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Criminal Minds Models: An Exploration of a Typology for Criminal Propensity

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CRIMINAL MINDS MODELS: AN EXPLORATION OF A TYPOLOGY FOR CRIMINAL PROPENSITY

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ABSTRACT

Title: Criminal Minds Models: An Exploration of a Typology for Criminal Propensity

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A new theoretical framework was introduced to classify criminal propensity. The principal assumption is there is variation within criminal propensity. It means even though criminals all have criminal propensity, it does not mean they are all prone to commit crime to the same extent. This new model is called the CM Model in which criminal propensity is defined as criminal minds. There are eight CM models based on the level of the three major dimensions of criminal minds, including rationality, emotinality, and morality. A survey study was done to test this new model. The issues regarding the difference between digital piracy and stealing have also been addressed, using the CM models. In addition, the moral issue about digital piracy was examined as well. As a exploratory study, implications were suggested according to the preliminary findings.

ACKNOWLEDGMENTS

I would like to start with my gratitude for my dissertation chair, Dr. Dennis Giever. Although he could have had all the good reasons to convince me not to pursue this project for the subject of my dissertation, never once did Dr. Giever even imply that I should not embark on this somewhat unconventional dissertation process. The confidence he showed in me and the latitude he granted me in this genuinely exploratory study were the true attestation of open-mindedness. He gave me useful guidance without stifling my ingenuity, which necessarily and successfully made sure my imaginativeness was environed by practicality so as to render the accomplishment of this project substantial contribution to the discipline of criminology. There is no doubt Dr. Giever is a true professional and I am lucky to have him chairing my dissertation.

I am also lucky to have a more than supportive committee, which consisted of Dr. Kate Hanrahan, Dr. Jake Gibbs, and Dr. John Lewis, in addition to Dr. Giever. Dr. Hanrahan has played an important role in my doctoral study. She is more than a teacher who taught me how to conduct research. She is also a role model showing how professionalism and personal cares do not need to be mutually exclusive. She gave me more opportunities to be involved in academic activities where I learned and grew beneficially. She gave me advice and help when my personal life was rugged. It is simply honorable to see Dr. Hanrahan's name signed on my completed dissertation.

Dr. Gibbs is another professor who affected me greatly. We did not really talk to each other very often but he understands me. He gets my weird sense of humor and strangely he seemed to have rather high opinion of me. Since my very first semester in IUP, Dr. Gibbs' encouragement has been a major source of my motivation. If I have ever been considered a self-motivated student, it is because Dr. Gibbs let me

believe I can do better. Although for some reason Dr. Gibbs was not always able to be available during the process, the fact that this dissertation was approved by him already means a lot to me.

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Last but not least, I would also want to express my appreciation for those who gave me permission to collect data from their institutions. I may not be able to list their individual names but they are the school officials working in Yale University, The Ohio State University, Florida Gulf Coast University, Iowa State University, and Washington University in St. Louis. These people made it possible to draw data from a sample across multiple institutions with minimal hurdles. Finally, I want to thank whoever that chose to participate in this project by completing the survey. This project could not have been done without your zeal and kindness.

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CHAPTER 1

INTRODUCTION

There are a number of theories in criminology, and many of them have been frequently cited, tested, criticized, and even integrated. New perspectives hence have been brought into old theories. For example, modern biological theory no longer uses the term 'born criminals', and labeling theory starts to take informal sanctions into account (Brennan & Raine, 2003; Matsueda, 2003). However, none of these theories, even with new perspectives, have really provided a complete explanation for criminality, mainly because when testing these theories, the unexplained variation seems to constantly exceed the explained portion (Williams, 1999). The explained variation found in empirical studies mostly ranges from 5 percent to 25 percent (Williams, 1999), which means in the attempt to explain crime, current theoretical models did not seem to apply to every case. This suggests the conventional approach to explaining crime fails to touch the core of criminality that is really shared by all criminals. Although the criminogenic factors derived from existing theories are sensible, they may not be applicable to everyone. Moreover, these theories were created with conventional crime or delinquency in mind, but they usually fail to account for all criminalities represented by conventional crimes, let alone the criminality of some newly defined crimes, such as cybercrime.

Cybercrime generally refers to a diverse range of illegal activities that take place in the unique electronic environment, "cyberspace" (Yar, 2006). Its crime scene (i.e., cyberspace) makes it a special type of crime, because in the virtual settings many things do not seem to operate in the same way as in the 'real world'. For instance, stealing property from the Internet is not quite the same as sealing a candy bar from a convenient store or stealing a car in the parking lot. By the same token, police patrol

is certainly also not in the same form in cyberspace. Given this 'cyber' nature, it is unsure whether existing theories can adequately apply to cybercrime if we have not established that cybercrime represents the same criminality as the one represented by conventional crime. Further, perhaps conventional crime itself represents more than one criminality, and so does cybercrime. Should we view all car thieves as potential rapists simply because they have a propensity to commit crime? Do people having a propensity to commit software piracy always also have a propensity to commit identity theft? Similar questions can go on and on, and currently criminological theory has not really offered a framework to examine this issue. In addition, offenders are often classified based on the offense they committed, which essentially means if you do the same thing, you are of the same kind. For instance, when studying drug offenders, the traditional approach to classifying crime and criminals does not seem to distinguish two convicted drug offenders when one of them is prone to violence but the other is not. The traditional approach tends to focus on salient behaviors and fail to address the underlying mindset that leads to those behaviors and possibly future behaviors.

The current project has no intention to refute the traditional approach, but it is meant to propose a less conventional, if not unconventional, approach. The focus here has shifted away from criminal behavior to the criminal mindset. This is not a psychological model that is intended to explain why or how the mindset is formed. Rather, the focus is on looking into the mindset after it has been formed. This project proposes a modeling approach to classifying offenders based on their criminal propensities, and argues their criminal propensities reside in their criminal mindset. The assumptions are first, people can do the same thing for different reasons, and second, a different mindset will lead to a different propensity. Put differently, because

two individuals both stole cars, it does not make them automatically the same type of criminals, for perhaps the criminal propensities that led to their stealing are not the same, due to different mindsets. Hence, the reasoning is we may be able to presume what crimes a person is more likely to commit by examining the type of criminal propensity, and we can determine the type of criminal propensity by assessing the criminal mindset that underlies the propensity.

The proposed models are entitled Criminal Minds (CM) models. Similar to self-control theory (Gottfredson & Hirschi, 1990), the CM models posit that it is the propensity to commit crime that best predicts crime, but the CM also posits there could be different mindsets underlying such criminal propensity. I.e., there could be different types of criminal propensity. In the CM models, the mindset underlying criminal propensity is called criminal minds, which allows people to consider using illegitimate means as options to achieve a goal. The goal can be intangible as well as tangible. In chapter 2, the CM models will be discussed in detail, but briefly the principal proposition is that criminal minds are criminal propensity, so different types of criminal minds represent different types of criminal propensity. It is argued that not all criminals are the same, even though they all have criminal propensity. They may have different propensities. What makes the CM models distinct from existing theoretical models is the highlight of the one element shared by all criminals (i.e., criminal propensity) without being enmeshed in the practically futile effort to identify all root causes, but at the same time the variation of criminal propensity (i.e., criminal minds) is addressed. This model is aimed to be applicable to all crimes, including cybercrime.

Cybercrime contains a broad domain of crime. The current project centered on digital piracy, which is copyright infringement related to digital files, such as music

software, and video. It has been argued that cybercrime represents a new virtual criminality (Capeller, 2001), whereas some people have seen cybercrime as no more than old crime committed via a new medium (Grabosky, 2001). In terms of digital piracy, it could be reflective of a new criminality different from conventional crimes, or it could be simply theft in cyberspace (Seale, Polakowski, & Schnieder, 1998). If the former postulation is true, then people who engage in digital piracy may not usually engage in traditional theft. If the latter is valid, then people who have a propensity to steal should also have a propensity to pirate digital files, regardless of actual engagement. To resolve this argument, this project included stealing as a conventional crime parallel to digital piracy for comparison, and applied the CM models to examine the propensity (i.e. criminal minds) for either stealing or digital piracy. If the criminal minds are the same, it implies the criminalities are of no difference. Otherwise, it might suggest digital piracy is not simply theft in cyberspace, and hence cybercrime may indeed represent a new criminality. The CM models address criminal propensity in terms of criminal minds and three major dimensions (i.e., rationality; morality; emotionality) are proposed as the components of criminal minds. It is these three dimensions that account for the variation in criminal minds (i.e. criminal propensity). Totally the variation based on the three dimensions constitutes eight CM models. They are discussed in detail in chapter two.

Using the CM models, the purpose of this project was threefold. The first one was based on the three major dimensions, to use different models of criminal minds to specify different types of criminal propensity. The objective was to establish a new offender typology based on the types of criminal propensity rather than the types of criminal behavior. Second, the proposed CM models could be used to examine whether digital piracy is different from stealing in terms of the criminality these two

offenses represent. If these two offenses simply represent the same criminality, it should be expected to see most people who have a propensity for digital piracy will also have a propensity for stealing, although actual behavior may not occur due to situational conditions. In addition to stealing and digital piracy, this project included totally five different offenses so as to demonstrate whether criminals really are prone to do it all, or perhaps the type of criminal propensity (i.e., criminal minds) indeed determines their differing offending, as postulated in the CM Model. The five offenses included digital piracy, stealing, drug use, sexual assault, and physical assault.

Finally, the last purpose of this project was to address the moral issue surrounding digital piracy, since it has been suggested digital piracy could be lacking in moral intensity (Logsdon, Thompson, & Reid, 1994), which implies even morally sound people might morally justify digital piracy. If software piracy is widely deemed as illegal but not immoral, then simply measuring a person's moral development can be misleading, for people might morally justify an illegal behavior, regardless of their level of general moral judgment. In this regard, this project measured the respondent's general moral judgment as well as the moral view specifically on digital piracy to see whether a person's level of moral judgment is correlated with the tendency to justify digital piracy.

To sum up, the CM argues if criminal propensity is present, it indicates criminal minds, and since there are different types of criminal minds, there are different types of criminal propensity. The types of criminal minds are based on the three major dimensions consisting of criminal minds: rationality, morality, and emotionality, which will be discussed in detail in chapter 2. Two offenses are considered representative of the same criminality if the offenders who show

propensity to commit one of them always also show propensity to commit the other. Basically, the current project set forth two concepts. First, criminal propensity is about the offender. People's criminal propensities can be the same or different. Criminal propensity is defined as criminal minds, which are defined as the mindset that allows people to consider using illegitimate means to achieve a goal. Accordingly, when we look into criminal propensity we see criminal minds, and when we look into criminal minds we see the three major dimensions. There was no causal relation proposed, only in-depth exploration on criminal propensity. Second, criminality is about the offense. Each offense has its criminality, and these criminalities can be the same or different. When two offenses represent the same criminality, they should be found in a criminal propensity simultaneously. The CM models were used to survey these two concepts (criminal propensity & criminality). They will be reiterated throughout the text.

In chapter 2 the CM models are introduced in detail and in chapter 3, the relationship between the CM models and existing theories is discussed. A literature review regarding digital piracy and its theoretical risk factors is included in chapter 4. The literature review was not meant to construct the CM models but instead it used digital piracy as an example to demonstrate the theoretical relationship outlined in chapter 3. In chapter 5, the research methods and analysis plan used to answer research questions and test hypotheses are discussed. Analysis results are presented in chapter 6. Finally, chapter 7 offers implications and conclusions derived from this current project.

CHAPTER 2

CRIMINAL MINDS MODELS

The Construct of Criminal Minds

The conceptual definition of criminal minds is a mindset that allows people to consider illegitimate means as options to achieve goals. The presence of criminal minds equals criminal propensity, which does not necessarily result in criminal behavior, for in some situations legitimate means may be considered a better option. Conversely, without the presence of criminal minds, illegitimate means will not be considered options to achieve the goal, and hence no criminal propensity will exist. The goal does not need to be tangible or materialized, as long as they are satisfying. If a person would seriously consider using an illegitimate means, this consideration is sufficient to betoken the presence of criminal minds. In the CM Model, the presence of criminal minds is seen as indicative of criminal propensity. Hence, the actual criminal behavior is not required to attest to the existence of criminal propensity, although if a person has committed a crime, it can be seen as indicative of criminal propensity (i.e. criminal minds). However, past behavior may only indicate past propensity, not necessarily current propensity. Besides, a single criminal behavior cannot demonstrate the whole picture of a criminal propensity.

In self-control theory, criminal propensity is viewed as a general propensity that can lead to all kinds of crime or analogous behaviors (Void et al., 2002; Gottfredson & Hirschi, 1990). The CM Model, however, posits there is variation in criminal propensity. This proposition is the heart of the CM Model. The CM argues the majority of criminals do not commit all crimes, although they are unlikely to be specialists, either. We cannot say a person stealing a candy bar from a grocery store must have a propensity to kill people, even though some people indeed have a

tendency to do both. Simply put, criminals are not all the same, despite the fact that they all have criminal propensity. Hence, there ought to be a need to look into the variation of criminal propensity.

In light of this reasoning, the CM models are intended to address this variation in criminal propensity by proposing that criminal minds (i.e. criminal propensity) are composed of three major dimensions. First, a rational dimension is concerned with people's rationality, which means the intention to estimate possible outcomes before engaging in a behavior. The second dimension of criminal minds is a morality, which if lower is more likely to lead to justifying a wider range of behavior that violates social norms. The third dimension is emotionality. This emotional dimension posits if emotionality is high, people are more likely to act on impulses or emotional drives; on the other hand, if it is low, people would have a better control over their emotional needs. In actuality, these three dimensions are not unique to criminal minds. It is safe to say they are existent in all people's minds. Therefore, it is important to note that these three dimensions themselves are not proposed as criminiogenic. Possessing these three dimensions does not make a mind criminal, but showing a criminal propensity will.

In terms of criminal minds (i.e. criminal propensity), rationality involves rational estimate of the outcome of the offense. In order for a person to consider committing a crime, s/he may have to recognize the outcome of the behavior as gratification in terms of the goal being achieved, since criminal minds are defined as considering using illegitimate means to achieve goals. The gratifications recognized need not be tangible, nor do they need to be as gratifying in other people's eyes. In short, this rational recognition is fairly subjective. This subjective recognition is based on the subject's rationality. In terms of rationality, the CM models subscribe to the

idea of bounded rationality in that offenders do not always have sufficient information, capacity, or time to make a sound assessment to maximize benefits before they take actions (Clarke & Cornish, 2001). Therefore the rational dimension is concerned with trying to act rationally rather than actually making the most optimal decisions all the time. Some behaviors might be seemingly irrational but are in fact a result of rational choice, so this dimension should be assessed from the offender's point of view.

In criminal minds, the moral dimension involves moral justifications that permit the subject to believe the behavior is morally acceptable or justifiable. If people's moral judgment does not consider crime immoral, the behavior will be more acceptable and thus more likely to become an option. These justifications also do not have to make sense to other people. They should rely on the subject's personal moral judgment, even though it is possible this judgment can be affected by outer influences. Because the CM is only concerned with what is existent instead of why it exists, it is of less importance to ask how the moral judgment is developed.

As for the emotional dimension, in criminal minds, this dimension renders emotional reaction to the criminal behavior, irrespective of rational reasoning and moral justification. People do not always need rational reasons and moral justifications to enjoy doing or want to do something. Sometimes it is just a matter of feelings or impulses. This dimension addresses the situation where people do something merely because they feel like doing so. As the rational dimension, both the moral and emotional dimensions need to be assessed from the offender's stance. Although it seems to be implied that high rationality, low morality, and high emotionality are more likely to be associated with criminal propensity, it is not impossible that low rationality, high morality, or low emotionality might also have bearing on propensity for certain crimes.

To sum up, the three dimensions represent rationality, morality, and emotionality. Rationality is defined as the effort to make a rational choice in terms of recognizing and then achieving gratifying outcomes. Morality is the moral judgment that may or may not provide justifications for criminal behavior. Emotionality is the extent to which the behavior is affected by emotions. Although these three major dimensions together constitute criminal minds, they are not invariable in all criminal minds, for people can commit the same crime for diverse reasons. For example, some individuals are more rational while some others are more emotion-driven, but they can all end up committing the same crime, despite the different mindsets. The CM models use eight models to illustrate such different mindsets.

CM Model 1: Rational Model

In this model, as shown in Figure 1, rationality and morality are high, while emotionality is low. This composition of mind could imply that criminal mind owners of this model are not likely to be impulsive and they do have decent moral judgment that is unlikely to justify deviant or illegal behaviors. However, the criminal propensity is still present. It should be stressed again that this does not mean high rationality, high morality, or low emotionality is criminogenic. The three dimensions, either high or low, simply reflect the characteristics of this type of mindset. There might be explanations as to how high rationality, high morality, and low emotionality together contribute to a criminal mind, but such explanations were not proposed in the current study.

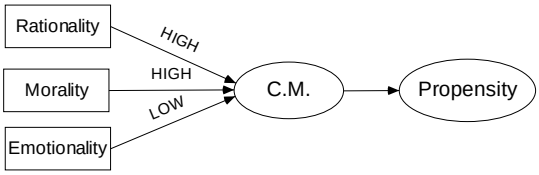

Figure 1. Rational model.

CM Model 2: Moral Model

In this model, all three dimensions are low. When morality is low, it is reasonable to assume that criminal mind owners of this model have such moral judgment that is more likely to justify behaviors that violate social norms or even the law. Also, because rationality is low, this type of criminal propensity does not seem to involve much rational choice. Besides, since emotionality is also low, the behavior is unlikely to be a result of impulses. Once again, there could be plausible explanations regarding how low rationality, low morality, and low emotionality might contribute to a criminal mind, but this project was not intended to provide explanations of this sort.

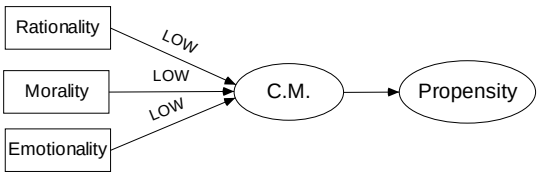

Figure 2. Moral model.

CM Model 3: Emotional Model

This emotional model consists of low rationality, high morality, and high emotionality. Criminal mind owners of this model allow their emotions to influence their behavior easily, due to the high emotionality. These people are more emotion-driven. The low rationality suggests they often do not calculate situations before they act on emotional drives. However, although rationality is low, it does not mean their behavior must bring them no gratification. It merely means before they engage, they probably would not pay attention to the outcomes. The high morality makes them less likely to justify deviant or illegal behaviors on moral grounds.

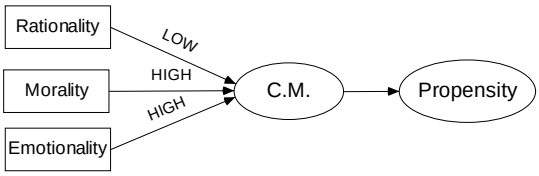

Figure 3. Emotional model.

CM Model 4: Justified Model

In this model, rationally is high, while morality and emotionality are both low. The low morality suggests criminal mind owners of this model are more inclined to justify some deviant or criminal behaviors, and they are more used to estimating the outcome of their behaviors on account of the high rationality. The low emotionality makes it unlikely that the behavior is driven by emotional want.

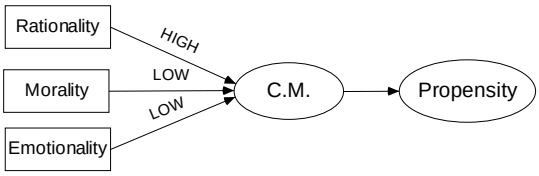

Figure 4. Justified model.

CM Model 5: Hedonistic Model

The hedonistic model contains three dimensions that are all high. This suggests criminal mind owners of this model are less likely to morally justify deviant behavior. They will try to act rationally, but at the same time they are more emotionally driven.

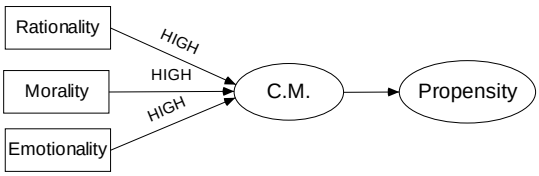

Figure 5. Hedonistic model.

CM Model 6: Self-Righteous Model

In this model, rationality and morality are low, whereas emotionality is high. Since morality is low, criminal mind owners of this model are likely to justify deviant or illegal behaviors. Rationality is low, so the outcome of the behavior is of less importance, while high emotionality shows emotional needs are crucial. Once again, low rationality, low morality, and high emotionality are the characteristics, instead of the cause, of this type of criminal propensity.

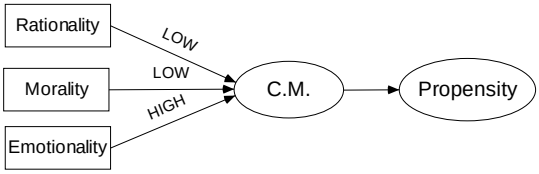

Figure 6. Self-Righteous model.

CM Model 7: Full Model

This model is characteristic of high rationality, low morality, and high emotionality. When people have criminal propensity of this model, they are prone to justify deviant or illegal behaviors. They are also inclined to calculate the possible outcomes, and they seem to have more trouble keeping their behaviors from emotional drives.

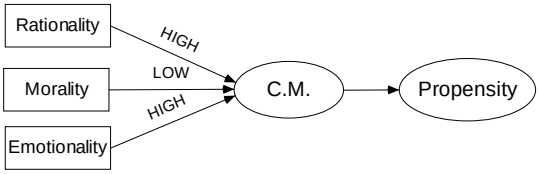

Figure 7. Full model.

CM Model 8: Irrational Model

Aside from the seven CM models depicted above, based on the three major dimensions, there is one more possible model which consists of a low level of rationality, high level of morality, and low level of emotionality. Rational choice, moral justification for crime, and impulsive behaviors are not the characteristics of this type of criminal propensity.

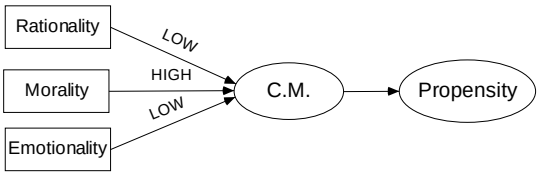

Figure 8. Irrational model.

Unlike self-control theory, which asserts low self-control indicates a general criminal propensity (Gottfredson & Hirschi, 1990), the CM Model postulates criminal propensity (i.e. criminal minds) needs to be classified. As aforementioned, people

without criminal propensity can also be classified under this scheme, for the three dimensions, either high or low, were not proposed as criminogenic. They are the characteristics of the mindset, but they are not the causes.

CHAPTER 3

CM & THEORIES

The CM Model is not intended to compete with existing criminological theories. In fact, it is not a theory trying to explain a causal relationship. Instead, it simply renders a framework to explore criminal propensity. On the one hand this framework recognizes the individual differences on a fairly micro level by emphasizing the variation within criminal propensity. On the other hand, it classifies these differences in an attempt to create a typology for offenders. It is a typology based on types of propensity rather than types of behavior, for the fundamental belief upheld in the CM Model is people can do the same thing for different reasons. A murderer can be a husband desperate to protect his wife or a sadistic manslayer who kills for pleasure. Given this belief, it should be at least considered probable that maybe theories need to be tested based on the type of offenders as defined by the criminal propensity instead of by the criminal act.

Thus, the CM Model is merely aimed to illustrate the differences within criminal propensity rather than explaining why people do what they do. Actually, the CM Model is focused not so much on what people do as on what people are inclined to do. It is the propensity that the CM models classify. As for what factors cause this propensity, this is a question left for criminological theories to answer.

Theoretical Perspectives

Criminological theories have identified numerous risk factors and they should explain the formation of criminal minds on a case by case basis. We should not expect theories can explain it all. Without a pertinent categorization, theories might be wrongfully applied to explain some irrelevant types of offenders. In this section, how the CM models can supplement the theoretical explanation of criminals is discussed.

Classical Perspective

The classical perspective basically is built on the assumption of rational free will (Void, Bernard, & Snipes, 2002). This perspective views crime as a product of rational choice. People are assumed to be calculating risks and benefits before they decide to commit crime, so if the risks outweigh the benefits or if the outcome is likely to be punishment, people will be discouraged from engaging in criminal behavior. Such propositions require people to possess capacity to exercise rationality. Rationality implies criminals are able to recognize risks and benefits, and are inevitably inclined to maximize their best interests. Modern views of this perspective have introduced some new take on the assumption of rationality. Rationality may not be viewed as absolute now. Rather, conditional or bounded rationality is embraced (Clarke & Cornish, 2001; Fishbein, 1990). It starts to be believed that criminals as much as they might want to do not always have enough information, time, or intelligence to maximize benefits while avoiding undesirable outcomes (Paternoster & Bachman, 2001). Despite this, the gist of this perspective remains unchanged; that is, people pursue pleasure and avoid pain by rational thinking (Anderson & Dyson, 2002; Void et al., 2002). It is rooted in utilitarianism and upheld by utilitarian philosophers, such as Becarria and Bentham (Banks, 2004), who are the icon figures of the classical perspective in criminology.

The CM Model adopts the idea of bounded rationality from this perspective, and proposes a rational dimension of criminal minds. This dimension addresses the rational side of human minds, where people try to rationally assess the consequences of a behavior so as to achieve a positive outcome. Apparently, the utilitarian philosophy on which the classical perspective is based has been incorporated in the CM models. Unlike the classical perspective, however, the CM models do not assume

all people are always rational. Even with bounded rationality, the CM models do not see every offense as necessarily a product of rational choice. Recall there are a few CM models in which criminal minds are composed of a low level of rationality (see chapter 2).

In sum, instead of absolute rationality, the CM Model calls for attention to the subjective rationality from the offender's viewpoint. With a more flexible assumption of rationality, the CM Model thus complements classical theories (e.g. deterrence theory and rational choice theory) in that it can specify why some people would make seemingly irrational choices. Some behavior may seem irrational but it might still be a result of rational thinking. Moreover, while classical theories tend to see crimes as utilitarian behaviors, the CM models address both utilitarian and non-utilitarian crimes. Crime does not have to be a result of rational choice.

Theories of Personal Traits

The classical perspective has been criticized for failing to account for crime causation (Anderson & Dyson, 2002). More precisely, the classical perspective only explains why people with criminal intent commit crime, but it fails to explain what causes criminal intent. To some extent, the CM could be seen as in line with the classical perspective, because it emphasizes individual mindsets without addressing the causation of such mindsets. It relies on other theories to identify plausible causes that contribute to the formation of criminal minds and hence criminal propensity.

The first set of theories that can be promising in identifying what causes criminal minds is the theories of personal traits, such as biological theories and psychological theories. These theories posit there are some personal traits that can be related to criminals. Theories of this kind specify the physical or psychological differences between criminals and non-criminals. These theories in their original

forms are mostly discredited because their policy implications were often politically incorrect from today's point of view. For example, Cesare Lombroso in 1876 posited some people were born criminals (Anderson & Dyson, 2002), and H. H. Goddard in 1914 concluded that most criminals were feebleminded (Void et al., 2002). The ensuing implications included sterilizing feebleminded people or isolating people with certain criminal characteristics from the rest of society (Void et al., 2002). Aside from the flimsy scientific credibility, such implications can easily be accused of discrimination. These arguments can hardly be accepted as legitimate today. Hence, modern theories of this kind have abandoned the view of determinism and embraced the view regarding predisposition (Fishbein, 1990; Moffitt, 1993; Yaralian & Raine, 2001), which means some personal traits can make people more susceptible to outer criminogenic factors, but these traits alone do not necessarily induce criminal behavior.

In this aspect, the CM subscribes to the contention that people are born with a certain genetic makeup, which varies individually, but this makeup will continuously interact with social environments (Yaralian & Raine, 2001). This complex interaction effect involves numerous social factors as well as individual traits. In addition, even though some characteristics may be found more prevalent in criminals, it does not follow that these characteristics must be criminogenic. It is a logical fallacy. We cannot say most criminals are male so being a male must implicate criminality. Some personal traits may predispose people to the formation of criminal minds, but most predisposed people may not commit crime. Currently many biosocial explanations have been put forth to identify personal traits that predispose people to crime (Fishbein, 1990; Moffitt, 1993; Yaralian & Raine, 2001). The CM simply refines these explanations by asserting these factors lead to criminal propensity rather than

crime per se. This position corresponds to the notion of predisposition upheld by modern theories of personal traits. In light of the three dimensions of criminal minds, certain personal traits may predispose people to abnormal rationality, distorted moral development, and emotional immaturity. Thus, these traits can lead to a criminal mind which increases the likelihood to commit a crime.

However, there are numerous personal traits and as stated, these traits will interact with outer factors. When research tries to take into account all possibilities, it is inevitable something will be left out of consideration. Consequently, much will remain unexplained. The CM Model on the other hand takes the attention directly to the consequences (i.e., criminal propensity), regardless of the root causes and processes. Thereby, the CM models by proposing the three major dimensions that may or may not be affected by various personal traits are free from the struggle with generating a complete list of risk factors when it is virtually impossible to do, especially when criminals are studied as an aggregate. Of course there will be deficiency if root causes are ignored, but as stressed at the beginning, the CM does not serve as a competing theory. Its deficiency may be well complemented by existing theories. Besides theories of personal traits, other theories are also needed to identify social factors that interact with personal traits.

Social Structural Theories

The biosocial view contends personal traits interact with social environment, and when predisposed people interact with criminogenic environments, crime will likely be the outcomes. When it comes to criminogenic environments, in contrast to those theories of personal traits, social structural theories minimize or ignore the individual's biological or psychological makeup (Void et al., 2002). These theories

pay great attention to social structures. The belief is certain social structures are bound to produce more crime regardless of who is living there.

In the 1800s, Guerry and Quetelet first intended to explore the distribution of crime rates by examining the characteristics of the regions in which crime occurred, and they found significant regional differences in crime rates (Void et al., 2002). They found property crime is more prevalent in wealthy areas, while violent crime is more likely to occur in poor neighborhoods (Void et al., 2002). They believed as far as crime rates are concerned, the opportunity presented in those areas mattered more than the people who lived there (Void et al., 2002). Later, Emile Durkheim theorized about why crime happens by introducing the idea of social forces influencing crime, which views crime as a societal phenomenon rather than outcomes of individual behavior (Anderson & Dyson, 2002). Following Durkheim, the Chicago School observed the social structures within the city of Chicago and found the worst crime rates always seemed to be associated with the inner city no matter who the residents were (Akers & Sellers, 2004). They came to a conclusion that it is the social structure of the inner city that generated crime, and the characteristics of residents were of no particular importance (Paternoster & Bachman, 2002; Void et al., 2002). With the focus on the social ecology of crime, the Chicago School in conjunction with Durkheim's theory founded social disorganization theory and strain theory (Anderson & Dyson, 2002; Void et al., 2002). Some newer structural theories basically are variants of these two prototypical theories (e.g. the institutional anomie theory). They view social disorganization, such as disruptive family or the lack of social control, as the root of crime, and the stress created under disorganized social structures can lead to crime, too.

Basically, these theories are not concerned about individuals. They argue crime stems from disorganized social structures and the inequality under such structures. Overall, social structural theories attribute the origin of crime to factors derived from social structures that generate a criminogenic background where crime takes place. These structural factors include poverty, unemployment, industrialization, residential mobility, racial heterogeneity, family disruption, strain, and many more (Void et al., 2002; Raphael & Winter-Ebmer, 2001; Farrington, 1998; Sampson & Groves, 1989). These theories argue criminality originates from social environments and conditions, rather than the offender's personal characteristics or rational free will. Put differently, crime is a product of social forces as opposed to individualistic factors (Void et al., 2002; Akers & Sellers, 2004; Cullen & Agnew, 2003).

According to structural theories, structural factors may limit legitimate options people have and force them to consider illegitimate options as means to achieve goals. Recall criminal minds are the mindset that allows people to consider illegitimate means as options. In this sense, structural factors can facilitate the formation of criminal minds if there are fewer legitimate means to choose from in the first place. Thus, the structural factors identified in the theories can be seen as contributors to criminal propensity, but still not crime per se, because despite the criminogenic environment, it is safe to say not everyone who is subjected to disorganized social structures becomes a criminal.

Similar to personal traits, it is almost impossible to include all structural factors. Even if we could, people living under different social structures will be subject to different influences and create different interactions. It will be hard to find a model based on structural theories that can fit everyone. Hence, the CM models help

avoid this shortcoming by once again taking the attention to the final products (i.e., criminal propensities) which may or may not be attributable to social structures.

Social Processing Theories

Social structural theories provide a macro view on the origin of criminal minds. When they are combined with theories of personal traits, together they offer a complex biosocial interactive framework for explaining the variations within the population, but this framework is not complete.

In numerous research studies done to examine social structural theories, one of the most constant findings is that structural factors mostly can only provide an indirect explanation of criminal conduct, for they are frequently mediated by social processing variables, such as peer association and social control (Elliot et al., 1996; Cantillon, Davidson, & Schweitzer, 2003; Sun, Triplett, & Gainey, 2004; Sampson, Raudenbush, & Earls, 1997; Agnew & White, 1992; Paternoster & Mazerolle, 1994). Social processing theories contend crime is a product of socialization processes to which individuals are subjected and these processes involve interactions that one has with socializing institutions, such as family, peers, school, marriage, and work (Anderson & Dyson, 2002). These interactions range from imitation, learning, association, labeling, to inner and outer control imposed on individuals' behaviors. These theories tend to have their own belief in what causes crime. The cause could be learning definitions in favor of law-violating, weak attachment to family, being discriminated against due to prior criminal record, criminal behavior being reinforced, imitating deviant role models, and so on. Differential association theory argues crime is a learned behavior, whereas control theory believes crime is a result of natural motivation that is unbound (Akers & Sellers, 2004). Labeling theory posits people

recidivate because they internalize a deviant self-identity, while learning theory asserts recidivism results from reinforcement (Anderson & Dyson, 2002).

Despite the incongruent takes on causes of crime, social processing theories bring attention back to individuals and they address how individuals interact with the immediate surroundings, but they also downplay personal traits. The focus is on the processes in which people interact with the environment. Not surprisingly, these processes can be very diverse and can affect people in various ways. Employment can expose you to delinquent habits but it may also increase your stakes in conformity. Shaming could rehabilitate a person but it may also repel a person to become anti-social.

Nevertheless, social processing theories supplement social structural theories by illuminating the process individuals go through under the social structure. This set of theories explains or at least are in an attempt to explain how individuals are socialized into criminals, implicitly given the social structural conditions (Gibbons, 1994). With the inclusion of social processing factors, the theoretical framework is now rather complete. If a person who is biologically or psychologically predisposed to crime (e.g. suffering neurological defects) lives in a crime-inducing environment (e.g. disadvantaged neighborhood) going through deviant processes (e.g. weak social control), we say this person is most likely to become a criminal. Even though the CM would agree with this inference, it argues the outcome is criminal propensity, which may or may not lead to criminal behavior. Even if it does lead to crime, different types of propensity will lead to different types of offenders.

To conclude thus far, personal traits, structural factors, and processing factors identified in existing criminological theories are all recognized as contributors to the formation of criminal propensity. People can be predisposed to criminal behavior due

to certain personal traits and this predisposition can be equal to criminal propensity. People can also be frustrated by the environment devoid of legitimate avenues to success and start considering illegitimate means. Criminal propensity thus occurs as a result. With or without a criminogenic environment, some socializing processes can also bring about criminal propensity, should the processes themselves be criminogenic. However, it is impossible to create an exhaustive list for all these risk factors, not to mention all possible interactions among these factors. At best we can name those most salient ones but ignoring other factors can be empirically troublesome, for the lack of explanatory power. Moreover, the complex interaction effects are also often overlooked due to methodological limitations (Williams, 1999).

The CM models are not capable of resolving this dilemma and are not intended to. Instead, they focus on the criminal mindset when criminal propensity has been existent. The criminal mindset could be formed due to personal traits, structural factors, or socialization. Since it is unlikely to know exactly how criminal propensity is formed owing to too many possibilities, the CM Model is an approach that bypasses this issue and addresses what has been created directly. In this sense, it should be able to encompass the variation in crime that prior research usually fails to explain. In a nutshell, the CM assumes all theoretical risk factors can be linked to at least one of the three major dimensions in criminal minds. For example, ‘commitment’ in social control theory could be linked to the rational dimension, whereas ‘strain’ in strain theory could be linked to the emotional dimension. Therefore, even if we cannot name all root causes, we can still address the whole picture of criminal propensity because no matter how complexly the root causes interact with one another, it is assumed they will all come down to the three dimensions of criminal minds. In the next chapter, digital piracy will be used as an example to illustrate this point.

Critical Perspective

As discussed above, the CM itself is not concerned with what the root causes of criminal propensity are. It acknowledges all existing theories as valid and plausible, while at the same time argues that none of those theories alone can adequately account for all causes of crime. An integrative and dynamic effort may be needed to incorporate relevant theories on a case by case basis. This view can be fairly troublesome when criminologists usually intend to explain crime in an aggregate sense (Williams, 1999). Nevertheless, this view may also fit reality more closely in terms of complexity. The CM recognizes this complexity and the desire for empirical practicality as well, so it proposes the CM models, which take into account individual diversity and also provide a framework to classify such diversity.

However, so far it is still not clear what 'criminal' means in the CM models. In criminology, a critical perspective has questioned or criticized the definition of crime (e.g. conflict theory). This perspective argues crime is defined by people who control the power to do so, not by the nature of the behavior (Void et al., 2002; Akers & Sellers, 2004). Therefore, crime is created to maintain the power elites' interests by means of criminalizing whoever threatens these elites (Anderson & Dyson, 2002). In light of this reasoning, crime may not be inherently evil. It could be simply politically incorrect. This view would challenge the legitimacy of the law in terms of morality and ethics. Even if we subscribe to the law without question and uphold the legal definition of criminal, a problem remains. The law can change over time and place. For instance, adultery can be immoral but not illegal in a nation, whereas it can be punishable by death in another nation. Slavery could be normal and legal 200 years ago but could have become a despicable crime today within the same country.

In this regard, the CM is flexible enough to accommodate these issues. Recall there is a moral dimension in criminal minds, which implies some behaviors can be illegal but considered moral by some or even most people. This implication renders power for the CM to detach itself from the issues regarding the morality of the law or the authorities. This is also the reason why the current project attempts to explore the relationship between general moral judgment and the tendency to justify a particular offense. Furthermore, the law targets the act, whereas the CM Model targets the propensity. Without an act, it cannot, by legal definition, be criminal. Hence, in the CM, 'criminal' is defined by the potentiality of violating a law or social norm. A criminal mind is simply a mindset considering doing an act which may or may not be unlawful in different jurisdictions. As long as the act could be seen as unlawful or deviant, it should be an appropriate subject for the CM models.

Aside from the meaning of the law, critical theories often bring attention to issues related to gender, class, and race. In this aspect, the CM holds a neutral stance, because it does not incorporate root causes in its models. Therefore, it does not assume anything related to gender, race or class, and it is totally open to explore any differences in criminal propensity when it comes to gender, race or class. Except for critiques, critical theories also identify several social factors that are claimed to be the root causes of crime, such as the division of labor and patriarchy (Akers & Sellers, 2004). These can as well be valid factors that cause criminal minds. Only, once again the causation is not the focus of the CM Model.

Conclusion

There have been numerous theories in criminology, and they all make good sense and points. That is why they are still talked about in theory courses and textbooks. Nevertheless, they have not seemed to lead us to any new understanding of

crime in the past few decades. Instead of repeatedly testing existing theories when we know not much progress can really be made, the CM is aimed to move forward. In the above sections, the relationships between the CM models and existing theories are discussed. Existing theories help explain why and how criminal propensity is developed and formed, but not all criminal propensities are created by the same factors. Because they are not created in the same way, it would be deficient to use a model containing insufficient causal factors to explain crime causality. In contrast, the CM tries to set up a model parsimonious enough but applicable in all cases.

It should be clear by now that the CM is not intended to provide theoretical causality, nor does it try to advocate any particular theories as better. The CM Model relies on other theories to identify risk factors that may contribute to the formation of criminal minds, although these risk factors are not the primary concern in the CM models. This position renders latitude to entertain the idea that all theories can be valid to some extent in some cases. On the other hand, the CM is intended to be applicable to all cases by looking into the final product of all theoretical models—criminal propensity as defined in terms of criminal minds. It does not matter which theory can account for the etiological factors, because the assumption is it all comes down to criminal propensity. Therefore, while theories cannot apply to everyone, the CM models have the potential to. After classifying criminal propensity by the eight CM models as introduced in chapter 2, it will be clearer regarding which theory is more suitable for which type of criminal propensity. For instance, perhaps deterrence theory explains the rational model perfectly but does not have bearing on the emotional model at all. If this can be verified, the CM Model may bring theory development in criminology to a newer level where the search for a general theory is not realistic anymore.

Furthermore, if the CM is to be incorporated in theory testing, besides classifying offenders based on criminal propensity, it can be used to test whether certain personal traits are more likely to lead to particular types of propensity. Likewise, it is also promising in testing whether people from different criminogenic environments show different criminal propensities. There are many ways that the CM can be contributive to theory testing.

To conclude, the relationship between existing theories and the CM Model is complementary. The CM addresses an aspect (i.e., the variation in criminal propensity) that is rarely considered in criminology before, but instead of replacing any theories, it merely introduces a new perspective. It is hopeful this new perspective can decipher what has not been explained by existing criminological theories, given the idea that the CM is actually like an eventual summary of all existing theories.

CHAPTER 4

DIGITAL PIRACY

Previously in chapter 3, the relationship between the CM Model and criminological theories was depicted. It has been argued the CM serves as an eventual summary that encompasses all criminogenic factors derived from existing theories. The notion is despite the variability, all kinds of effects and interactions as described in the various theories will eventually result in criminal minds. The theoretical factors all can be linked back to one or more dimensions of criminal minds.

In this chapter, a literature review on digital piracy was used as an example to further illustrate such a notion. Digital piracy was chosen because in the current project although five offenses were included to test the CM models, a particular emphasis was put on digital piracy, for of the three research questions, two of them centered on digital piracy.

The Issue

According to Software Publishers' Association (SPA)[1], digital piracy is the illegal act of copying digital goods for any reason other than backup, without permission from or compensation to the copyright holder (Gopal, et al., 2002). Digital goods include software, digital documents, digital audio, and digital video (Gopal, et al., 2002). Although this definition may not be deemed the best, one thing remains certain; that is, every year huge financial losses are reported from business groups on account of digital piracy. For example, Business Software Alliance (BSA) alleged software piracy has become a global phenomenon in which no nations had a piracy rate less than 20%, and it resulted in $10 to $12 billion lost for software manufacturers worldwide per year (Banerjee, Khalid, & Sturm, 2005; Bagchi, Kirs, &

[1] The SPA merged with the IIA to form the Software & Information Industry Association in 1999.

Cerveny, 2006). Some trade groups claimed software piracy caused the software industry $50 billion in lost revenue from 1994 through 1997, and in some countries the piracy rate even reach 95% or higher (Marron & Steel, 2000).

Although the Business Software Alliance (BSA) reported that of the 102 countries covered in the IDC Global Software Piracy Study, 62 of them have reduced piracy rates from year 2005 to 2006, the financial losses increased by 15% over 2005 (BSA, 2007). The average piracy rate was 35% and half of the countries studied had a piracy rate of 62% or higher (BSA, 2007). Software piracy appears to be most rampant in Central/Eastern Europe, Latin America, Asia Pacific, and Middle East/Africa, but in the US in 2006 the financial losses due to software piracy is the highest, in an amount of $7.3 billion dollars (BSA, 2007). In 2007, the global piracy rate increased by 3% and financial losses increased by 20%, compared to the same statistics in 2006 (BSA, 2008). Although the increases can be attributable to the fact that the BSA study included more nations in its 2008 report, the trend seems to suggest piracy rates are steady with an increasing amount of financial losses.

In addition to software piracy, music piracy is another example that signifies the gravity of digital piracy. Based on the estimation of Recording Industry Association of America's (RIAA), millions of dollars are lost from the music industry every year due to online music piracy (RIAA, n.d.). An analytical study done by the Institute for Policy Innovation (IPI) shows that as a result of sound recording piracy, the United States economy lost $12.5 billion and 71,060 jobs annually, whereas U.S. workers lost $2.7 billion in earnings per year and governments on all levels in total lost $422 million in tax revenues annually (Siwek, 2007). Further, an increasing percentage of the financial losses are attributable to illegal downloading. It is estimated that about 20 billion songs were illegally downloaded worldwide (Siwek,

2007). These illegal downloads either from peer-to-peer (P2P) networks or from the Internet are considered responsible for recent declines in the number of legitimate CD sales (Siwek, 2007).

In the United States, given the impact of financial losses and the pressure from business groups (e.g., RIAA and ITAA), in 1998, the Digital Millennium Copyright Act (DMCA) was enacted (Grabosky, Smith, & Dempsey, 2001). Thereafter the United States became part of the Worldwide Intellectual Property Organization (WIPO) treaties, which aim to protect copyrights around the world as well as battle piracy worldwide (Hang, 2003). This act also makes criminal charges applicable to digital piracy in addition to civil lawsuits. DMCA betokens digital piracy as an illegal act to the extent that it even raises some concern about endangering the current system of fair use and inhibiting technological innovation (Grabosky, Smith, & Dempsey, 2001; Hang, 2003). Due to this irreconcilable issue between the view upholding free information and the position embracing copyright protection, any attempt to explain digital piracy as a criminal behavior must take into account the different perspectives, none of which are necessarily deviant in either sociological or psychological terms. This connotation makes it interesting to question the suitability of digital piracy being explained by criminological theories. Nevertheless, currently some efforts have been devoted to providing theoretical explanations for digital piracy.

Theoretical Risk Factors

In previous chapters, it has been emphasized that CM Model is not aimed to identify the etiological factors that cause digital piracy, while existing theories have provided a list of risk factors. Because the current project did not incorporate these risk factors, only brief reviews on them are discussed in the following.

Rationality

According to rational choice theory, individuals commit an act based on rational calculation of risks and benefits. Should the benefits outweigh the risks, the act will be carried out. People may not always have information which allows them to anticipate all possible consequences and hence, they do not know exactly which decision will bring about the maximum benefits due to bounded rationality (Paternoster & Bachman, 2001). Despite this, people still make decisions based on subjective expectations. In other words, their rational choice might not seem rational in the eyes of the beholder.

Suggesting the same rational choice model, Cohen and Felson (1979) proposed a Routine Activities Theory (RAT) that argues crime occurs when there is a convergence in time and space of: 1. a motivated offender, 2. a suitable target, and 3. the absence of a capable guardian. The assumption is there are always offenders who are motivated to commit crime (Anderson & Dyson, 2002). The key is opportunity, without which no crime will occur despite the prevalence of motivated offenders.

According to the theories above, two factors can be identified: rational calculation and opportunity. Research has found that software piracy is linked to opportunities presented in the physical surroundings, such as the accessibility of original software materials (Kern & Pfeiffer, 2001). Other research also indicates when access to the Internet is conveniently available, the computer and Internet usage increases. This increase lends itself to a greater likelihood that users will encounter opportunities of digital piracy online, and a greater likelihood users will be socialized or even conditioned to condone or participate in digital piracy (Hinduja, 2001). It was also found that the Internet's anonymity provides offenders a sense of security when they estimate the risks (Kern & Pfeiffer, 2001). Pseudo-anonymity and true

anonymity on the Internet, which can be accomplished by advanced information technologies, have been warned by former US Attorney General Janet Reno to be new opportunities for criminal behavior (Chawki, 2006).

The rational calculation of risks and benefits usually involves deterrence theory, which asserts when the punishment associated with a behavior is severe, certain, and swift enough, individuals will be deterred from engaging in that behavior. The reasoning is when the punishment is severe and certain, the perceived risks will more likely outweigh the perceived benefits (Paternoster & Bachman, 2001). Paternoster (1987) in his review of literature suggested perceptual severity and certainty are more pertinent to deterrence theory than actual severity and certainty are. Besides, nonlegal sanctions can be more deterrent than legal sanctions. Research testing deterrent effects in software piracy has consistently found punishment certainty is inversely correlated with software piracy, while severity is usually not significant (Higgins et al., 2005; Peace, Galletta, & Thong, 2003). The perceived anonymity on the Internet usually produces less perceived punishment certainty and thus lower risks. In addition, informal sanctions (e.g. shame and social disapproval) are considered significant factors in research (Higgins et al, 2005). On the other hand, in terms of perceived benefits, costs play an important role in that the higher the price is, the more positive the attitude toward piracy will be (Peace et al, 2003).

In sum, derived from theories of rational choice, five risk factors have been identified in the literature: cost, perceived anonymity, perceived informal sanctions, perceived certainty of legal punishment, and opportunity.

Psychology

A psychological factor most relevant to cybercrime is deindividuation, a concept that can be attributed to anonymity. The virtual settings in cyberspace can

lead to deindividuation and a reduction of public self-awareness aligned with an increase in private self-awareness (Joinson, 1999). Deindividuation is a psychological state of loss of public self-awareness, lower social inhibitions, and increased impulsivity (Kabay, 1998). According to social control and self-control theory, there is a greater chance for criminal behavior to ensue when deindividuation is in effect, owing to the lower social inhibitions and increased impulsivity. The difference between self-control theory and deindividuation is self-control theory argues low self-control is a constant personal trait, whereas deindividuation is contingent on situations, such as in a crowd or in cyberspace (Void, Bernard, & Snipes, 2002; Bartol & Bartol, 2005). Hence, deindividuation which comprises low public self-awareness, high private self-awareness, and low social inhibitions can be identified as another risk factor for digital piracy.

Strain

Robert Merton's strain theory focuses on economic goals as the sources of strain, while Agnew's general strain theory addresses strain from a micro level and suggests people feel strain when they fail to achieve positively valued goals (e.g. money, status, and autonomy), when positive stimuli are removed (e.g. the death of a friend), and when negative stimuli are present (e.g. physical assaults) (Anderson & Dyson, 2002; Agnew, 2001). The common rationale is that people under strain are more likely to commit crime.

Literature suggests strain theory can apply to software piracy, when the costs are higher than the individual can afford. The strain will exacerbate if there is a pressure to acquire that software and there is a lack of legitimate means to acquire it (Kern & Pfeiffer, 2001). In light of this perspective, economic strain can be identified as another risk factor.

Subculture

"A subculture is a set of values, norms, and beliefs that differ from the dominant culture (Taylor et al., 2006, p.46)." People who subscribe to a subculture which condones, tolerates, or encourages a certain behavior are more prone to have a positive attitude toward it or participate in it. Peace et al. (2003) found subjective norms are significant in affecting individuals' intention to commit software piracy. Seale et al. (1998) found similar results indicating the social norms people uphold have a direct effect on self-reported piracy. When the norms do not deem software piracy unethical, digital piracy becomes acceptable. Research also suggests in a culture that emphasizes collectivism rather than individualism digital piracy will be more prevalent (Bagchi et al., 2006). Therefore, cultural norms can also be a risk factor.

Learning

Learning theory's essential argument is criminal behavior is learned behavior. What is learned includes definitions that favor criminal behavior, and techniques required to commit that behavior (Akers & Sellers, 2004). The sources for learning can be friends, associates, or any intimate personal groups (Akers & Sellers, 2004). Research found required expertise has a direct effect on piracy behavior and is shaped by the perceived ease of making unauthorized copies (Seale et al., 1998). Skinner and Fream used software piracy to test social learning theory and found strong support (1997). Associations including friends and families who engage in software piracy appeared to be significant in learning it (Skinner & Fream, 1997). Hinduja (2006) also found social learning factors are the strongest predictors for the likelihood and amount of music piracy. Moreover, past experience of software piracy has been identified in

literature to be correlated with software piracy (Hinduja, 2001; Higgins et al., 2005), which is consistent with reinforcement theory.

Based on the literature, association, capability, and past experience are three more factors identified in addition to what have been identified in the previous sections.

Self-Control

According to Gottfredson and Hirschi, "people with low self-control (1) seek immediate, not delayed, gratification; (2) prefer easy and simple endeavors and tend to dislike activities that require diligence, tenacity, and persistence; (3) engage in risky and exciting, rather than cautious and cognitive, behaviors; (4) fail to see the long-term benefits of investing in social institutions; (5) are attracted to endeavors that entail little skill or planning; and (6) are unkind, insensitive, self-centered, and unempathic to others. (Delisi, Hochstetler, & Murphy, 2003)"

Recent research has shown self-control can be an important factor in explaining digital piracy (Higgins et al., 2005). Higgins (2005) examined the link between self-control theory and software piracy while controlling for measures of social learning theory, morality, and computer use, and the findings confirmed the existence of the link. Hinduja (2006) in her study found low self-control is significantly related to music piracy. Higgins and colleagues (2007) also found low self-control accounts for movie piracy, while association with movie-pirating peers exacerbates the effect. Thus, if self-control is separated from psychological factors, it can be viewed as another risk factor.

Three Dimensions

A brief literature review has indicated that several criminological theories have provided a list of risk factors for digital piracy. They include cost, perceived

anonymity, perceived informal sanctions, perceived certainty of legal punishment, opportunity, deindividuation, economic strain, cultural norms, association, capability, past experience, and self-control. Conceivably, there must be more risk factors related to digital piracy, so if studying digital piracy in terms of risk factors, there is a chance something will be missing. Hence the CM proposes a new perspective to avoid such an issue. The CM posits these risk factors all contribute to the same thing—criminal minds. The effects of these risk factors can fall into at least one of the three major dimensions of criminal minds: rational, moral, and emotional. In the following sections, the connection between the risk factors and the three dimensions is presented to show why the CM Model only addresses the three dimensions while downplaying the risk factors.

Rational

In chapter 2, the rational dimension was described as the attempt to act rationally by recognizing the outcome of a behavior. This dimension is based on rational choice, which strives for a utilitarian decision to pursue benefits while avoiding risks. In terms of digital piracy, this utilitarian aspect should be salient. Some risk factors, such as cost, perceived informal sanctions, perceived certainty of legal punishment, opportunity, and capability are all related to this rational dimension of criminal minds, for these rational factors are all derived from theories that assume rationality, and they all could factor into a person's recognition of the outcome of digital piracy (Higgins et al., 2005; Peace et al., 2003; Kern & Pfeiffer, 2001; Chawki, 2006). When piracy behavior is modeled as a utility-maximizing behavior considering the cost and risks of punishment, such a rational model is usually supported in research (Ehrlich, 1973; Cheng, Sims, & Teegen, 1997; Gopal & Sanders, 1997; Gopal et al., 2002).

In economics, a discipline that often strives for maximizing profits, expected utility theory and planned behavior theory have been adopted to account for digital piracy and found empirical support (Peace et al, 2003; Al-Rafee & Cronan, 2006). These findings show that digital piracy can be a result of rational choice. Although with different names, these economic theories are, as classical criminology, based on a utilitarian view, which sees people as rational beings that calculate costs and benefits and weigh the outcome of each alternative (Peace et al., 2003; Al-Rafee & Cronan, 2006). This is consistent with the argument that criminal minds allow illegitimate means to be considered as options, but they may or may not be regarded as the best option. The literature also supports the claim that the costs and benefits need not be financial in nature (Peace et al., 2003). Moreover, to perform such rational decision making, a cognitive recognition of the outcome is necessary. Research has found cognitive beliefs that the outcome of the behavior is positive significantly enhance the attitude toward that behavior (Al-Rafee & Cronan, 2006; Fishbein & Middlestadt, 1995), which means perceived positive outcomes increase the likelihood to view that behavior as an option to solve problems or to achieve goals. This is also supportive of that rationality is subjective, because cognitive beliefs are based on personal beliefs rather than some objective equations.

Since subjective beliefs imply the risk factors can have different bearings on different individuals, it should have merit to address the rational dimension they influence as a whole, instead of testing these factors separately, especially when it is conceivable there could easily be more factors in this dimension that have not been identified in the literature. Hence, by addressing this rational dimension directly, the CM avoids the deficiency associated with the complex interaction among risk factors which is very likely to vary on an individual basis. In other words, it does not matter

how people develop their rationality, the CM models only focus on the current level of rationality. Hence, although it is impossible to specify all risk factors related to rationality, the CM Model actually does not require that knowledge.

Nevertheless, humans are not always rational and do not invariably make decisions entirely in accordance with rational thinking. Therefore, the rational dimension is an important one but not the only dimension consisting of criminal minds.

Moral

The moral dimension is another component in criminal minds. In the literature, it has been commonly suggested that moral belief is related to crime (Bachman, Paternoster, & Ward, 1992; Paternoster, 1987). In terms of cybercrime, research found people may agree on the illegality of cybercrime, but might not consider it unethical (Aukerman & Mott, 2002). When it comes to digital piracy, some people argue it is not really theft, due to personal or workplace ethics that tolerate or even encourage it (Seale, Polakowski, & Schnieder, 1998). This implies digital piracy may not be considered morally wrong, contingent on circumstances and cultures. Justifications on moral grounds may be upheld by individuals, regardless of the law (Condry, 2004).

There could be numerous reasons contributing to such a moral belief in favor of digital piracy. It is noteworthy that this moral belief may not be indicative of an unethical person. Considering cyberspace as the social setting where digital piracy usually occurs, some people have advocated that information attainable on the Internet should be free of constraints and interference from the authorities (Spinello, 2001; Thomas, 2005). In other words, ethical people could still engage in digital piracy in cyberspace, should they view it as morally justifiable. The literature suggests

people are more likely to perform an act when they think it is less unethical (Higgins, 2005), and people seem to be have a lower sense of moral responsibility in cyberspace (Stephens, Young, & Calabrese, 2007). When people do not view digital piracy as unethical, their attitudes toward it would be more positive (Siegfried & Ashley, 2006), which may constitute a criminal propensity for digital piracy.

Some risk factors identified in the literature can fall into the moral dimension. For example, cultural norms and association can affect the moral dimension of criminal minds in that people can learn moral justifications from associates and also such moral justifications can be reinforced by the cultural norms in favor of digital piracy (Peace et al., 2003; Condry, 2004; Seale et al., 1998). Research has found that culture and interpersonal responsiveness play an important role in people's moral judgment (Miller & Bersoff, 1992). As suggested in the literature, some cultures shape norms and beliefs that tolerate digital piracy (Seale et al., 1998; Bagchi et al., 2006; Holm, 2003). However, cultures are too diverse and within one culture there are often several subcultures interplaying, so it might be simpler to address the product of these cultural norms—moral beliefs. Hence, the CM models focus on the moral dimension rather than the various cultural norms in favor of law-violating. Also, there could be other factors influencing morality, but the CM does not need to identify all of them to address the moral dimension. The CM is only concerned with whether people justify crime, instead of why they justify it.

Besides, the risk factors, such as individual moral disengagement and neutralization can also contribute to moral justifications for digital piracy (Bandura, 1990; Bartol & Bartol, 2005). Individuals can justify digital piracy by denying harm, responsibility and victims (Sykes & Matza, 1957). There are arguments suggesting digital piracy may actually benefit the alleged victims (Peitz & Waelbroeck, 2006;

Siegfried & Ashley, 2006), which provides grounds for moral justifications. Furthermore, digital piracy has been suggested to be an issue that lacks moral intensity (Logsdon, Thompson, & Reid, 1994), which means many people do not view digital piracy as a moral issue and thus moral judgment becomes irrelevant. Therefore, even though the moral dimension might play an important role in the propensity to commit digital piracy, it is likely both moral and immoral people could find justification for digital piracy. In this regard, the current project measures this moral dimension from two angles: general and piracy-specific.

Emotional

The third dimension of criminal minds is the emotional dimension. Since people may not always be rational and morality might not yield sufficient inhibition, this dimension posits people can have a propensity for criminal behavior when they emotionally approve of that behavior. Some people are likely to act on emotions or feelings, rather than thinking about the consequences first. The literature has identified an affective component in a positive attitude toward a behavior, which involves feelings and emotions toward performing the behavior (Al-Rafee & Cronan, 2006; Bodur, Brinberg, & Coupey, 2000). Studies found affective beliefs exert a direct influence on attitude, independent of cognitive beliefs (Holbrook & Batra, 1987; Trafimow & Sheeran, 1998; Kempf, 1999). This is consistent with the CM Model, which proposes rationality and emotionality as two independent dimensions in criminal minds.

When it comes to digital piracy, while research is relatively rare in this aspect, some empirical support does find that affective beliefs are significant in determining the positive attitude toward digital piracy (Al-Rafee & Cronan, 2006), and positive attitude was consistently found the best predictor of behavioral intention (Trafimow &

Finlay, 1996; Peace et al., 2003; Al-Rafee & Cronan, 2006). It has been suggested that emotions, such as sympathy and annoyance might have an impact on digital piracy (Kwan, 2007). Some risk factors identified earlier in this chapter can also be relevant to this emotional dimension. Economic strain and low self-control are associated with the emotional dimension of criminal minds, because such strain and personality can lead to emotional approval of digital piracy without rational thinking and moral justification. Research indicates strain and negative emotions are related (Broidy, 2001) and certain personality traits (e.g. negative emotionality) are more likely to respond to strain with delinquency (Agnew, Brezina, Wright, & Cullen, 2002). Self-control is also related to this emotional dimension in that self-control failure can be attributable to negative emotions (Tice & Bratslavsky, 2000), while self-control can also moderate the adverse effects of negative emotions (Brown, Westbrook, & Challagalla, 2005).

Hence, the effects on criminal behavior stemming from strain and some personality traits are suitable to be categorized in this emotional dimension. Actually, the emotional dimension in the CM models is broader than merely negative emotions. This dimension can comprise positive emotions about crime as well. Although criminologists tend to view negative emotions as criminogenic (Agnew, 2001) people do not always commit crime only when they feel bad. Sometimes they may enjoy doing it. A hacker can simply enjoy tempering with software programs and make them available on the Internet for free even though he does not profit from doing so. As such, the emotional dimension in the CM models is more comprehensive than any other constructs that only partially reflect the emotional aspect in crime issues. In order to achieve this, the CM does not try to concretize the emotions as risk factors,

but rather it is simply concerned with how likely people would allow emotions, either positive or negative, to influence their behaviors.

Criminal Minds

Using digital piracy as an example, all the risk factors identified previously point to the three major dimensions of criminal minds. For example, cost, perceived informal sanctions, perceived certainty of legal punishment, opportunity, and capability are related to the rational dimension. Cultural norms, deindividuation, and association can be related to the moral dimension, whereas strain and self-control can be related to the emotional dimension. Some of them can affect more than one dimension. For instance, the perceived anonymity can be related to all three dimensions. The perception of being anonymous can influence people's estimate of risks (Chawki, 2006). It can also affect people's moral judgment on account of the different moral infrastructure provided in cyberspace (Remmele, 2004). Besides, in an anonymous environment, people tend to generate a different sense of self-identity as well as social identity, especially when individuation is in effect (Kabay, 1998; Turkle, 1999; Mullen, Migdal, & Rozell, 2003). When this happens, people may sense a different reality in cyberspace, which attenuates moral controls refraining from engaging in unlawful activity (Bartol & Bartol, 2005; Chawki, 2006; Taylor, 2006). In addition, the deindividuation stemming from perceived anonymity can lower people's inhibitions, which may result in emotional behavior, regardless of rationality and morality (Kabay, 1998), but it can also create diffused responsibility to dilute personal moral restraints (Bartol & Bartol, 2005). Moreover, past experience can contribute to moral justification by denying harm or victim based on past experiences. Research has found past experience of digital piracy tends to be associated with more tolerance of digital piracy (Liang & Yan, 2005), which implies moral justification. It can also

render basis for rational estimate of positive outcomes in digital piracy according to learning theory (Haruvy, Mahajan, & Prasad, 2004). In sum, the literature has shown the risk factors, as diverse as they are, can all be regarded as effecting differences in rationality, morality, or emotionality.

It should be noted, however, there are conceivably more risk factors for digital piracy than these identified in the above discussion. Actually, this is exactly why the three dimensions are proposed to test criminal propensity, because it is unlikely to list all risk factors, but it is possible to address what they have commonly contributed to. The CM aims at the end product rather than the etiological factors. Hence, the current project does not intend to use risk factors to explain digital piracy.

Furthermore, attempting to prevent digital piracy by manipulating risk factors can be unwieldy, considering they often are entangled with one another. It would be impossible to ask the software companies to lower the price to a level competitive with, say, download for free. Besides, the social settings in which digital piracy usually takes place (i.e., cyberspace) might hinder the effectiveness of manipulating risk factors. For example, reducing opportunities for digital piracy is virtually impossible on the Internet, unless all nations in the world are willing to deprive their people of the right to share digital files. Cyberspace is a virtual social structure, which is fundamentally unlike any real-world society. To say the least, in cyberspace there are no boundaries. It has been suggested that a virtual criminality is formed in this social setting where social factors may need to be redefined and new cultural norms may be created (Capeller, 2001), which implies people who are otherwise law-abiding may engage in illegal activity in cyberspace (i.e., virtual criminality). If this is true, then it implies the criminal mind for cybercrime may be essentially different from the

criminal mind for conventional crimes, and different criminal minds can account for different criminal propensities.

To shed light on the distinctions in criminal propensity, existing criminological theories seem to fall short, for they tend to treat criminal propensity as a universal concept which requires no further elaboration. Traditional theories also may not apply to a new criminality represented by cybercrime. The CM thus serves as a framework suitable in this aspect, even when the assumption of virtual criminality is wrong. If virtual criminality is not actually existent, the CM models should be able to identify the identical mindset for both cybercrime and conventional crime. The current project uses digital piracy and stealing as a pair of comparison to illustrate this point. In the following chapter, this will be further clarified.

Summary

In sum, several studies have intended to apply criminological theories to digital piracy and some valuable results have been found. Peer association, low self-control, past experience, opportunities, and deterrence, among others are factors identified as predictors or determinants of digital piracy (Higgins et al., 2005; Peace et al., 2003; Kern & Pfeiffer, 2001; Hinduja, 2001; Skinner & Fream, 1997). The CM treats these factors as contributors to criminal minds for digital piracy. Such criminal minds represent the criminal propensity related to digital piracy, based on the assumption that not all types of criminal propensity would lead to digital piracy. The CM proposes three major dimensions in criminal minds in order to examine the variation in criminal propensity. Empirical findings have provided support for the relevance of these three dimensions in their relations to the risk factors of digital piracy. It seems all risk factors can be categorized into the three dimensions. As discussed in the last chapter, these risk factors are derived from existing

criminological theories, but they are not exhaustive. Despite this, the lack of completion does not bother the CM because the focus is solely on the three dimensions which have supposedly encompassed all unidentified as well as identified risk factors.

Although the above discussion seems to be fixated on digital piracy when there are four other offenses included in the current project, most of the risk factors of digital piracy can actually be easily applied to other crimes, for these factors are mainly derived from criminological theories that are used to explain crime in general. For example, past experience is found related to girls' violent behavior (Schaffner, 2007), and cultural norms can promote violence (Batchelor, 2005). Self-control is found to predict the probability of property crime and drug crime (Cretacci, 2008). Cognitive, moral, and emotional factors are associated with both male and female sex offenders (Gannon, Rose, & Ward, 2008; Zakireh, Ronis, & Knight, 2008; Underhill, Wakeling, Mann, & Webster, 2008; Ward & Moreton, 2008). As to drug offenders, rationality is indicated in the literature as a factor, for relearning the value of alternative behaviors so as to maximize utility seems promising in leading to drug desistance (Frisher & Beckett, 2006). Rationality is also related to reducing property crime (Schneider, 2008).

As shown, the factors previously found related to digital piracy mostly can also be found related to the other offenses. Similar to digital piracy, the factors related to other offenses can also be categorized into the three dimensions of criminal minds. Cognitive ability affects rationality. Past experience provides moral grounds for offending, and also rational estimate of consequences. Cultural norms affect morality, and self-control affect emotionality. Some other factors are with respect to opportunity, and blocked opportunity for legitimate means can contribute to criminal

propensity to adopt illegitimate means (Simons & Gray, 1989), which corresponds to the CM proposition that posits criminal minds are a mindset that considers using illegitimate means as options.

All in all, the etiological factors of crime can exist in various forms and be accounted for by diverse theories. The CM models assume they all will eventually result in the three major dimensions of criminal minds. Therefore, as complicated as the relationship among risk factors can be, the CM models postulate their end product is inevitably criminal minds (i.e. criminal propensity). In this chapter digital piracy is used to illustrate how risks factors can be linked to criminal minds, but by the same token the same relationship can be applied to other offenses. Thus, in the current project, the CM models are proposed to classify offenders based on their different criminal minds without regard to what causes their criminal minds.

CHAPTER 5

METHODS

Objectives

In the introduction the relation among the main constructs was stated. When we look into criminal propensity we see criminal minds, and when we look into criminal minds we see the three major dimensions. There is no causal relation being asserted, only in-depth exploration on the variation of criminal propensity.

As mentioned earlier, the first objective of this project was to establish the relationship between the three major dimensions (i.e., rational, moral, and emotional) and criminal propensity. When this relationship was verified, a typology could then be formed to classify criminal propensity based on the eight CM models. However, before it could be done, it was crucial to set up proper measurement first. Therefore, although this project was seemingly proposed to test the CM Model, it was more of testing proper measurement and establishing some foundations for future testing. For example, it was more important to ensure the measures can truly reflect the three dimensions of the CM models, and it was also important to explore whether the three dimensions were independent of one another. Besides, each dimension might require more than one variable as indicators.

A second objective was to compare digital piracy with stealing so as to render implications about whether digital piracy is just another form of stealing which is accounted for by the same criminal propensity. In other words, if digital piracy and stealing represent the same criminality, then when a criminal propensity is related to digital piracy, it should also be related to stealing.

The third objective was to examine whether a lower level of general moral judgment is associated with a higher likelihood to justify digital piracy, or perhaps

general moral judgment has no effect on justifying digital piracy. Put differently, can we say a person who tends to justify digital piracy must have a lower level of moral judgment?

Research Questions

In light of the aforementioned objectives, three research inquiries were being addressed in the current project. First, can the CM models be used to classify criminal propensity? Second, does digital piracy represent a criminality different from that of conventional stealing? Third, does justifying digital piracy infer a lower level of moral judgment?

Neither of these questions could be answered based on only one study. Nevertheless, the current project was expected to lay some groundwork for a different perspective in future research by offering a new framework (i.e., the CM models) to direct more attention to the mindset as opposed to the behavior, and to the variation in the propensity instead of the diversity of root causes.

Design

The current project was a quantitative study, using an Internet survey as the instrument for data collection. One primary reason for using an Internet survey was that it was easier to target the population more likely to commit digital piracy in cyberspace, considering digital piracy was the primary subject in this project. The advantage of an Internet survey has been suggested in the literature as people will be more inclined to reveal their truthful opinions in cyberspace because when public self-awareness is reduced, the need for social desirability will be lowered as well (Joinson, 1999). It is also less costly, compared to a mail survey, and it allows for more dynamic interaction in survey design, which might help enhance response rates (Dillman, 2007). The downside is that it requires the respondent's familiarity as well

as accessibility to a computer and the Internet (Dillman, 2007). However, considering the primary subject of this project was digital piracy, which mostly takes place on the Internet, the required accessibility might actually help recruit respondents who were more capable of answering questions related to this subject.

The respondents were asked to respond to the survey only once in the sense that it was a cross-sectional study. A cross-sectional design was sufficient for the current study, because the nature of this project was not aimed to establish a causal relationship. Rather, it was intended to examine the correlations among the main variables of interest, and develop a typology based on current mindsets, not future behavior.

Sampling

Considering the scales required factor analysis, the aim was to gain as many valid respondents as possible. In order to obtain a sample size that was desirable for the current project, two samples were drawn. The first sample consisted of college students. College students were targeted for two reasons. First, college students in the US typically have a formal email account issued by the school, which in theory permits all students to be reached via the Internet and this is amenable to an online survey. Second, prior research has indicated that digital piracy is prevalent among college students (Higgins, 2005; Hinduja, 2001). Since the current study put emphasis on digital piracy, college students appeared to be a suitable population for answering the research questions. The literature also suggests students who possess greater familiarity with computers tend to commit more digital piracy, which implies students of certain majors may be more likely to commit digital piracy (Cronan, Foltz, & Jones, 2006). Therefore, the current study purposefully recruited students from various academic departments so as to constitute a diversified sample.

A cluster sampling plan was designed to draw such a sample. At the first stage, all colleges or universities in the United States served as the sampling frame. Although random selection was technically possible, practical obstacles existed to rule out random sampling at this stage, because different institutions demanded different procedures to attain institutional approval before the survey could be conducted to their students. Considering the limited time and resources, only institutions that did not require IRB approval from the local institution were included for the second stage sampling. These were institutions that permitted direct contact with their academic departments for recruitment without going through their IRB procedures.

At the second stage, an email invitation was sent to the departments of the selected institutions, asking for participation. Should they agree, the department was asked to forward the invitation to all of their students. If the department forwarded the email to their students, the act alone should suffice to signify agreement to participate. If the department had decided not to participate, no students would have received the invitation. The reason for this procedure was that in light of the typically low response rate associated with online surveys (Couper, 2000), by soliciting the department's cooperation first, it might be more likely to convince students to respond to it, compared to directly sending the invitation to their email inbox. Besides, it was unlikely to gain a complete and updated list of student email addresses without the department's cooperation. This procedure did not need the department to reveal their students' information and could better ensure anonymity, due to the absence of direct contact with respondents. However, considering the unknown departmental willingness to participate and the typically low response rate of online surveys, there seemed to be a need to recruit respondents from different sources.

Hence, in addition to the college student sample, a second sample was drawn targeting the Internet users who were more likely to commit or have knowledge on digital piracy. This was accomplished by posting invitations to the survey on several online forums. These forums were selected according to their discussion topics. They included forums on some popular networking websites (e.g. MySpace) and some online forums dedicated to discussions about software or digital music. Respondents recruited from these forums might have constituted a sample consisting of a more diverse population than college students.

Although both samples were not drawn based on the most ideal sampling procedure, there were reasons for doing this. First, relying on only one university was less likely to achieve the sample size needed. Even if we had a random sample of sufficient respondents from a particular institution, at best the findings could only be generalized to the students within that institution, which renders very little about students in other settings. The current sampling method at least reached beyond one single setting, and had a bigger chance to obtain a substantial sample size. Besides, a random sample might not generate enough respondents who possessed criminal propensity. It was admitted that targeting specific forums and populations could result in a biased sample, for the respondents could be more inclined to digital piracy than the general public. Nonetheless, the CM Model is aimed to address criminal propensity, so it can be justified to target people who are more likely to have such propensity in order to capture enough criminal propensities for analysis. Moreover, the sampling methods adopted here could assure anonymity well. Finally, the results could be contributive to future research where online surveys are considered to collect data. Given the purpose of the CM Model, a more diverse sample is preferable to a homogeneous one.

Procedure

The Internet survey was designed and posted on the hosting website (Studentvoice). A link to the webpage was obtained and included in the email invitation. The invitation along with other necessary documents, such as informed consent forms, was first sent to the selected departments in the selected institutions. When the department agreed to participate, the invitation was expected to be forwarded to all students of that department by the department rather than by the researcher. In other words, the researcher had no direct contact with the potential respondents. If the students elected to participate, they simply clicked on the link embedded in the email and would be directed to the survey. At the same time, invitational messages including the link to the survey were posted on the selected online forums. Participation was strictly on a voluntary basis. Participants could withdraw at anytime during answering the survey. No effort was made to identify who the respondents or non-respondents were.

Measurement

The instrument used to collect data is attached in the appendix. For the complete survey items, please refer to appendix A. In the following, the scales used to measure major constructs are discussed. These scales were all tested for validity and reliability before they were viewed as representatives of the major constructs.

The Rational Dimension

Throughout the manuscript, it has been stressed there are three major dimensions of criminal minds proposed in the current project. The first dimension was the rational dimension. This is a dimension that reflects a person's level of rationality. To measure this dimension, the current project incorporated the Rationality/Anti-Emotionality scale items (RAE). RAE is a scale developed by Eveline Bleiker and

colleagues in 1993. Originally, it was designed to study the relationship between rationality/anti-emotionality and cancer (Bleiker et al., 1993). Although it is not directly related to criminology, the psychometric properties of RAE actually correspond to the rational dimension of the CM models.

There were only six items from RAE included in the rational dimension scale in the current project. The six items were chosen based on a factor analysis, which identified three subscales in RAE: rationality, emotionality, and understanding (Bleiker et al., 1993). The one adopted in this project was rationality, a construct meaning trying to act rationally (Bleiker et al., 1993). The original subscale is listed as follows:

1. I try to act rational, so I do not need to respond emotionally.
2. Do you always try to understand people and their behavior, so that you seldom respond emotionally?
3. Do you try to overcome all interpersonal conflicts by intelligence and reason, trying hard not to show my emotional response?
4. Do you always try to do what is reasonable and logical?
5. Do you succeed in avoiding most interpersonal conflicts by relying on your reason and logic?
6. Do you try to act rationally in all interpersonal situations?

This subscale showed solid reliability (0.76), according to Cronbach's alpha coefficient (Bleiker et al., 1993). The test-retest reliability, computed with Pearson correlations, was also supported by empirical evidence at 0.64 (Bleiker et al., 1993). Because RAE items were derived from other established psychometric scales for measuring rationality (e.g. RAE-D2 and R/A), the validity of these items should have

been established to some extent (Bleiker et al., 1993; Grossarth-Maticek, Bastinnas, & Kanazir, 1985; Van der Ploeg, et al., 1989).

When it was adopted to measure the rational dimension in criminal minds, some alteration was needed to make the scale fit the current project. Rationality in the CM Model is a subjective construct as stressed in chapter 2. Hence, this rationality scale was not aimed to measure so much as how rational the respondent's behavior will be as how much the respondent thinks s/he is acting rationally. Ergo, the rationality scale was in terms of "try to" be rational. With the essence unchanged, the RAE subscale was transformed to the following format:

1. I try to act rational, so I do not need to respond emotionally.
2. I try to understand people and their behavior, so that I seldom respond emotionally.
3. I try to overcome all interpersonal conflicts by intelligence and reason, trying hard not to show my emotional response.
4. I try to do what is reasonable and logical.
5. I try to avoid most interpersonal conflicts by relying on my reason and logic.
6. I try to act rationally in all interpersonal situations.

The above six items were used in the current project as part of the rational dimension scale. Respondents were asked to rate these statements from 1: Never to 5: Always (see appendix A). The score should represent the extent to which the respondent tried to be rational.

Although the six items chosen from RAE rendered some confidence in measuring rationality in a psychological sense, the rational dimension in criminal minds should also address the way criminology usually defines rationality in a utilitarian sense. Therefore, three more items were added to this rational dimension

scale. The three items were derived from how rationality is described in criminology textbooks (Void et al., 2002; Paternoster & Bachman, 2001; Anderson & Dyson, 2002; Akers & Sellers, 2004):

1. I try to think about the consequences before I do anything.
2. I try to calculate the risks and the benefits when making a decision.
3. I try to pursue pleasure and avoid pain.

Moreover, one additional item served as a criterion for validity check, which means if the rationality scale indeed measured rationality, then it should be correlated with the criterion item. In the CM models, the rational dimension is defined as recognition of gratifying outcomes. Considering gratifying might be a big word for some respondents, satisfying was used instead. This criterion item was the most straightforward way to measure the rational dimension as defined in the CM Model, so if the scale was at odds with it, it means the scale did not measure what the CM is meant to measure in terms of rationality:

1. I prefer to do things when I know the outcome will be satisfying.

Together there were nine items consisting of the rational dimension scale in the current study, plus one criterion item. A factor analysis was used to determine whether all items were indeed measuring the same construct, supposedly rationality, and a validity check would determine how useful the scale was for testing the CM Model. Although a scale was proposed, it by no means implies this must be the right scale. However, the scale was constructed based on conceptual compatibility, so for exploratory purposes, it should merit a chance to be tested. Assuming validity, a higher score from this scale was indicative of a higher level of rationality, and then the analysis would be directed to explore the relationship between the rationality level and criminal propensity.

The Emotional Dimension

Another dimension in criminal minds is the emotional dimension. This is a dimension that postulates some people's behavior is more likely to be influenced by their feelings or emotions rather than rational choice. In this sense, the emotional dimension scale ought to focus on how likely people allow feelings or emotions to factor into their behavior.

Previously RAE was utilized to measure rationality. It was also mentioned there were three subscales in RAE items, and rationality was just one of them. Another component in RAE was emotionality (Bleiker et al., 1993). This subscale was composed of four items as follows:

1. I trust my feelings.
2. I respond emotionally to people.
3. My behavior is influenced by my emotions.
4. In important situations, I trust my feelings.

Based on face validity, this subscale suited the CM Model, and it appeared to be a reliable scale, based on both Cronbach's alpha (0.69) and test-retest reliability (0.64) (Bleiker et al., 1993). It was found that in RAE, 'rationality' and 'emotionality' represent two distinct constructs without a significant correlation (Bleiker et al., 1993), so they should be suitable for measuring the two distinct dimensions in criminal minds respectively. Even so, the emotional dimension scale did not seem to be sufficient enough, using only four items. Hence, the Emotional Expression and Control (EEC) scales were incorporated as well. EEC was also created by Bleiker and colleagues (1993). There were three subscales derived from EEC: Emotional Control (EC), Emotional Expression Out (EEO), and Emotional Expression In (EEI) (Bleiker et al., 1993). The subscale chosen to be included in the current project was EC, for it

fits how the emotional dimension of criminal minds is defined. It measured the extent to which people can control their behavior under emotions, whereas the emotional dimension of the CM models posits people can engage in criminal behavior in accordance with emotional approval as opposed to rational thinking. In Bleiker et al.'s study, EC showed a Cronbach's alpha coefficient 0.86, which suggests good reliability (Bleiker et al., 1993). The six original items in EC were listed below:

1. When I feel unhappy or miserable, I keep quiet.
2. When I feel angry or very annoyed, I control my behavior.
3. When I feel afraid or worried, I keep quiet.
4. When I feel unhappy or miserable, I control my behavior.
5. When I feel angry or very annoyed, I keep quiet.
6. When I feel afraid or worried, I control my behavior.

The current project modified them to create a scale that captures the influence stemming from both negative and positive emotions as intended in the CM Model:

1. When I feel happy or excited, I can control my behavior.
2. When I feel angry or very annoyed, I can control my behavior.
3. When I feel confident or bold, I can control my behavior.
4. When I feel unhappy or miserable, I can control my behavior.
5. When I feel greedy or selfish, I can control my behavior.
6. When I feel afraid or worried, I can control my behavior.

In combination with the four items adopted from RAE, totally ten items were included in the emotional dimension scale. Respondents were asked to rate the above items from 1: Never to 5: Always. In general, the total score from this scale represented a person's likelihood to let emotions influence his or her behavior. For validity checking purposes, one separate item was used as a validity criterion:

1. I sometimes do things only because I feel like doing it, without thinking about it.

This criterion item was consistent with the emotional dimension in criminal minds. In the CM, the emotional dimension is defined as behavior as a result of emotional reaction or impulses. In other words, a person can do something simply because s/he emotionally wants to, without rational or moral reasons. Hence, the validity item measured this tendency directly, whereas the scale measured this tendency by assessing how likely the person would allow emotion to influence behavior. If the emotional scale turned out to be uncorrelated with this criterion, the scale was not suitable for testing the CM Model.

Factor analysis helped decide the unidimensionality of the scale and a validity check (using the validity criterion) determined the usefulness of this emotional dimension scale. At least, before testing, the emotionality scale and EC adopted here were most conceptually close to the emotional dimension of the CM Model, compared to other existing scales (e.g. BEES) that measures emotional aspects.

The Moral Dimension

The third major dimension in criminal minds is the moral one. In the CM, this dimension is intended to address people's moral judgment that may allow them to justify illegitimate behaviors. In this dimension, the current project measured morality in two aspects. As stressed, part of this project's purpose was to clarify the notion that justifying criminal behavior may not necessarily indicate a lower level of moral judgment. First, a general moral judgment was measured by using items from the Sociomoral Reflection Measure-Short Form (SRM-SF). It is a scale designed to measure the development of sociomoral reasoning (Gibbs, Basinger, & Fuller, 1992). SRM-SF assesses moral values, including contract, truth, affiliation, life, property,

law, and legal justice (Gibbs et al., 1992). The reliability (inter-rater, test-retest, internal consistency) and validity (criterion-related and construct related) of SRM-SF have been supported by empirical data (Gibbs et al., 1992; Basinger, Gibbs, & Fuller, 1995; Stevenson, Hall, & Innes, 2004). The split-half reliability was 0.87 and Cronbach's alpha was 0.93 (Basinger et al., 1995). The test-retest differences were nonsignificant, indicating reliability, and inter-rater correlations were above 0.94 (Basinger et al., 1995). In terms of validity, the correlation between SRM-SF and Moral Judgment Interview (the most prominent measure of moral judgment) was 0.69, which suggests validity (Basinger et al., 1995). Overall, SRM-SF is deemed a concise instrument that can successfully assess moral judgment (Basinger et al., 1995).

Hence, SRM-SF was adopted in the current project to measure general moral judgment, although the current project did not follow the SRM-SF scoring manual to tally the final score. The eleven items from SRM-SF were as follows:

1. Think about when you've made a promise to a friend of yours. How important is it for people to keep promises to friends?
2. What about keeping a promise to anyone? How important is it for people to keep promises even to someone they hardly know?
3. What about keeping a promise to a child? How important is it for parents to keep promises to their children?
4. In general, how important is it for people to tell the truth?
5. Think about when you've helped your mother or father. How important is it for children to help their parents?
6. Let's say a friend of yours needs help and may even die, and you're the only person who can save him or her. How important is it for a person (without losing his or her own life) to save the life of a friend?

7. What about saving the life of anyone? How important is it for a person (without losing his or her own life) to save the life of a stranger?
8. How important is it for a person to live even if the person doesn't want to?
9. How important is it for people not to take things that belong to other people?
10. How important is it for people to obey the law?
11. How important is it for judges to send people who break the law to jail?

These items were abridged to make the survey user friendly. The items used in the current project were as follows:

1. How important is it for people to keep promises to friends?
2. How important is it for people to keep promises even to someone they hardly know?
3. How important is it for parents to keep promises to their children?
4. How important is it for people to tell the truth?
5. How important is it for children to help their parents?
6. How important is it for a person (without losing his or her own life) to save the life of a friend?
7. How important is it for a person (without losing his or her own life) to save the life of a stranger?
8. How important is it for a person to live even if the person doesn't want to?
9. How important is it for people not to take things that belong to other people?
10. How important is it for people to obey the law?
11. How important is it for judges to send people who break the law to jail?

A validity item was used to test for validity. The item was based on the reasoning that a lower level of moral judgment is more likely to justify some criminal behaviors, so if the above moral scale was adequately measuring what the CM

modeling means by the moral dimension, a positive correlation should be seen between the moral scale and this validity item:

1. Criminal behavior is always morally wrong.

In this general moral scale, respondents were asked to respond to above questions by rating them from 1: Never to 5: Always. The final scores represented different levels of general moral judgment. A higher score could be seen as indicative of a higher level, but it did not necessarily mean a better level, especially when in the current project evaluation was not done on the respondent's justification for each response. We simply did not know why they think it was not important. The CM Model does not intend to impose a certain moral standard on everyone. It is this neutral stance that warrants a second measure of this moral dimension in criminal minds. The second measure was specific to digital piracy, the subject this project paid particular attention to.

The second scale was designed to measure the respondents' moral justification for digital piracy, based on the techniques of neutralization (Sykes & Matza, 1957). The reason why this measure was included is because research had indicated digital piracy may be an issue of low moral intensity, which means a higher level of moral judgment does not necessarily entail moral disapproval of digital piracy (Logsdon et al., 1994). The six items in this scale were based on the techniques of neutralization: denial of victim, denial of harm, condemnation of the condemner, denial of responsibility, and resort to higher loyalty (Sykes & Matza, 1957). Sykes and Matza (1957) argued people do not need to oppose the dominant value system in a society to be deviant, and they proposed the techniques of neutralization to demonstrate that people can uphold mainstream values and be criminal at the same time, as long as they find justification for the behavior (Anderson & Dyson, 2002). This theory fits the

current project perfectly in that it provides theoretical reasons to believe people can uphold normal moral beliefs and still justify a criminal behavior, especially when it comes to digital piracy, an offense many people believe should not have been criminalized (Yar, 2006). The scale items were listed below:

1. Digital piracy does not really hurt anyone.
2. Digital piracy actually increases users, which is a good thing for the companies.
3. Without piracy, most people still would NOT buy software or music anyway.
4. The software or music is too expensive, and piracy is just a result of that.
5. Most people are doing digital piracy, so it's not really a big deal.
6. Digital piracy is necessary for poor people to make lives easier.

A definition of digital piracy was provided before the respondents responded to the scale. A separate item was used to be the validity criterion for the piracy-specific scale. This item directly measured what this scale was intended to measure, as shown in the wording. If the score of the piracy-specific scale was high, the criterion would be the conclusion. Therefore, if the score was not correlated with the criterion item, this scale failed to serve as a suitable measure for the current project:

1. Digital piracy is morally justifiable.

Although a few scales were proposed to measure the three major dimensions of criminal minds respectively, in the survey these items were mixed to avoid a pattern being perceived so as to ensure the truthfulness of responses.

Social Desirability

Social desirability is a common source of biases in a survey study (Nederhof, 1984). It is a threat to the validity of survey responses, for respondents might provide answers that meet social expectation instead of being truthful. Research found Internet

surveys seem to be able to reduce this threat, compared to traditional pen and paper surveys (Joinson, 1999). Although the current study employed an Internet survey, it is still perceived as needed to measure social desirability, because this project was exploratory in nature and it should be important to address this factor that might account for unsupportive as well as supportive findings. Also, this measure could help refine our scales presented in previous sections.

The scale utilized for this purpose was a 10-item short form scale derived from the Marlowe-Crowne Social Desirability Scale (M-C SDS) (Strahan & Gerbasi, 1972). Strahan and Gerbasi created three shorter scales based on M-C SDS (i.e., M-C (20), M-C 1(10), M-C 2(10)), and the current project adopted M-C 1(10), for it is shorter than M-C (20) and its reliability is better than M-C 2(10). Using college students as samples, the reliability coefficient was around 0.7, and the correlation between this shorter scale and its original form (M-C SDS) was approaching 0.9, which provides certain confidence in its reliability and validity (Strahan & Gerbasi, 1972). After internal analysis, Strahan and Gerbasi concluded M-C 1(10) is suitable for a survey when lengthy forms are undesirable (1972). The M-C 1(10) items were as follows:

1. I’m always willing to admit it, when I make a mistake.
2. I always try to practice what I preach.
3. I never resent being asked to return a favor.
4. I have never been irked when people expressed ideas very different from my own.
5. I have never deliberately said something that hurt someone’s feelings.
6. I like to gossip at times.
7. There have been occasions when I took advantage of someone.
8. I sometimes try to get even rather than forgive and forget.

9. At times I have really insisted on having things my own way.
10. There have been occasions where I felt like smashing things.

As the scale was originally designed, respondents were asked to respond to the above statements in a true or false manner. For the first 5 items, if the response was 'true', it was recorded as a socially desirable answer, while for the second half of the items, a 'false' would be considered a socially desirable answer. This social desirability scale could be used to check on the validity of each survey item in other scales of this project. When an item is highly correlated with the social desirability score, it may need to be excluded (DeVellis, 2003).

Propensity

In the CM Model, the presence of criminal minds represents criminal propensity, and the presence of criminal minds is defined as considering criminal behavior an option to solve a problem or to achieve a goal. Since criminal behavior contains a wide range of behaviors, criminal propensity conceivably can have a wide range of variation, too. The current project chose five offenses to manifest this variation. The assumption was even if all respondents turned out to possess a criminal mind (hence criminal propensity), their criminal propensities should be related to the five offenses in a various way. The five offenses included digital piracy as a cybercrime, stealing as a property crime, physical assault as a violent crime, sexual assault as a sex crime, and illegal drug use as a drug crime or allegedly victimless crime. Digital piracy was operationalized as unauthorized copying, using, or distributing software, music, or video. Stealing was measured as stealing things from others, regardless of what the thing is. Drug use was defined as using illegal drugs, and sexual assault was to force someone to have sexual contact. Physical assault meant using violence against another person, other than self-defense.

A scale was borrowed to measure criminal propensity. It was adopted from a study conducted by Peace and colleagues in 2003 when they intended to explain software piracy intention. The concept of intention is corresponding to the concept of criminal propensity for they both purport to be a precursor of future behavior, and yet they do not necessarily require behavior to actually take place (Al-Rafee & Cronan, 2006; Peace et al., 2003). In short, intention and propensity entail the potentiality of a behavior happening. Hence, the measures Peace et al. used in their study were adopted to measure criminal propensity in this study. Modification was warranted, however. The original items were in the following:

1. I may commit software piracy in the future.
2. If I had the opportunity, I would commit software piracy.
3. I would never commit software piracy.

The reliability computed by structural equation modeling was 0.94 (Peace et al., 2003). We adapted the above items to measuring the five offenses of interest in this project. The first two items (after modified) were used as the propensity scale, while the third item was chosen as the validity criterion. If a person believes s/he would never commit a crime, it follows this person does not have a mindset that will allow this offense to be an option. This is a clear indication of the absence of criminal minds. The five propensity scales were as follows:

1. I may commit digital piracy in the future.
2. In the past, I have seriously thought about committing digital piracy.
3. I may steal things from others in the future, regardless of what the thing is.
4. In the past, I have seriously thought about stealing things from others, regardless of what the thing is.
5. I may use violence against another person in the future, other than self-defense.

6. In the past, I have seriously thought about using violence against another person, other than self-defense.
7. I may force someone to have sexual contact with me in the future.
8. In the past, I have seriously thought about forcing someone to have sexual contact with me.
9. I may use illegal drugs in the future.
10. In the past, I have seriously thought about using illegal drugs.

The five validity criterion items were:

1. I have never seriously thought about committing digital piracy, even if I know I won't be caught.
2. I have never seriously thought about stealing things from others, even if I know I won't be caught.
3. Other than self-defense, I have never seriously thought about using violence against someone, even if I know I won't be caught.
4. I have never seriously thought about forcing someone to have sexual contact with me, even if I know I won't be caught.
5. I have never seriously thought about using illegal drugs, even if I know I won't be caught.

These were all measured on a five point scale. Given prior strong reliability on the original scale, the validity criteria were expected to be correlated with the propensity scales. If they were not correlated, it implies criminal propensity is not related to criminal minds, which fundamentally challenges the primary proposition of the CM Model; that is, criminal minds indicate criminal propensity and different types of criminal minds represent different types of criminal propensity.

Personal Information

In the questionnaire, some variables were measured in addition to the main constructs aforementioned. Aside from some basics, such as race, age, and gender, background in information technology was measured for testing its relevance to criminal minds. Education level was also measured. To avoid making the survey too lengthy and thus dampening respondents' willingness to complete it, the questionnaire only included variables that were of interest in the analysis. The complete questionnaire is in appendix A.

Human Subjects Protection

First, because the online survey was not hosted by the researcher and respondents were not contacted directly, the researcher did not know who is responding. This should ensure anonymity. Respondents' personal identity could not be revealed in the survey.

Second, the current study intentionally avoided involving any self-reported criminal behavior, for the focus of the CM was not on behavior. Therefore, revealing personal attitudes and perceptions ought not to be incriminating. This feature eliminated legal risks. Physical and social risks could also be minimized, considering answering this survey did not require interpersonal interaction and anonymity was ensured to a great extent. Psychological risks were unlikely.

Third, when the email invitation was sent, a statement was included to make it clear that by responding to the survey, it signaled the respondent's consent. Additionally, the respondent would have every right to decide not to participate or withdraw at anytime without penalty. This should be assuring, given the anonymous survey process. In short, the respondents were not and could not be coerced to participate. Overall, this study poses only minimal risks.

Strengths & Limitations

One salient limitation was with regard to sampling. Despite the attempt to gather information from a sample representative of the general public, there were too many practical obstacles to draw a random sample, using the general public as the sampling frame. Hence, as a compromise, for the college student sample, the schools were purposefully selected and these schools might not contain departments of all disciplines. Furthermore, selected departments might not want to participate. In this aspect, it has been attempted to include as many institutions as feasible.

Another limitation was regarding the typically low response rate of online surveys (Couper, 2000). In addition, the survey procedure rendered the researcher little control over whom the invitation will reach. The researcher could only rely on the selected departments' cooperation and had to trust the participating departments indeed distributed the invitation to all of their students. However, an advantage could be associated with this design. If the invitation was sent by the department, there was a better chance that students would pay more attention to that email and hence were more likely to respond. Besides, the department was presumed to have a complete and updated email list of all students, which was unattainable to the researcher. Despite this, if the department elected to decline participation, all students of the department would lose chance to participate. Also, utilizing an online survey basically ruled out the possibility to include potential offenders who did not usually use the Internet, while this group of potential offenders might be systematically different from those included in the study. Nonetheless, this project was an exploratory one, so its findings should not be over-generalized.

The major strength of this design was that it aimed to collect data beyond one single institution. A sample drawn based on a single institution, even with random

sampling, can hardly ensure generalizability to other institutions. The current study on the other hand allowed for a more diverse sample to be drawn. Even if the samples were not representative of any particular population, the diversity in the samples eliminated some threats to the internal validity related to institutional characteristics. Another strength was using an Internet survey could induce more truthful responses on account of the reduced tendency in cyberspace to meet social desirability (Joinson, 1999). Also, it was easier to recruit respondents who were most suited for answering the questions about digital piracy, without having to physically track them down.

Analysis Plan

Exploratory Data Analysis

After the data were collected, the first step was to perform exploratory data analysis. The purpose was to verify the accuracy of the data collected, to address missing data, and make sure statistical assumptions were met so as to decide proper statistical procedures. Also, it helped present demographic information that might be of concern, and it examined relationships between variables to determine better methods for hypothesis testing.

To begin with, frequency and descriptive statistics (e.g. minimum, maximum, mean, and standard deviation) were run to examine whether all data values fall within the reasonable range. For example, if someone reported his age was 2 years old, it should alert the researcher about the credibility of this respondent's response, because all underage people should have been screened out by the first question in the survey (see Appendix A). Also, outliers were identified and addressed, for outliers could usually distort statistical analysis results (Mertler & Vannatta, 2005). Outliers were spotted by exploring extreme values and examining boxplots. (Mertler & Vannatta, 2005).

Second, missing data were identified and the extent to which these missing data affected analysis was assessed. After assessment, proper measures were taken to address missing data. If excluding missing data did not substantially reduce the sample size, then missing cases were excluded.

Third, all statistical procedures are based on assumptions (Mertler & Vannatta, 2005). Normality refers to the assumption of a normal sample distribution. This was examined by visually inspecting a *normal Q-Q plot*, as well as by calculating *skewness* and *kurtosis*. Linearity is another important assumption because many analysis techniques are based on the linear combinations of variables, such as Pearson's *r* (Mertler & Vannatta, 2005). This assumption posits there is a linear relationship between two variables of interest. Linearity was examined by scatterplots, and homoscedasticity was also examined by bivariate scatterplots (Mertler & Vannatta, 2005). Besides, multicollinearity would occur when there are high correlations among the independent variables. If it was present, this implies at least one of the independent variable might be redundant and thus should be removed from the model or be combined with another variable. However, not all of these assumptions necessarily applied to all analytical procedures that were used in the analysis.

Finally, a distinction was made to differentiate people who did not show criminal propensity and people who did. In other words, if a respondent showed no propensity for any of the five offenses, he or she was classified as the absence of a criminal mind. This is not to say this individual really does not have a criminal propensity. Only, in the current project, when propensity was limited to only five offenses, a criminal mind might be undetected.

Validation & Reliability

The current study involved a few scales that were created for the CM models. Some validation procedures were proposed and reliability of the scales was tested, but before these scales were tested individually, it needed to first be verified that the three dimensions of criminal minds were indeed measured as three variables. A factor analysis was run on all survey items consisting of the scales measuring the three dimensions: rational, emotional, and moral. Although it was proposed there are three dimensions, this factor analysis was aimed to determine how many factors or components were actually under these three dimensions. In other words, there could be more than three variables. Principle components analysis was recommended for this exploratory purpose (Mertler & Vannatta, 2005). Such analysis showed how many components were reflected in the measurement. After the scale items were settled, each scale was then tested for reliability and validity respectively.

Reliability is the proportion of variance in the scale that is attributable to the latent variable it measures (DeVellis, 2003). When all items have a strong relationship with the latent variable, according to measurement theory, these items will be highly correlated to one another (DeVellis, 2003). Cronbach's coefficient alpha was calculated on SPSS to indicate the correlations among items.

While reliability is a requirement for validity, it does not guarantee validity. Construct validity cannot be verified by any statistical procedure, but the measures used in the current project were deliberately chosen or constructed to meet the conceptualization of the CM. The validity items were particularly derived from the essential definitions of the constructs in the CM models. Accordingly, they were used to prove criterion-related validity. If the scale items were not correlated with the

criterion item, they would be unlikely to be measuring the constructs as intended in the CM.

As previously mentioned, factor analysis was done to test for unidimensionality of these scales (DeVellis, 2003). Along with reliability testing, unwarranted items might be excluded. Further, using the social desirability scale, survey items could be tested for social desirability and if the item was substantially correlated with the social desirability score, it would need to be excluded (DeVellis, 2003).

When validity and reliability were supported, the model was considered a good fit to the data. This rendered sufficient confidence in the results of hypothesis testing. On the other hand, if the model did not fit the data well, it meant the model or the measurement required modification.

Hypothesis Testing

After the data were screened and explored for issues that might undermine the analysis, the hypotheses aimed to help answer the research questions are listed here. The following was the analysis plan for testing these hypotheses.

Hypothesis 1: There is no correlation among the three major dimensions of criminal minds.

The three major dimensions of criminal minds were proposed as three independent aspects of criminal minds. If they were correlated, it means they were not independent of one another, and this suggests it could be unsuitable or unnecessary to use three constructs to represent criminal minds, for criminal minds might represent one unique construct by itself. If they were correlated, some variables would need to be removed or be collapsed into one. There could be more than one variable within each dimension. The number of variables hinged on the overall factor analysis that

was done before hypothesis testing. Regardless, all these variables were tested for correlation and the purpose was to establish the independence of these variables derived from the three major dimensions.

For hypothesis 1, Pearson's r was an appropriate statistic to measure the correlation because the three dimensions were all measured on the interval level. When some statistical assumptions required for parametric analysis were violated (e.g. normal distribution), Spearman's rho was a substitute as nonparametric analysis is restricted by fewer assumptions. Besides, nonparametric methods can be used whenever parametric methods are valid (Gibbons, 1993).

Hypothesis 2: The three dimensions of criminal minds are correlated with criminal propensity.

To find correlation, Pearson's r was used and Spearman's rho were used. The three dimension scores were expected to be individually correlated with the propensity score, after the scales had been verified by the validity criteria. If the scales had not been verified, the validity criterion items would have been used as a single item scale to find correlation. After the correlation between the three dimensions and criminal propensity was confirmed, then this correlation would be further examined in terms of direction.

The current project included five offenses as the subject matters. This hypothesis was tested on each individual offense. Correlations were explored between the propensity for each of the five offenses and the three dimensions of criminal minds, but respondents were classified into the eight CM models first. Since the CM argues these three dimensions have different bearings on different types of offender, the correlation might be different in each CM model. The classification was tested for accuracy by multinomial logistic regression or discriminant analysis. This analysis

was hindered by insufficient case numbers in each CM model, but it was carried out insomuch as possible. Moreover, the five propensity scores were combined to create an overall propensity score and the correlation with the three dimensions was also tested in this manner.

Hypothesis 3: The CM models to which people belong are related to which offense is contained in their criminal propensities.

To be a promising typology for classifying offenders, the CM models need to be able to classify criminal propensities. In other words, each CM model should represent a unique type of criminal propensity, whereas different types of criminal propensity should be related to the five offenses in different combinations. For example, the rational model might be only related to stealing, when the moral model is related to all five offenses. If the CM models can indeed represent different types of criminal propensity, a new typology is thus probable.

To test this hypothesis, cross-tabulation was the method with chi-square indicating the significance of the relationship between the CM models and the propensity for each offense at issue. Before this was done, again respondents were categorized into the eight CM models first. In addition, the five propensities for the five offenses were recoded into two categories indicating the presence as well as the absence of propensity. Given the scales used to measure criminal propensities, a cutoff point was set at 6 (the midpoint), considering the score ranged from 2 to 10. A score below 6 was indicative of no propensity, while 6 or higher indicated the presence of propensity.

Cross-tabulation showed whether for each offense the propensity was distributed evenly across all eight CM models. When this was the case, it follows the CM models do not serve well as a classification for criminal propensity. Conversely,

when there were apparent differentials, it means the variation in criminal minds does determine which crime a person is more likely to commit.

Hypothesis 4: There are significant differences in the three dimensions of criminal minds between people with and without criminal minds.

If the three dimensions of criminal minds are correlated with criminal propensity, it should be reasonable to expect there is a difference in the three dimensions between people with and without a criminal mind. An independent t-test helped detect such a difference between two groups. When normal distribution was violated, Mann-Whitney U-test was used as a nonparametric equivalent to an independent t-test. Nonparametric analysis is free from the assumption regarding distribution (Gibbons, 1993). The presence of a criminal mind was represented by the propensity for any of the five offenses. It is noteworthy, however, that even if no propensity was detected, a person might still possess a criminal mind on account of crimes not included in the current project.

Hypothesis 5: Not all criminal propensities include both digital piracy and stealing.

This hypothesis is related to the second research question of the project. It was intended to verify the assumption that digital piracy and stealing are not the same crime in the sense that their underlying criminal minds are not identical. This relied on frequency analysis to show how frequently when a person had a propensity for digital piracy, he or she also had a propensity for stealing. In addition, a correlation was computed to see whether the propensity for digital piracy is positively correlated with the propensity for stealing.

Hypothesis 6: The general moral judgment is not correlated with the moral view specific to digital piracy.

It has been proposed earlier to measure the moral dimension in two aspects, a general judgment and a specific view. Pearson's r and Spearman's rho were used to test for the correlation between the tendency to justify digital piracy and the general level of moral judgment. A negative correlation would imply there is nothing special about the moral view on digital piracy, as it simply reflects the person's general moral judgment, while a positive correlation could generate very controversial implication, for it suggests higher moral judgment tends to justify digital piracy. If there was no obvious correlation, it means digital piracy is not really a moral issue, because justifying it has nothing to do with a person's moral judgment. The absence of correlation would also imply using a person's general moral judgment to express criminal minds could be inadequate.

CM Typology

Should hypothesis 1 through 4 be verified, then the relationships between the three dimensions and criminal propensity would offer promise in an offender typology based on the eight CM models. It was worth exploring whether each CM model could account for a unique type of offenders. Since the CM argues people can do the same thing for different reasons, this is an offender typology, not an offense typology. For instance, perhaps CM model 1 (the rational model) is only related to money-making crime, while CM model 4 (the justified model) is related to both money-making and violent crimes. In this case, it could be inappropriate to treat all offenders who committed a money-making crime as the same type of offenders, because some of them may have a propensity for violence but the others do not. After testing hypothesis 3 for differences among the eight CM models regarding how frequently each CM model is related to each offense, the practical meanings relied on examining the frequency table and making some qualitative assessment. For

illustration purposes, Table 1 provides an example of possible findings regarding the CM typology.

Table 1

CM Typology

Models / Offenses	Rational	Moral	Emotional	Justified	Hedonistic	Self-Righteous	Full	Irrational
Piracy	66%	88%	12%	3%	90%	3%	12%	1%
Stealing	88%	9%	1%	3%	4%	7%	44%	2%
Assault	4%	6%	94%	90%	4%	45%	33%	0%
Sex	2%	78%	86%	2%	67%	2%	4%	0%
Drugs	6%	80%	78%	56%	67%	3%	18%	5%

In Table 1 it shows how many percents of criminal mind owners in each CM model would consider committing each offense listed. In the first model (the rational model), 66% of criminal mind owners of this model have a propensity for digital piracy, but only 2% of them would consider sexually assaulting someone and 6% of them would be likely to use illegal drugs. In contrast, the moral model also shows a high relationship with digital piracy, but unlike the rational model, it also is strongly related to sexual assault and illegal drug use. This simulation demonstrates the case where two digital pirates own two different types of criminal propensity even though outwardly they both commit digital piracy. The point is, due to the different propensities, the possibilities for them to commit other offenses are not the same. Hence, they pose different risks and their correctional needs are contingent on the CM models they fall into respectively.

To determine which CM model each respondent belongs to, as depicted in chapter 2, it depended on the level of the three dimensions. Therefore, as an example, criminal mind owners who score high in all three scales were categorized into the

hedonistic model. As for how to determine whether the level was high or low, the number of items in the scale times 3 (the midpoint of each scale item) generated the cutoff for a 'low' score, and the classification was tested for correctness by multinomial logistic regression. Multinomial logistic regression was used for classification purposes (Mertler & Vannatta, 2005). It generated results showing the accuracy of classifying respondents into eight CM models based on the three dimensions. The initial classification was using the midpoint of the scale as the cutoff, so in a 10-item 5-point scale, scoring below 30 is 'low'. This was somewhat arbitrary, due to the lack of prior references.

Because all respondents inevitably fell into one of the eight CM models, besides the CM models, criminal mind owners were identified based on the criminal propensity scores. In the current project, the midpoint of the scale scores was used as the cutoff. A score 6 or above was indicative of the presence of criminal propensity and thereby defined the respondent's mind as a criminal minds.

Additional Analysis

In addition to testing abovementioned hypotheses, some extra analyses were done for exploratory purposes.

First, since social desirability was measured, it was used to test the relationships between social desirability and criminal propensity. If the social desirability score had been related to the scores obtained from the scales used to measure the three dimensions and criminal propensity in a biased way, then the cutoff score for determining a high or low score might have been changed according to the direction of biases. For instance, if we found most respondents show a high level of social desirability and the higher this level is the less likely they report criminal propensity, in this case, the cutoff score would need to be lowered for we had reason

to believe the seemingly low score might not really reflect the absence of a propensity. Rather, it seemed low only because the respondent was trying to provide answers that are socially desirable.

Second, regression was useful for assessing the relationship between criminal minds and age. Analysis of variance was utilized to compare groups based on demographic variables, such as race and gender. The purpose was to see whether there were significant differences among the demographic groups with regard to criminal minds. The same analysis applied to education level and IT background as well.

Furthermore, all eight CM models were compared with one another with respect to rationality, morality, emotionality, and criminal propensity. Non-criminal mind owners also joined the comparison.

Basically, this was an exploratory study, so more relationships embedded in the data should be discovered as long as the methods permit. Because this was the very first time the CM models were tested, any findings should be able to offer some new information, even if they might be contradictory to the CM propositions. Although this project attempted to verify the conceptualization of the CM models, it should be essentially aimed to establish suitable measurement for testing the CM models and meanwhile to explore hidden aspects that could guide future research. Table 2 summarizes the analysis plan in the next page.

Table 2

Analysis Plan

PURPOSE	PROCEDURE
Exploring data for outliers and missing data	Descriptive Statistics-> Descriptives; Frequencies; Explore
Determining measurement overlap	Exploratory Factor Analysis (Principle Components Analysis)
Testing for scale reliability	Scale-> Reliability Analysis-> Cronbach's alpha; Split-half
Testing for scale criterion-related validity	Criterion items correlation with scale items
Testing scales with social desirability scores	Social desirability correlation with each scale item
Determining final items of each scale	Based on abovementioned testing
Detecting dubious responses	Identifying respondents with high social desirability scores
Testing for missing data patterns	Independent t-test or ANOVA
Testing for the assumption of normality	Normal Q-Q Plot; Skewness & Kurtosis
Testing for the assumption of linearity	Graphs-> Scatterplot
Testing for the assumption of homoscedasticity	Graphs-> Scatterplot
Identifying criminal mind owners	Propensity scores (High or Low)
Classifying respondents into CM models	Midpoints or Classify-> K-means
Testing the accuracy of classification	Multinomial Logistic Regression or Discriminant Regression
Testing hypothesis 1 for correlation	Correlate-> Bivariate
Testing hypothesis 2 for correlation	Correlate-> Bivariate
Testing hypothesis 3 for significant relationship	Crosstabs (Chi-square; Lambda)
Testing hypothesis 4 for significant differences	Independent t-test or Mann-Whitney U-test
Testing hypothesis 5 for frequency	Frequencies (Percentages); Correlation between propensities
Testing hypothesis 6 for correlation	Correlation between two moral scales
Additional analysis for research implication	Group comparison (e.g. race & gender); Sample comparison (if data permit); Multiple Regression

CHAPTER 6

DATA ANALYSIS

Data Exploration

The first step of the analysis plan was to explore the data collected from the online instrument. An online survey was administered and respondents were recruited from various online avenues. One of them relied on college students enrolled in several institutions in the United States. A total of six universities were involved in sampling following approved IRB procedures and institutional permissions. These universities include public and private institutions. They are respectively located in Pennsylvania, Florida, Connecticut, Missouri, Iowa, and Ohio. The survey was meant to be anonymous, so the response rates from these academic institutions could not be estimated. It could not even be certain how many academic departments in these universities actually participated by forwarding the survey invitation to their students, as some departments may have forwarded it without bothering to notify the researcher. By monitoring the increment of responses everyday, there is reason to believe most departments simply ignored the researcher's request.

Another method used to recruit respondents was posting survey invitations on selected online forums. Although it appeared the invitation was highly visible through these avenues, it is impossible to know exactly how many people chose to respond when they saw the advertisement, especially in the absence of incentive or coercion of any kind. Despite this, there were a few feedbacks posted on the forums that indicated this survey was interesting to some people. An unintended outcome occurred when some respondents voluntarily forwarded the survey invitation they saw on the forums to their friends or email contacts. It seemed that such personal favors were a lot more

convincing to induce willingness to take part in the survey, even though the responding remained anonymous.

Eventually, 652 responses were recorded after 3 weeks of data collection. The data collection was ended when the responding had apparently come to an end. Although 652 is not the most satisfactory number, it was deemed substantial enough for data analysis. However, not all 652 responses were good for analysis. The purpose of data exploration was to identify missing data and outliers that were not amenable to analysis. Finally 151 responses had to be excluded. These cases were removed because they did not provide sufficient data for analysis as these respondents only answered the first few questions and then decided to quit. As a result, the dataset ready for data analysis contained 501 responses.

Table 3 summarizes some descriptive information of the sample. As shown in Table 3, the sample contained more female respondents than males, and most respondents are White/Caucasian. According to the data, most respondents were relatively well-educated, which is not surprising considering college students, including graduate students, possibly constituted more than half of the sample. This might also suggest that people with a higher education level were more likely to finish the survey. It is noteworthy that some college professors might have taken the survey to determine whether or not to forward the survey invitation to their students. About 70% of the respondents did not have an IT background as defined by an IT-related major or job. As for age, most respondents were younger than 31, but the data did indicate a wide range in the age of the respondents, where the oldest was 79 while the youngest was 18. Although the demographics by no means represent a normal distribution, the descriptives at least render confidence in the diversity of our sample. Diversity rather than representativeness was the goal of the sampling methods.

Table 3

Frequencies

VARIABLES	FREQUENCIES (N=501)	PERCENTAGES
Gender		
Female	273	54.5%
Male	207	41.3%
Missing	21	4.2%
Race		
Black/African American	40	8.0%
While/Caucasian	290	57.9%
Asian/Pacific Islander	97	19.4%
Hispanic/Latino	22	4.4%
Other	7	1.4%
Missing	45	9.0%
Education		
Less than high school	1	0.2%
High school	132	26.3%
Bachelor's Degree	169	33.7%
Master's Degree	90	18.0%
Doctoral/Professional	29	5.8%
Other	12	2.4%
Missing	68	13.6%
IT Background		
Yes	64	12.8%
No	347	69.3%
Not Sure	16	3.2%
Not Applicable	3	0.6%
Missing	71	14.2%
Age		
18-24	160	31.9%
25-31	149	29.7%
32-38	51	10.2%
39-45	29	5.8%
45 <	56	11.2%
Missing	56	11.2%
Source		
Online Forums	116	23.2%
Blogs or Websites	8	1.6%
Email from School	267	53.3%
Email from Friends	51	10.2%
Other	25	5.0%
Missing	34	6.8%

Factor Analysis

After unusable data were removed from the dataset, the next step was to determine how many independent variables were actually comprised in the scales. A principal component analysis (rotation method: Varimax) was run to extract the principal components measured by the 30 scale items. These 30 items were initially intended to measure the three dimensions of criminal minds: rationality, morality, and emotionality. The results showed these 30 items had formed 4 major components according to their eigenvalues, and these 4 components together accounted for 75.158% of the variance in the data. The criterion was only when the eigenvalue exceeded 1, the component would be considered an important one. Figure 9 displays that except for the first four components, no other components had eigenvalues greater than 1. Only four components met the criterion, so SPSS only generated information for the four components. Table 4 shows the rotated results. All 30 items were correlated with one of the 4 components. The factor loadings were all very strong, which indicates strong correlation (See Table 5). After a closer examination, component 1 was associated with all 11 items in the scale that was originally designed to measure morality. Component 2 contained all 9 items of the rationality scale. Hence, it was quite clear that component 1 represents morality, whereas component 2 represents rationality. However, the original emotionality scale split into two components, even after all items were recoded in the same direction. In fact, the original emotionality scale was constructed based on two subscales, and component 3 and 4 happened to represent them respectively.

To sum up, it appeared that the 30 scale items measured 4 constructs as opposed to 3 as proposed. It is likely there are two constructs under the emotional dimension. However, reliability and validity tests are still needed to determine

whether these scales are indeed useful for the CM models. As this point, no scale items needed to be excluded. The morality scale specific to digital piracy was also confirmed by factor analysis that the six items measure the same construct.

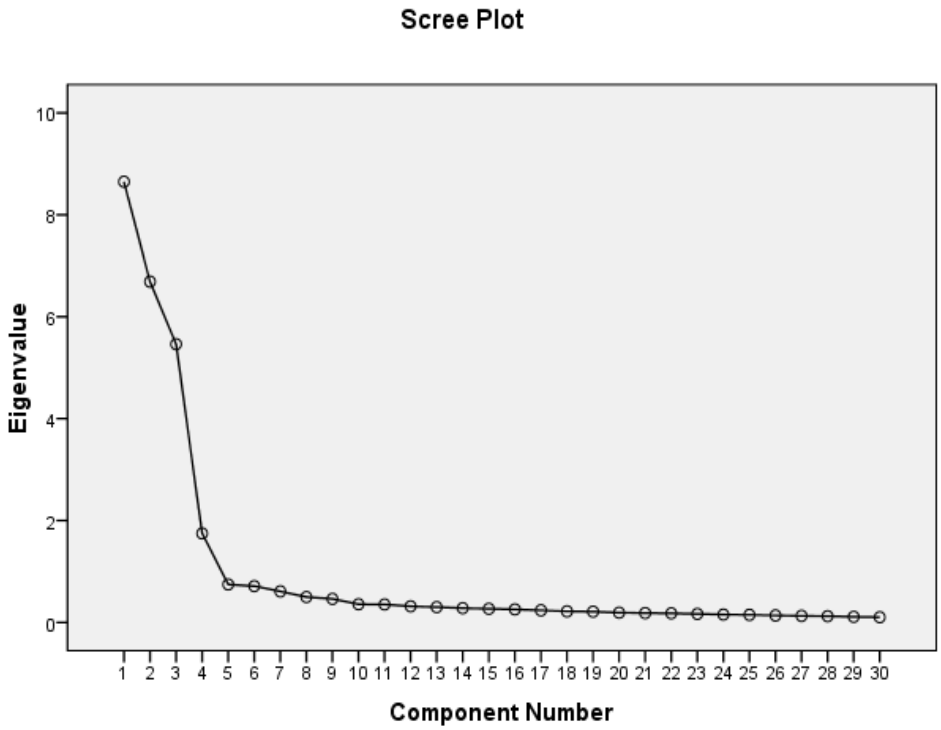

Figure 9. Factor analysis scree plot.

Table 4

Principal Component Analysis (Rotated)

Component	Eigenvalues	Variance Explained %	Cumulative %
1	8.046	26.822	26.822
2	6.327	21.089	47.911
3	5.159	17.196	65.107
4	3.015	10.052	75.158

Table 5

Factor Loadings (Rotated)

	Component			
	1	2	3	4
How important is it for parents to keep promises to their children?	**.895**	-.035	-.127	.076
How important is it for people to keep promises to friends?	**.889**	-.060	-.121	.047
How important is it for a person (without losing his or her own life) to save the life of a friend?	**.869**	-.075	-.072	.058
How important is it for people to tell the truth?	**.868**	-.031	-.096	.040
How important is it for people to keep promises even to someone they hardly know?	**.868**	-.058	-.085	-.049
How important is it for people to obey the law?	**.863**	.045	-.043	.051
How important is it for people not to take things that belong to other people?	**.859**	-.040	-.161	.085
How important is it for children to help their parents?	**.847**	-.043	-.016	.036
How important is it for a person (without losing his or her own life) to save the life of a stranger?	**.834**	-.033	-.168	.033
How important is it for judges to send people who break the law to jail?	**.776**	-.032	.020	-.044
How important is it for a person to live even if the person doesn't want to?	**.742**	-.088	-.016	-.028
I try to understand people and their behavior, so that I seldom respond emotionally	-.064	**.878**	.003	-.042
I try to act rationally in all interpersonal situations.	.014	**.877**	-.152	.059
I try to act rational so I do not need to respond emotionally.	-.101	**.872**	.001	-.064
I try to think about the consequences before I do anything.	-.010	**.860**	-.105	.049
I try to calculate the risks and the benefits when making a decision.	-.023	**.853**	-.090	.095
I try to avoid most interpersonal conflicts by relying on my reason and logic.	-.061	**.852**	-.075	-.026
I try to overcome all interpersonal conflicts by intelligence and reason, trying hard not to show my emotional response.	-.082	**.848**	.002	-.083
I try to do what is reasonable and logical.	.049	**.841**	-.092	.069
I try to pursue pleasure and avoid pain.	-.103	**.593**	.158	.060
When I feel afraid or worried, I can control my behavior.	-.077	-.049	**.889**	.164
When I feel angry or very annoyed, I can control my behavior.	-.129	-.098	**.879**	.181
When I feel greedy or selfish, I can control my behavior.	-.106	-.033	**.876**	.126
When I feel unhappy or miserable, I can control my behavior.	-.091	-.018	**.862**	.236
When I feel confident or bold, I can control my behavior.	-.179	-.072	**.848**	.103
When I feel happy or excited, I can control my behavior.	-.114	-.042	**.829**	.194
I trust my feelings.	.073	.076	.151	**.901**
In important situations, I trust my feelings.	.111	-.001	.214	**.892**
I respond emotionally to people.	.026	.020	.444	**.766**
My behavior is influenced by my emotions.	.021	.024	.473	**.759**

Rationality Scale

Reliability & Validity

After factor analysis, the next step was to determine scale items for each scale intended to measure the three major dimensions of criminal minds. According the principal component analysis, there were 9 items clustered together to indicate one construct (component 2 in Table 5). Based on the face validity, this scale was recognized to be the rationality scale. A reliability analysis was run using Cronbach's alpha as the coefficient, and the statistic showed 0.946.

Table 6

Reliability of Rationality Scale

Cronbach's Alpha: 0.946 (Total Items: 9)	Item-Total Correlation	Cronbach's Alpha if Item Deleted
I try to act rational so I do not need to respond emotionally	.832	.937
I try to understand people and their behavior, so that I seldom respond emotionally	.838	.937
I try to do what is reasonable and logical	.793	.939
I try to avoid most interpersonal conflicts by relying on my reason and logic	.814	.938
I try to think about the consequences before I do anything	.820	.938
I try to calculate the risks and the benefits when making a decision	.814	.938
I try to pursue pleasure and avoid pain	.521	.952
I try to overcome all interpersonal conflicts by intelligence and reason, trying hard not to show my emotional response	.802	.939
I try to act rationally in all interpersonal situations	.845	.937

As showed in Table 6, only one item, if deleted, would improve the reliability to 0.952. However, this is not a big improvement, compared to 0.946. This item also had a relatively weaker correlation with other items as indicated by the item-total correlation, but 0.521 is an effect size substantial enough to be kept. Hence, there was no need to drop this item. This 9-item rationality scale appeared to be highly reliable. Despite the encouraging reliability, the scale needed to be further validated. The validity item was used to confirm criterion-related validity. An item was specifically proposed for the rationality scale. It was based on the conceptual definition of rationality in the CM models, which asserts if people are rational, they would prefer to do things when they know the outcome will be satisfying. Before this validation, a total score was computed by summing up the scores of the 9 items in the rationality scale. This rationality score was highly correlated with the validity item (Pearson's r: 0.668) at the 0.001 significance level (Table 7). The result suggested this rationality scale is adequate for measuring the rational dimension in criminal minds, for its high reliability and significant correlation with the validity item.

Table 7

Rationality Correlation with Validity Item

		I prefer to do things when I know the outcome will be satisfying
The rationality score	Pearson Correlation	.668
	Sig. (2-tailed)	.000
	N	501

Rationality Score

Table 8 summarizes the descriptive statistics of the rationality score. The possible score range was 9 to 45, but the actual range was 13 to 45. The mean rationality score was 34.20. For analysis purposes, respondents would be classified in

part based on this rationality score. Given 3 was the midpoint of each scale item and the scale comprised 9 items, the cutoff score was set at 27. Using the midpoint score as the cutoff was due to the lack of prior reference to justify otherwise. For those who scored 27 points or higher, they would be considered possessing high rationality, whereas the others would be deemed low on rationality. By this standard, 91 respondents (18.2%) in the sample had low rationality, and 410 respondents scored high on rationality.

Table 8

Rationality Score Descriptives

	N	Minimum	Maximum	Mean	Median	Mode	Std. Deviation
Rationality Score	501	13	45	34.20	36	35&42	7.989

Scale Items

After reliability and validity were confirmed, the final scale items consisting of the rationality scale are as follows:

1. I try to act rational, so I do not need to respond emotionally.
2. I try to understand people and their behavior, so that I seldom respond emotionally.
3. I try to do what is reasonable and logical.
4. I try to avoid most interpersonal conflicts by relying on my reason and logic.
5. I try to think about the consequences before I do anything.
6. I try to calculate the risks and the benefits when making a decision.
7. I try to pursue pleasure and avoid pain.
8. I try to overcome all interpersonal conflicts by intelligence and reason, trying hard not to show my emotional response.
9. I try to act rationally in all interpersonal situations.

General Morality Scale

Reliability & Validity

The principal component analysis indicated that the 11 scale items proposed to measure general morality indeed belonged together (component 1 in Table 5). For this scale, Cronbach's alpha was 0.961, which betokens a high level of reliability. As shown in Table 9, no items if removed would improve the reliability much further. The item-total correlations also attested to the reliability, for every item was strongly correlated with the rest.

Table 9

Reliability of General Morality Scale

Cronbach's Alpha: 0.961 (Total Items: 11)	Item-Total Correlation	Cronbach's Alpha if Item Deleted
How important is it for people to keep promises to friends?	.873	.956
How important is it for people to keep promises even to someone they hardly know?	.842	.957
How important is it for parents to keep promises to their children?	.881	.955
How important is it for people to tell the truth?	.842	.957
How important is it for children to help their parents?	.811	.958
How important is it for a person (without losing his or her own life) to save the life of a friend?	.849	.957
How important is it for a person (without losing his or her own life) to save the life of a stranger?	.815	.958
How important is it for a person to live even if the person doesn't want to?	.695	.962
How important is it for people not to take things that belong to other people?	.843	.957
How important is it for people to obey the law?	.828	.958
How important is it for judges to send people who break the law to jail?	.720	.961

Table 10

General Morality Correlation with Validity Item

		Criminal behavior is always morally wrong
The general morality score	Pearson Correlation	.598
	Sig. (2-tailed)	.000
	N	501

Since all 11 items were retained in the scale, a general morality score could be computed by summing them up. This score is significantly correlated with the validity item (Pearson's r: 0.598) at the 0.001 significance level (Table 10). The validity item was constructed according to the conceptual definition of morality. In the CM models, morality means the likelihood a person would see crime as morally justifiable. It follows the higher the general morality score is, the more likely people agree that criminal behavior is always morally wrong. Given the reliability and validity, this 11-item scale appeared to be suitable for measuring the moral dimension in criminal minds.

General Morality Score

The possible range of the general morality score was from 11 to 55, but the actual range was from 14 to 55. The mean score was 42.42. The standard deviation implies a rather huge variance in this measurement. Table 11 lists some descriptive statistics. For classification purposes, the cutoff point was set at 33, the midpoint. Respondents would be classified as having low general morality if they scored lower than 33. In light of this, 99 (19.8%) respondents' general morality was low. The majority of the respondents (402) seemed to possess a high level of general morality.

Table 11

General Morality Score Descriptives

	N	Minimum	Maximum	Mean	Median	Mode	Std. Deviation
General Morality Score	501	14	55	42.42	46	47	10.749

Scale Items

The final items consisting of the general morality scale are listed below.

1. How important is it for people to keep promises to friends?
2. How important is it for people to keep promises even to someone they hardly know?
3. How important is it for parents to keep promises to their children?
4. How important is it for people to tell the truth?
5. How important is it for children to help their parents?
6. How important is it for a person (without losing his or her own life) to save the life of a friend?
7. How important is it for a person (without losing his or her own life) to save the life of a stranger?
8. How important is it for a person to live even if the person doesn't want to?
9. How important is it for people not to take things that belong to other people?
10. How important is it for people to obey the law?
11. How important is it for judges to send people who break the law to jail?

Digital Piracy Moral Scale

Reliability & Validity

Another scale was proposed to measure moral justifications for digital piracy. Reliability test was performed for this scale as well. One case was excluded in this analysis due to missing data. Cronbach's alpha (0.925) indicated high reliability for

this 6-item scale. No item, if deleted, would improve the reliability, and the item-total correlations rendered strong confidence in the reliability, so all six items were retained (see Table 12).

As other scales, a validity item was proposed to validate this scale as well. The item states digital piracy is morally justifiable. The score of this scale is strongly correlated with the validity item (Pearson's r: 0.828) at the 0.001 significance level (see Table 13). A higher score on this scale suggests a tendency to believe digital piracy is morally justifiable.

Table 12

Reliability of Digital Piracy Moral Scale

Cronbach's Alpha: 0.925 (Total Items: 6)	Item-Total Correlation	Cronbach's Alpha if Item Deleted
Digital piracy does not really hurt anyone	.804	.909
Digital piracy actually increases users, which is a good thing for the companies	.774	.913
Without piracy, most people still would NOT buy software or music anyway	.787	.911
The software or music is too expensive, and piracy is just a result of that	.742	.917
Most people are doing digital piracy, it's not really a big deal	.838	.904
Digital piracy is necessary for poor people to make lives easier	.760	.915

Table 13

Digital Piracy Moral Score Correlation with Validity Item

		Digital piracy is morally justifiable
Digital Piracy Moral Score	Pearson Correlation	.828
	Sig. (2-tailed)	.000
	N	500

Digital Piracy Moral Score

The digital piracy moral score ranged from 6 to 30. The mean score was 16.61 (See Table 14). Using the midpoint (18) as the cutoff, 278 respondents (55.6%) reported low on this scale. Less than half (222/500) of the respondents scored 18 or higher, meaning less than half of our respondents perceived digital piracy as morally justifiable.

Table 14

Digital Piracy Moral Score Descriptives

	N	Minimum	Maximum	Mean	Median	Mode	Std. Deviation
Digital Piracy Moral Score	500	6	30	16.61	16	12	6.058

Scale Items

After testing for reliability and validity, the digital piracy moral scale remained intact as proposed.

1. Digital piracy does not really hurt anyone.
2. Digital piracy actually increases users, which is a good thing for the companies.
3. Without piracy, most people still would NOT buy software or music anyway.
4. The software or music is too expensive, and piracy is just a result of that.
5. Most people are doing digital piracy, so it's not really a big deal.
6. Digital piracy is necessary for poor people to make lives easier.

Emotionality Scale

According to the principal component analysis, the original emotionality scale split into two subscales. However, these two scales were actually correlated (Pearson's r: 0.508) at the 0.001 significance level. Neither the effect size nor the significance level was negligible. Hence, while acknowledging there might be two

aspects in emotionality, the two subscales were combined into one as originally proposed to represent the emotional dimension of criminal minds. Thereby, reliability and validity were tested for this emotionality scale.

Reliability & Validity

Cronbach's alpha showed 0.928. Given this strong reliability, there was no compelling reason to exclude any scale items, as shown in Table 15. Therefore, an emotionality score was computed based on these 10 items for each respondent. While testing for validity, the emotionality score manifested a strong and significant correlation with the validity item. The validity item was a direct assessment of the emotional dimension in criminal minds, which posits people may do things impulsively or emotionally without thinking about it. The effect size reached 0.747 at the 0.001 significance level. Table 16 shows this correlation. In summary, this emotionality scale seemed to be reliable and valid in measuring the emotional dimension of criminal minds.

Table 15

Reliability of Emotionality Scale

Cronbach's Alpha: 0.928 (Total Items: 10)	Item-Total Correlation	Cronbach's Alpha if Item Deleted
When I feel happy or excited, I can control my behavior	.753	.919
When I feel angry or very annoyed, I can control my behavior	.793	.917
When I feel confident or bold, I can control my behavior	.721	.921
When I feel unhappy or miserable, I can control my behavior	.810	.916
When I feel greedy or selfish, I can control my behavior	.752	.919
When I feel afraid or worried, I can control my behavior	.786	.918
I trust my feelings	.537	.930
My behavior is influenced by my emotions	.753	.919
I respond emotionally to people	.731	.920
In important situations, I trust my feelings	.586	.928

Table 16

Emotionality Score Correlation with Validity Item

		I sometimes do things only because I feel like doing it, without thinking about it
Emotionality Score	Pearson Correlation	.747
	Sig. (2-tailed)	.000
	N	501

Emotionality Score

Since there are 10 items in the emotionality scale, the cutoff point was set at the midpoint score (30), using the same rationale for other scales aforementioned. The respondents who scored 30 or higher would be regarded as having high emotionality. It is noteworthy that some scale items had been reversed in coding so that a higher score signifies a higher level of emotionality, which according to the CM models entails a greater likelihood that a person's behavior is influenced by emotions. Among the 501 respondents, 301 (60.1%) of them scored lower than 30, so in the sample 200 people had high emotionality. Table 17 displays some descriptive statistics about this score.

Table 17

Emotionality Score Descriptives

	N	Minimum	Maximum	Mean	Median	Mode	Std. Deviation
Emotionality Score	501	11	50	29.37	28	26	8.692

Scale Items

1. When I feel happy or excited, I can control my behavior.
2. When I feel angry or very annoyed, I can control my behavior.
3. When I feel confident or bold, I can control my behavior.

4. When I feel unhappy or miserable, I can control my behavior.
5. When I feel greedy or selfish, I can control my behavior.
6. When I feel afraid or worried, I can control my behavior.
7. I trust my feelings.
8. My behavior is influenced by my emotions.
9. I respond emotionally to people.
10. In important situations, I trust my feelings.

Social Desirability

In a survey study, it is possible that the respondents did not provide truthful answer, but instead they gave answers that are deemed socially desirable. Social desirability thus can be a validity threat. Therefore, a short form of social desirability scale (Strahan & Gerbasi, 1972) was adopted in the current project. The social desirability scores should be able to shed some light on how likely the respondent's answers were more socially desirable than truthful. The highest score possible is 10 and the lowest is 0. A higher score follows the tendency to meet social expectation rather than provide truthful responses.

Among all 501 valid cases in the sample, the highest score was 9 (1.4%) and 10% of the respondents scored 0 on social desirability. The mean was 2.84; the mode was 2; the median was 2. Only 2.4% of the respondents scored higher than 7. The results suggest social desirability did not pose a huge threat to validity, for it seems most respondents did not mean to provide socially desirable answers. This could be attributable to the feature of online surveys in that it has been argued people tend to be more truthful when taking a survey online (Joinson, 1999).

However, when the social desirability score was tested for correlation with scale items, it was significantly correlated with most scale items. First, all items in the

digital piracy moral scale were significantly correlated with the social desirability score in a negative direction. It means if a person scores higher on social desirability, he or she is less likely to say digital piracy is morally justifiable. This fits commonsense. Despite this, the strength of the correlation was fairly weak (< 0.3). Given that only few people actually scored high on social desirability and the fact that the large sample size (N=500) might account for the statistical significance found, there was no compelling reason to exclude these scale items.

The social desirability score was also negatively correlated with all items in the 5 propensities scales, which means people who scored high on social desirability were less likely to report criminal propensities. Again, considering the weak strength (<0.4) and other things mentioned above, no items were excluded, especially when their reliability and validity have been verified to the extent possible. Of course, a more practical reason is these scales were crucial for analysis. They needed to be used as the dependent variables, so they could not be removed entirely.

The same significant but weak correlation was also partially found in other scales, including the rationality scale, the general morality scale, and the emotionality scale. No items were to be removed solely because of this correlation with social desirability. To reiterate the reasoning, first, the large sample size might have overrated the practical meaning of statistical significance; second, only few respondents in the sample really scored high on social desirability; third, the direction of the correlations fit common knowledge, which actually helps confirm the validity of the responses.

To conclude, the examination of social desirability did not change the scale content, although there were some correlations between the scale items and the social desirability score. If there had been many respondents reporting a high score on social

desirability, these correlations should have been a concern, regardless of the strength. Nevertheless, in the current project, the majority of people showed low social desirability. This already lessened the validity threat, so the weak correlations should be tolerable.

There were only 12 respondents in the sample who scored high on social desirability (higher than 7). This is a fairly small percentage (2%), and it is normal to have some higher scores in the distribution. Thus, it rendered little ground to exclude these respondents on account of social desirability.

Criminal Propensity

As proposed in the CM models, the presence of criminal propensity indicates the existence of criminal minds. In the current project, five 2-item scales were used to measure criminal propensities. The notion is if the respondent possessed at least one propensity for any of the five offenses (i.e., digital piracy, stealing, violence, sexual assault, and illegal drug use), he or she would be deemed as a criminal mind owner. They were also tested for reliability and validity respectively.

First, for the scale of digital piracy propensity, Cronbach's alpha was 0.944 and the correlation with the validity item was -0.861 ($p<0.001$). The validity item measured whether the respondent had seriously thought about committing digital piracy. The reliability was considered good as reliabilities above 0.8 are susceptible to measurement error to a very little extent (Carmines & Zeller, 1979). The validity was strong and significant and the negative correlation was in the correct direction. Second, for the scale of stealing propensity, Cronbach's alpha was 0.947. The correlation with the validity item was -0.811 ($p<0.001$). Third, for the scale of violence propensity, Cronbach's alpha was 0.928, and the correlation with the validity item was -0.848 ($p<0.001$). Fourth, for the scale of sexual assault propensity,

Cronbach's alpha was 0.904, and the correlation with the validity item was -0.751 ($p<0.001$). Finally, for the scale of illegal drug use propensity, Cronbach's alpha was 0.915, and the correlation with the validity item was -0.862 ($p<0.001$). In a nutshell, all propensity scales demonstrated high reliability and strong correlation with their corresponding validity items.

After reliability and validity were verified, the propensity scores were used to determine the existence of criminal propensity and hence a criminal mind. As proposed in the analysis plan, when the score was 6 (midpoint) or higher, the propensity was considered existent. Among the 501 respondents, 95 of them showed no propensity for any one of the five offenses. These respondents were not criminal mind owners. The other 406 respondents (81%) all indicated at least one propensity. Table 18 shows the frequencies. From the table it can be seen that most people's criminal propensities did not lead to all crimes, even if there were only five offenses included in the current study. This can support the fundamental CM proposition that there is variation in criminal propensity.

Table 18

Criminal Propensity Frequencies

Number of Criminal Propensities	Frequency	Percent
0	95	19.0
1	133	26.5
2	132	26.3
3	71	14.2
4	29	5.8
5	41	8.2
Total	501	100.0

For digital piracy, 300 respondents (59.9%) reported a propensity, while 201 people did not show a propensity. For stealing, 181 people (36.1%) scored high enough to be considered having such a propensity, and 320 did not. In addition, 177 (35.3%) respondents showed a propensity for violence, and 216 (43.1%) people

showed a propensity for illegal drug use. Sexual assault had the lowest percentage of propensity detected at 11.4%, which added up to only 57 people. Table 19 sums up these frequencies. It is clear some offenses were more prevalent in criminal propensity.

Table 19

Frequencies for Individual Criminal Propensities

	Criminal Propensity	
	Existent	Nonexistent
Digital Piracy	300 (59.9%)	201 (40.1%)
Stealing	181 (36.1%)	320 (63.9%)
Violence	177 (35.3%)	324 (64.7%)
Sexual Assault	57 (11.4%)	444 (88.6%)
Illegal Drug Use	216 (43.1%)	285 (56.9%)

When all five scale scores were summed up to create a total criminal propensity score, the score ranged from 10 to 50, with the mean 24.37, the median 24, and the mode 24. The standard deviation was 9.5 and the sample size was 501.

Scale Items

1. I may commit digital piracy in the future.
2. In the past, I have seriously thought about committing digital piracy.
1. I may steal things from others in the future, regardless of what the thing is.
2. In the past, I have seriously thought about stealing things from others, regardless of what the thing is.
1. I may use violence against another person in the future, other than self-defense.
2. In the past, I have seriously thought about using violence against another person, other than self-defense.
1. I may force someone to have sexual contact with me in the future.

2. In the past, I have seriously thought about forcing someone to have sexual contact with me.
1. I may use illegal drugs in the future.
2. In the past, I have seriously thought about using illegal drugs.

Classification

On account of the previous testing of reliability and validity, the results confirmed the scales are reliable and valid. As mentioned in previous sections, the cutoff scores were based on the midpoint score on each scale. Each CM model manifests a different composition of these three dimensions in terms of high or low. Accordingly, respondents were classified into the eight CM models based on the scores gained on these three scales. It has been stressed in chapter 2 that CM models are not the cause of criminal propensity, so everybody would belong to one CM model but not everyone has a criminal mind. Only the people who reported at least one criminal propensity would be viewed as criminal mind owners.

In Table 20, it is clear that before excluding people who did not indicate criminal propensity, a significant portion of the respondents fell into CM Model 1, where rationality and morality are high, while emotionality is low. This model alone accounts for 46.3% of the respondents. CM Model 5 contained a second large portion (21%). Table 21 displays the frequencies after excluding 95 people who did not reported any criminal propensity. The people retained were criminal mind owners, so they had at least one criminal propensity.

Table 20

Classification Frequencies

		Frequency	Percent
Valid	CM Model 1	232	46.3
	CM Model 2	13	2.6
	CM Model 3	41	8.2
	CM Model 4	32	6.4
	CM Model 5	105	21.0
	CM Model 6	13	2.6
	CM Model 7	41	8.2
	CM Model 8	24	4.8
	Total	501	100.0

Table 21

Classification Frequencies (CM Owners Only)

		Frequency	Percent
Valid	CM Model 1	161	39.7
	CM Model 2	13	3.2
	CM Model 3	39	9.6
	CM Model 4	31	7.6
	CM Model 5	89	21.9
	CM Model 6	13	3.2
	CM Model 7	41	10.1
	CM Model 8	19	4.7
	Total	406	100.0

As shown, CM Model 1 was the largest group, followed by CM Model 5. Seventy-one non-criminal mind owners shared the same characteristics as CM Model 1. It seems this mindset is the most common one among both criminal mind owners and non-criminal mind owners. Sixteen non-criminal mind owners shared the characteristics of CM Model 5. CM Model 3 had two non-criminal counterparts, and CM Model 4 had one. Five non-criminal mind owners had the same mindset as CM Model 8. In contrast, everyone who had the characteristics of Model 2, Model 6, and Model 7 was a criminal mind owner in this study. These three models all had a small

sample size, so it was not sufficient to conclude that having a mindset characteristic of these CM models must entail a criminal mind.

Table 22

Classification Verification (Multinomial Logistic Regression)

	Predicted								
Observed	CM Model 1	CM Model 2	CM Model 3	CM Model 4	CM Model 5	CM Model 6	CM Model 7	CM Model 8	Percent Correct
CM Model 1	232	0	0	0	0	0	0	0	100.0%
CM Model 2	0	13	0	0	0	0	0	0	100.0%
CM Model 3	0	0	41	0	0	0	0	0	100.0%
CM Model 4	0	0	0	32	0	0	0	0	100.0%
CM Model 5	0	0	0	0	105	0	0	0	100.0%
CM Model 6	0	0	0	0	0	13	0	0	100.0%
CM Model 7	0	0	0	0	0	0	41	0	100.0%
CM Model 8	0	0	0	0	0	0	0	24	100.0%
Overall Percentage	46.3%	2.6%	8.2%	6.4%	21.0%	2.6%	8.2%	4.8%	100.0%

This classification was confirmed to be accurate by multinomial logistic regression. In Table 22 it shows when using the midpoint score as the cutoff point to classify respondents into CM models, the outcome met the prediction of logistic regression using rationality score, morality score, and emotionality score as the predictors.

Hypothesis Testing

Hypothesis One

The first hypothesis states: There is no correlation among the three major dimensions of criminal minds. There were three scales used to measure these three dimensions respectively, so the three scale scores were used in testing this hypothesis. Pearson's r was proposed as the statistical procedure for this purpose, but there were some statistical assumptions that needed to be examined. First, the three variables were treated as interval data, as they were measured by scales. Second, these variables needed to be normally distributed. For rationality, the skewness was -0.798 and

kurtosis was -0.254. For general morality, the skewness was -1.179 and kurtosis was 0.088. As for emotionality, the skewness was 0.390 and kurtosis was -0.527. According to these statistics, the assumption of normal distribution did not seem to be supported very well. Although the sample size was large enough to employ central limit theorem and alleviate the violation of normality, the assumption of linearity was also violated, for some non-linear patterns could be seen in the scatter plots (Figure 10). In addition, the assumption of equal variance was also not supported according to the scatter plots. Since the basic assumptions for Pearson's r were not met adequately, a nonparametric alternative not subjected to these assumptions would be supplemented.

Thereby, Spearman's rho was used. The results, as shown in Table 23, indicated a significant correlation between general morality and rationality. However, the effect size was fairly weak (0.170). All other correlations were very weak and insignificant. To serve as a comparison, Table 24 presents Pearson's r for the correlation. Although the correlation was found statistically significant ($p< 0.01$) between emotionality and morality, in addition to between rationality and morality ($p<0.05$), as far as the effect size was concerned, the correlations did not seem to bear much practical meaning, especially when the large sample size might have exaggerated the statistical significance.

All in all, the results were deemed supportive of the hypothesis which asserts there is no substantial correlation among these three dimensions of criminal minds. The three CM dimensions are independent of one another, and thus need to be addressed separately.

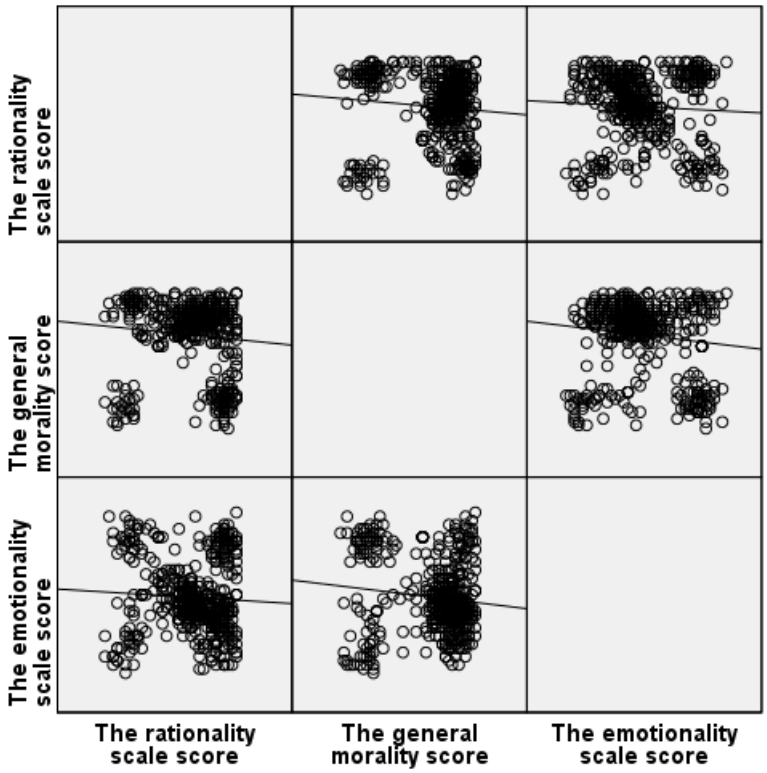

Figure 10. Scatter plots for examining linearity.

Table 23

Correlation among the Three CM Dimensions (Nonparametric)

			The rationality scale score	The general morality score	The emotionality scale score
Spearman's rho	The rationality scale score	Correlation Coefficient	1.000	-.170	-.066
		Sig. (2-tailed)	.	.000	.142
	The general morality score	Correlation Coefficient	-.170	1.000	-.073
		Sig. (2-tailed)	.000	.	.102
	The emotionality scale score	Correlation Coefficient	-.066	-.073	1.000
		Sig. (2-tailed)	.142	.102	.

Table 24

Correlation among the Three CM Dimensions (Parametric)

		The rationality scale score	The general morality score	The emotionality scale score
The rationality scale score	Pearson Correlation	1	-.094	-.057
	Sig. (2-tailed)		.035	.205
The general morality score	Pearson Correlation	-.094	1	-.120
	Sig. (2-tailed)	.035		.007
The emotionality scale score	Pearson Correlation	-.057	-.120	1
	Sig. (2-tailed)	.205	.007	

Hypothesis Two

The second hypothesis argues the three dimensions of criminal minds are correlated with criminal propensity. This correlation was first examined on a model-specific basis, because in different CM models the correlation could be in different directions. Only respondents who possessed criminal propensity as defined in this project would be included in this analysis.

There were 161 people in CM Model 1. As seen in Table 25, the correlations between the CM dimensions and criminal propensities were all weak, and only a few of them were significant at the 0.01 level. When criminal propensity was treated as a whole, only morality was significantly correlated with criminal propensity on the 0.05 level. The effect size reported below is based on nonparametric analysis, because the sample size in each model was too small.

In Model 2, only low morality was correlated with criminal propensity (-0.619; $p<0.05$). In Model 3, high emotionality was significantly correlated with criminal propensity (0.540; $p<0.005$). All three dimensions were correlated with criminal propensity in Model 4 at the 0.05 level. Rationality had a positive correlation (0.372) and emotionality had a positive and stronger correlation (0.565). The surprising finding was morality also had a positive correlation with criminal propensity (0.397). Morality was not significant in Model 5, but rationality and emotionality both had a positive correlation with the effect size 0.240 and 0.299 respectively. In Model 6 and Model 7 and Model 8, the three CM dimensions were not correlated with criminal propensity. The findings were even more perplexing when looking into each individual criminal propensity. In Table 25 it can be seen that rationality was not always positively correlated with propensities. Low morality and high emotionality were not always significant in some offense. The same mixed results could be found

in all eight CM models. In sum, the findings in the model-specific analysis were confounding.

Table 25

Correlation with Criminal Propensity (Model 1)

N=161			The rationality scale score	The general morality score	The emotionality scale score
Spearman's rho	Digital piracy propensity score	Correlation Coefficient	.298	-.161	-.116
		Sig. (2-tailed)	.000	.041	.144
	Stealing propensity score	Correlation Coefficient	-.147	-.173	.143
		Sig. (2-tailed)	.063	.028	.070
	Violence propensity score	Correlation Coefficient	-.079	-.052	.099
		Sig. (2-tailed)	.322	.513	.211
	Sexual assault propensity score	Correlation Coefficient	-.057	-.099	-.121
		Sig. (2-tailed)	.469	.213	.126
	Illegal drug use propensity score	Correlation Coefficient	-.236	-.093	.203
		Sig. (2-tailed)	.003	.238	.010
	Total propensity score	Correlation Coefficient	-.122	-.284	.128
		Sig. (2-tailed)	.124	.000	.104

It is noteworthy that except Model 1, all other models had a rather small sample (N<100). The correlations generally lacked consistency in direction, strength, and statistical significance. Simply put, the findings did not support the hypothesis. Owing to this disappointing outcome, the hypothesis was tested again, only this time all criminal mind owners were tested together. Table 26 shows the results. Rationality was not significantly correlated with violence or sexual assault, and it was negatively associated with illegal drug use. General morality was negatively correlated with all 5 criminal propensities at the 0.001 significance level. Emotionality was not correlated with digital piracy, but has a significant positive correlation with the other 4 propensities.

The total propensity score was significantly correlated with all three dimensions at the 0.001 level. Rationality had a positive but weak correlation with

criminal propensity; morality had a negative and moderate correlation; emotionality's correlation with criminal propensity was moderate and positive.

Table 26

Correlation with Criminal Propensity (All Models)

N=406			The rationality scale score	The general morality score	The emotionality scale score
Spearman's rho	Digital piracy propensity score	Correlation Coefficient	.614	-.303	-.054
		Sig. (2-tailed)	.000	.000	.275
	Stealing propensity score	Correlation Coefficient	.167	-.545	.126
		Sig. (2-tailed)	.001	.000	.011
	Violence propensity score	Correlation Coefficient	.019	-.182	.567
		Sig. (2-tailed)	.709	.000	.000
	Sexual assault propensity score	Correlation Coefficient	.002	-.343	.431
		Sig. (2-tailed)	.965	.000	.000
	Illegal drug use propensity score	Correlation Coefficient	-.258	-.315	.191
		Sig. (2-tailed)	.000	.000	.000
	Total propensity score	Correlation Coefficient	.164	-.540	.367
		Sig. (2-tailed)	.001	.000	.000

Given the above results, it was hard to claim that hypothesis 2 was supported. Especially when the CM models were tested individually, the correlations were either too weak or insignificant or in inconsistent directions. Nonetheless, Table 26 did show the three dimensions had different bearings on different criminal propensities. It is true for all three dimensions that the correlations were stronger or more significant in some offenses but not the others. This seemed to imply it is unsuitable to infer causality when multiple offenses were included in the criminal propensity.

Despite the lack of causal inference, the CM models might still be able to classify different propensities. In fact, the CM models were not proposed in an attempt to explain criminal minds. Rather, they were meant for classification, which was analyzed in the next hypothesis.

Hypothesis Three

The CM models to which people belong are related to which offense is contained in their criminal propensities. This statement is the third hypothesis. Put differently, people in different CM models are hypothesized to manifest different types of criminal propensity.

The first criminal propensity examined was digital piracy. Using a crosstabulation analysis, in Model 1, which contained 161 criminal mind owners, there were 127 of them (78.9%) indicated a propensity for digital piracy. In Model 2, 23.1% (3/13) of criminal mind owners in this model showed a propensity for digital piracy. In Model 3, 12 out of 39 (30.8%) had this propensity. In Model 4, the percentage was 100%, and it was 93.3% (83/89) in Model 5. Model 6 contained 13 people and only 1 of them (7.7%) had a digital piracy propensity. All 41 criminal mind owners in Model 7 had such a propensity, while in Model 8, 2 out of 19 (10.5%) people had this propensity. A chi-square test found statistical significance at the 0.001 level, which means the propensity for digital piracy was not distributed across the CM models equally. Although some cell counts were less than 5, which is considered undesirable in a chi-square test, based on the frequencies reported above, it is quite evident that criminal mind owners in certain models were more likely to possess a propensity for digital piracy than those in other CM models. A directional measure (Lambda) suggested when using CM models to predict the propensity for digital piracy, the proportional error reduction reached 45.3%. It betokens a moderate relationship between the CM models and digital piracy propensity.

The second criminal propensity was stealing. The following is the percentages of criminal mind owners who showed a propensity for stealing in each CM model: 1. 28.6% (46/161); 2. 84.6% (11/13); 3. 20.5% (8/39); 4. 96.8% (30/31); 5. 40.4%

(36/89); 6. 61.5% (8/13); 7. 95.1% (39/41); 8. 15.8% (3/19). A chi-square test attested to the statistical significance at the 0.001 level, but chi-square tends to signal significance when the sample size is large. Nevertheless, from the percentages, it is also obvious that some CM models were more frequently related to stealing. Lambda revealed 43.1% of error reduction when using CM models to predict stealing propensity, which follows a moderate relationship between them.

Next, the propensity of violence manifested 21.1% of the time in Model 1. Only 34 people in Model 1 had such a propensity, and in Model 2, 6 out of 13 criminal mind owners (46.2%) had a violent propensity. Model 3 had a higher percentage in this regard, at 76.9% (30/39). Model 4 had 2 criminal mind owners (6.5%) showing violent propensity, while 29 of them did not. It was 49 out of 89 (55.1%) for Model 5, and 40 out of 41 (97.6%) for Model 7. In Model 6, all 13 of them had a violent propensity. In Model 8, 3 out of 19 (15.8%) were prone to physical violence. Chi-square again indicated statistical significance, and the directional measure (Lambda) showed 46.3% reduction in error if CM models were used to predict violent propensity. There was a moderate relationship between them.

As for the propensity for sexual assault, of the 161 criminal mind owners in CM Model 1, only 1 person appeared to possess this propensity (0.6%). The ratio was 4/13 (30.8%) in Model 2, 3/39 (7.7%) in Model 3, 0/31 (0%) in Model 4, 3/89 (3.4%) in Model 5, 9/13 (69.2%) in Model 6, 36/41 (87.7%) in Model 7, and 1/19 (5.3%) in Model 8. Once again, there was a significant relationship between the sexual assault propensity and CM models, according to the chi-square test. The strength of this relationship was 0.632, meaning the CM models could reduce 63.2% of error when being used to predict the propensity for sexual assault.

Furthermore, in Model 1, 65 people had a propensity for using illegal drugs (40.4%). All 13 criminal mind owners in Model 2 possessed such a propensity, so it was 100%. Model 3 contained 39 criminal mind owners, and 32 of them had this propensity (82.1%). In Model 4 the percentage was 35.5% (11/31) and it was 28.1% (25/89) in Model 5. Only 1 person in Model 6 did not have this propensity, so 12 (92.3%) of them did. In Model 7, 40 out of 41 criminal mind owners were prone to use illegal drugs (97.6%), and in Model 8, 18 out of 19 (94.7%) had the propensity for illegal drug use. It seemed all CM models were related to illegal drug use to some degree, but some of them had an especially high proportion. The relationship between the CM models and the propensity was significant at the 0.001 level, and was moderately strong as Lambda was 0.416.

Table 27 summarizes the analysis results from crosstabulations. The table shows CM Model 1 was highly related to digital piracy, but not other offenses. Sexual assault seemed to be very unlikely to be committed by Model 1 criminal mind owners given the absence of such a propensity. Illegal drug use and stealing appeared to be more prevalent than other offenses in CM Model 2. In CM Model 3, violence and illegal drug use stood out with higher percentages, while in CM Model 4 digital piracy and stealing were more common. Digital piracy was the only one that had a percentage higher than 70% in CM Model 5, whereas in CM Model 6 digital piracy was apparently rare to find, compared to other offenses. CM Model 7 seemed to be related to all five offenses. Illegal drug use was the only prevalent propensity in CM Model 8. The results needed further interpretation, but they were already indicative of a variation contingent on CM models. Due to the small sample in each CM model, it might not be enough to claim full support for the hypothesis. Nonetheless, the results

did render some reason to believe there is variation inside criminal propensity, and the CM models might have captured this variation.

Table 27

How Often Each Criminal Propensity Appears in Each CM Model

	Model 1 (N=161)	Model 2 (N=13)	Model 3 (N=39)	Model 4 (N=31)	Model 5 (N=89)	Model 6 (N=13)	Model 7 (N=41)	Model 8 (N=19)
Digital Piracy	78.9%	23.1%	30.8%	100%	93.3%	7.7%	100%	10.5%
Stealing	28.6%	84.6%	20.5%	96.8%	40.4%	61.5%	95.1%	15.8%
Violence	21.1%	46.2%	76.9%	6.5%	55.1%	100%	97.6%	15.8%
Sexual Assault	0.6%	30.8%	7.7%	0%	3.4%	69.2%	87.8%	5.3%
Illegal Drugs	40.4%	100%	82.1%	35.5%	28.1%	92.3%	97.6%	94.7%

Hypothesis Four

The fourth hypothesis states: There are significant differences in the three dimensions of criminal minds between people with and without criminal minds. Owing to the possible violation of statistical assumptions, a nonparametric analysis, Mann-Whitney Test, was run to do the group comparison in addition to an independent t-test, so as to be more certain about the results. Table 28 lists the results from the Mann-Whitney test.

Table 28

Mann-Whitney Test—Criminal Propensity

	CM Existence	N	Mean Rank	Mann-Whitney	Sig. (2-tailed)
Rationality score	CM nonexistent	95	235.71	17832.00	0.252
	CM existent	406	254.58		
Morality score	CM nonexistent	95	337.14	11101.50	0.000
	CM existent	406	230.84		
Emotionality score	CM nonexistent	95	213.98	15768.00	0.006
	CM existent	406	259.66		

According to the result from Mann-Whitney, there was no significant difference in the rationality score between the two groups. There were however significant differences in morality and emotionality. Criminal mind owners had a much lower level of general morality, but a significantly higher level of emotionality. This result is corroborated by an independent t-test. In the t-test, criminal mind owners had a slightly lower mean score in rationality (34.13 vs. 34.49) but the difference was not statistically significant. In general morality, criminal mind owners had a lower mean score (40.99 vs. 48.52) and the difference between groups was significant at the 0.001 level. Also significant at the 0.001 level was the emotionality score, where criminal mind owners scored higher on average (29.98 vs. 26.78).

All in all, the analysis results showed that while rationality might not matter, low morality and high emotionality seemed to be associated with the existence of a criminal mind.

Further analysis was performed for each individual criminal propensity for the five offenses. When digital piracy propensity was singled out, there was a significant difference in all three dimensions between people who had and had not a propensity for digital piracy. People with this propensity had a higher level of rationality, lower level of general morality, and higher level of emotionality. Table 29 lists the result from Mann-Whitney.

Table 29

Mann-Whitney—Digital Piracy Propensity

	Digital Piracy	N	Mean Rank	Mann-Whitney	Sig. (2-tailed)
Rationality score	No Propensity	201	171.50	14169.50	0.000
	Propensity	300	304.27		
Morality score	No Propensity	201	306.01	19092.50	0.000
	Propensity	300	214.14		
Emotionality score	No Propensity	201	233.03	26539.00	0.023
	Propensity	300	263.04		

However, in the t-test, the difference in emotionality became insignificant. Despite this, the t-test result suggested rationality was important in terms of the criminal propensity for digital piracy, and people with this propensity tended to have higher rationality (37.24 vs. 29.65), lower morality (40.25 vs. 45.65), and higher emotionality (29.93 vs. 28.53). When stealing propensity was analyzed alone, significant differences were found in all three dimensions. This was verified by both Mann-Whitney (Table 30) and t-test. People with stealing propensity had higher rationality (35.44 vs. 33.49), lower general morality (34.43 vs. 46.93), and higher emotionality (31.28 vs. 28.29). The numbers in the parentheses are the means.

Table 30

Mann-Whitney—Stealing Propensity

	Stealing	N	Mean Rank	Mann-Whitney	Sig. (2-tailed)
Rationality score	No Propensity	320	232.70	23105.00	0.000
	Propensity	181	283.35		
Morality score	No Propensity	320	304.59	11812.50	0.000
	Propensity	181	156.26		
Emotionality score	No Propensity	320	235.80	24096.50	0.002
	Propensity	181	277.87		

For the propensity for violence, rationality was not significant according to the Mann-Whitney test, but it was close to be significant at the 0.05 level according to the t-test (p=0.055). General morality and emotionality were significantly different between the two groups in both tests. People with a violent propensity had lower rationality (33.11 vs. 34.76), lower morality (38.46 vs. 44.57) and higher emotionality (36.48 vs. 25.48). Table 31 summarizes the results from Mann-Whitney.

As for sexual assault, the Mann-Whitney test showed all three CM dimensions were significantly different between people with and without a propensity. The results can be found in Table 32. The t-test, albeit agreed on emotionality and morality, found no significant difference in rationality. Still, it sufficed to say people with sexual assault

propensity tended to have higher rationality (34.54 vs. 34.15), lower general morality (26.37 vs. 44.48), and higher emotionality (40.19 vs. 27.98).

Table 31

Mann-Whitney—Violence Propensity

	Physical Violence	N	Mean Rank	Mann-Whitney	Sig. (2-tailed)
Rationality score	No Propensity	324	252.81	28089.00	0.705
	Propensity	177	247.69		
Morality score	No Propensity	324	272.38	21747.00	0.000
	Propensity	177	211.86		
Emotionality score	No Propensity	324	191.83	9501.50	0.000
	Propensity	177	359.32		

Table 32

Mann-Whitney—Sexual Assault Propensity

	Sexual Assault	N	Mean Rank	Mann-Whitney	Sig. (2-tailed)
Rationality score	No Propensity	444	245.48	10203.50	0.017
	Propensity	57	293.99		
Morality score	No Propensity	444	270.86	3834.00	0.000
	Propensity	57	96.26		
Emotionality score	No Propensity	444	230.99	3771.00	0.000
	Propensity	57	406.84		

Table 33

Mann-Whitney—Illegal Drug Use Propensity

	Illegal Drug Use	N	Mean Rank	Mann-Whitney	Sig. (2-tailed)
Rationality score	No Propensity	285	280.52	22368.00	0.000
	Propensity	216	212.06		
Morality score	No Propensity	285	288.29	20151.50	0.000
	Propensity	216	201.79		
Emotionality score	No Propensity	285	224.95	23354.50	0.000
	Propensity	216	285.38		

For illegal drug use, all three dimensions were different between the two groups (Table 33). For people who had a propensity to use illegal drugs, rationality was lower (31.39 vs. 36.32), general morality was lower (38.21 vs. 45.60), and emotionality was higher (31.81 vs. 27.52). All differences were significant at the 0.001 level in both Mann-Whitney and t-test.

To sum up, when overall criminal propensity was tested, rationality did not seem to make a difference between people with and without criminal minds. However, this was not because rationality does not contribute to criminal propensity. When individual criminal propensities were assessed separately, the results revealed rationality could play an important role in some crimes, such as digital piracy, illegal drug use, or stealing. Unlike general morality and emotionality, rationality could affect criminal minds in both ways. Sometimes high rationality facilitated criminal propensity, but sometimes low rationality seemed to be the factor. On the other hand, high emotionality almost always distinguished people with criminal propensity, and these people always featured a lower level of general morality.

The overall results supported hypothesis 4. There were differences in the CM dimensions that could be found between criminal mind owners and non-criminal mind owners. In terms of rationality, it requires a closer look, for both low and high rationality could account for criminal propensities. In contrast, high emotionality and low general morality would be more likely to be associated with criminal propensities. Although this inference may be sensible, it is important to note that this analysis alone is not sufficient for insinuating causality.

Hypothesis Five

Hypothesis 5 is addressing the second research question regarding the criminality of stealing and digital piracy. The purpose is to determine whether these two offenses are essentially driven by the same mindset. A frequency analysis was thus performed.

In our sample, there were 300 criminal mind owners who reported a propensity for digital piracy. Among them, 144 people also reported a propensity for stealing. This was 48%. Although it was a fairly high percentage, it was not sufficient

to assert when people have a propensity for digital piracy, they will also have a propensity for stealing. After all, more than half of the cases did not support this argument. In comparison, among the 181 criminal mind owners who reported a propensity for stealing, 144 of them reported a propensity for digital piracy at the same time, which added up to 79.6%. This is a much higher percentage and it seemed to suggest that a propensity for stealing is more likely to entail a propensity for digital piracy than the other way around. Although a propensity for staling may predict a propensity for digital piracy, the latter may not predict the former as well. Nevertheless, the two propensity scores were significantly correlated (Pearson's r: 0.423; p=0.000).

Further analysis was conducted to test this hypothesis. There were 144 people who possessed a propensity for both stealing and digital piracy. As shown in Table 34, these criminal mind owners mostly fell into CM Model 1, Model 4, Model 5, and Model 7. These models all happen to require a high level of rationality.

Compared to people who had digital piracy propensity regardless of stealing propensity (Table 35), a considerable increase could be seen in Model 1, while Model 4 and Model 7 both manifested a drastic decrease in the percentage. Model 2, Model 3, Model 6, and Model 8 are less likely to be related to digital piracy propensities either way.

Table 36 on the other hand presents the frequencies for the people who had a stealing propensity regardless of digital piracy propensity. The majority of them belonged to Model 1, Model 4, Model 5, and Model 7, where rationality is commonly high. In this aspect, the propensity for stealing was similar to digital piracy.

Table 34

CM Models for Digital Piracy Propensity with Stealing

Digital Piracy & Stealing		Frequency	Percent
Valid	CM Model 1	29	20.1
	CM Model 2	3	2.1
	CM Model 3	6	4.2
	CM Model 4	30	20.8
	CM Model 5	35	24.3
	CM Model 6	1	0.7
	CM Model 7	39	27.1
	CM Model 8	1	0.7
	Total	144	100.0

Table 35

CM Models for Digital Piracy Propensity

Digital Piracy		Frequency	Percent
Valid	CM Model 1	127	42.3
	CM Model 2	3	1.0
	CM Model 3	12	4.0
	CM Model 4	31	10.3
	CM Model 5	83	27.7
	CM Model 6	1	0.3
	CM Model 7	41	13.7
	CM Model 8	2	0.7
	Total	300	100.0

Table 36

CM Models for Stealing Propensity

Stealing		Frequency	Percent
Valid	CM Model 1	46	25.4
	CM Model 2	11	6.1
	CM Model 3	8	4.4
	CM Model 4	30	16.6
	CM Model 5	36	19.9
	CM Model 6	8	4.4
	CM Model 7	39	21.5
	CM Model 8	3	1.7
	Total	181	100.0

From the results above, stealing and digital piracy shared certain similarities. Both propensities were dominated by high rationality, whereas morality and emotionality did not seem to dictate. Although this finding points to the conclusion that stealing and digital piracy are based on a similar mindset, the fact that in the sample more than half of the people who had a digital piracy propensity did not have a propensity for stealing still implies they are not exactly the same. The difference perhaps resided in morality. Notwithstanding low morality was not a necessary condition for both propensities, stealing was more frequently related to a CM model that consists of low morality than digital piracy was. Does this mean digital piracy propensity is less immoral? This brings up the next hypothesis.

Hypothesis Six

Hypothesis 6 states: The general moral judgment is not correlated with the moral view specific to digital piracy. This hypothesis is intended to examine the correlation between general morality and moral justification for digital piracy. Pearson's r indicated a moderate correlation (-0.404) at the 0.001 significance level. This correlation was corroborated by a nonparametric analysis. Spearman's rho indicated -0.402 at the 0.001 significance level. The results showed the higher a person's general morality is the less likely this person would morally justify digital piracy. Therefore, the tendency to justify digital piracy may follow that the person is unlikely to believe criminal behavior is always morally wrong. Nevertheless, there were 82 people in the sample had a propensity only for digital piracy and nothing else. When these people were analyzed, the correlation between digital piracy score and general morality disappeared (Pearson's r: 0.021; p=0.854).

The digital piracy moral score was correlated with the digital piracy propensity score with an effect size around 0.625 at the 0.001 significance level. As

such, the proclivity to justify digital piracy can predict the propensity for digital piracy. In addition, the digital piracy moral score was positively correlated with rationality, but the effect size was somewhat weak (Pearson's r: 0.280; Spearman's rho: 0.305). Emotionality was not correlated with the digital piracy moral score, nor was it correlated with the digital piracy propensity score. The digital piracy propensity score was positively correlated with rationality (0.598) and negatively correlated with general morality (-0.406). For the 82 criminal mind owners who only had a propensity for digital piracy, the correlation between digital piracy propensity and morality again disappeared.

Summary

To sum up the results from all hypothesis testing, there was no substantial correlation found among the three CM dimensions, meaning the three dimensions should be treated as independent of one another. Low morality and high emotionality seemed to be associated with criminal propensity, but when individual criminal propensities were analyzed separately, high emotionality was not always needed for some offenses. Low morality was significantly correlated to all five propensities but the strength was moderate at best. As for rationality, both high and low rationality could be associated with criminal propensity significantly. It depended on which offense was being concerned. However, these correlations could not be found consistently when each CM model was examined alone. This implies the CM dimensions (i.e., rationality, morality, and emotionality) cannot be used to explain criminal propensity which involves more than one offense, and model-specific analysis might need to be offense-specific as well.

Although the CM models may not be suitable for establishing causality, they appeared to be promising in classifying criminal propensities to some extent. Based

on Table 27, evidently different CM models were related to different criminal propensities in different ways. For example, sexual assault was much more prevalent in Model 7 rather than in Model 1 or Model 4. It also demonstrates the point that people can do the same thing with different mindsets, because some propensities were prevalent in more than one CM model.

Comparing criminal mind owners with others, criminal mind owners tended to have lower morality and higher emotionality, which is consistent with the findings previously suggested. Rationality required more scrutiny due to its two-way effect. High rationality might be associated with criminal propensity but low rationality could also be associated, contingent on the offense at issue.

Moreover, the analysis revealed that digital piracy and stealing are very much alike in terms of their underlying mindset. These two propensities were correlated. High rationality was the commonality. However, it might be too soon to conclude digital piracy is practically the same as stealing, because more than half of the people with digital piracy propensity did not report a propensity for stealing. In contrast, most people with a stealing propensity owned a propensity for digital piracy as well. It would be very likely to find a thief who has a propensity to commit digital piracy, but there is only about 50% of chance a digital pirate will also consider stealing. In addition, the tendency to morally justify digital piracy may be attributable to low general morality, by which people are more likely to view deviant or unlawful behavior as morally justifiable. However, it is noteworthy that people who had propensity for only digital piracy deserved more attention in that their justification for digital piracy was not a result of low morality, and low morality was not correlated with their propensity for digital piracy.

CM Models Comparison

After the hypotheses were tested, the findings seemed to suggest there was certain variation across the eight CM models. As showed in Table 27, the different levels of rationality, morality, and emotionality were related to criminal propensities in different ways. The following analysis would compare these CM models with respect to rationality, morality, emotionality, and criminal propensity. In addition, a ninth group was added. This group consisted of people who did not report any criminal propensities in the current project. They were the non-criminal mind owners.

Non-Criminal Mind Owners

In the current project, there were 95 people who did not indicate any criminal propensity insomuch that only five offenses were included in the measurement. They might actually possess a criminal propensity of some other offense. For comparison purposes, they were labeled as non-criminal mind owners in this study.

In the previous hypothesis testing, it was found that this group of people tended to have a lower level of emotionality and a higher level of general morality. As to rationality, it required some offense-specific consideration. In this section, a few supplementary analyses would be presented to offer more information on these non-criminal mind owners.

First, compared to criminal mind owners, non-criminal mind owners scored significantly higher on social desirability, but the mean score was 4.53, which is not high on a scale ranging from 1 to 10. The total propensity score was correlated with low morality and high emotionality. The digital piracy propensity score was correlated with low morality. The stealing propensity score and the illegal drug use propensity score both had no significant correlation with rationality, morality, or emotionality. The violence propensity score was negatively correlated with morality

and positively correlated with emotionality. The sexual assault propensity score was correlated with low rationality, and high emotionality. Although there were some significant correlations found, it is important to stress that by definition, these propensity scores were too low to indicate the existence of criminal propensity. That is why these 95 people were considered non-criminal mind owners. Next, these 95 people would form a group parallel to the eight CM models.

Rationality

A one-way analysis of variance was conducted to compare the rationality score in each of the nine groups. Some significant differences were found in this aspect. Table 37 shows the descriptives.

Table 37

CM Model Comparison—Rationality

Rationality	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	34.49	5.222	.536	16	44
CM Model 1	161	36.80	4.494	.354	27	45
CM Model 2	13	17.15	2.035	.564	13	20
CM Model 3	39	22.13	3.088	.494	14	26
CM Model 4	31	41.58	2.203	.396	36	45
CM Model 5	89	36.19	5.414	.574	27	45
CM Model 6	13	18.23	2.048	.568	15	21
CM Model 7	41	42.12	2.027	.317	35	45
CM Model 8	19	19.47	2.932	.673	13	26
Total	501	34.20	7.989	.357	13	45

Model 1, Model 4, Model 5, and Model 7 are the CM models that require high rationality. Non-criminal mind owners had a lower rationality score than these four models, but had a higher score than other CM models that require low rationality. Except for Model 5, the differences all reached statistic significance at the 0.05 level. A post-hoc (Games-Howell) test reveled that even among the models that require high rationality, significant differences existed, too. Model 1 and Model 5 had a significantly lower rationality score than Model 4 and Model 7. It appeared that in this

category, when morality was low, rationality was higher. In contrast, as to the models that require low rationality, Model 3 had a significantly higher score than Model 2 and Model 6, while there was no significant difference among Model 2, Model 6 and Model 8. In this category, high morality entailed relatively higher rationality, although the rationality was still considered low.

Morality

The same analysis was carried out for morality. Model 2 had the lowest score and Model 8 had the highest (Table 38). In this aspect, non-criminal mind owners had a significantly higher score than the CM models that require low morality, namely Model 2, Model 4, Model 6, and Model 7. Model 1 requires high morality but it was still significantly lower than non-criminal mind owners. Model 8 had a higher score than non-criminal mind owners but it was not statistically significant. Model 1 and Model 5 had a significant lower score than Model 8, although they all require high morality. There were no significant differences among the CM models that require low morality.

Table 38

CM Model Comparison—Morality

General Morality	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	48.52	4.102	.421	22	55
CM Model 1	161	46.37	3.860	.304	33	54
CM Model 2	13	20.69	3.449	.957	15	27
CM Model 3	39	47.74	5.398	.864	39	54
CM Model 4	31	22.74	3.777	.678	15	32
CM Model 5	89	46.57	4.829	.512	34	55
CM Model 6	13	21.08	3.730	1.034	16	27
CM Model 7	41	23.29	3.809	.595	14	31
CM Model 8	19	50.84	3.625	.832	42	55
Total	501	42.42	10.749	.480	14	55

As for the digital piracy moral score, non-criminal mind owners had a lower score than all eight CM models but the differences were significant only when

compared to Model 1, Model 4, Model 5, and Model 7. As noted in hypothesis five, most people with a digital piracy propensity belonged to these four models. All these four models require high rationality. Among these four models, Model 1 and Model 5 had a significantly lower score than Model 4 and Model 7. Model 4 and Model 7 require low morality, while Model 1 and Model 5 require high morality. This result made sense, because the digital piracy moral score was negatively correlated with the general morality score.

Emotionality

As far as the emotionality score was concerned, non-criminal mind owners scored lower than all CM models that require high emotionality, but higher than those that entail low emotionality (see Table 39). All differences reached statistical significance at the 0.05 level. Model 2 had the lowest score and Model 6 had the highest.

Table 39

CM Model Comparison—Emotionality

Emotionality	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	26.78	4.126	.423	13	42
CM Model 1	161	24.39	3.816	.301	13	29
CM Model 2	13	15.69	2.869	.796	11	21
CM Model 3	39	40.49	5.862	.939	30	49
CM Model 4	31	20.90	5.867	1.054	12	29
CM Model 5	89	35.07	5.121	.543	30	50
CM Model 6	13	43.31	2.983	.827	38	49
CM Model 7	41	42.59	3.279	.512	30	49
CM Model 8	19	20.16	3.804	.873	13	27
Total	501	29.37	8.692	.388	11	50

The models that require low emotionality include Model 1, Model 2, Model 4, and Model 8. Among them, Model 1 had a significantly higher score than Model 2 and Model 8. Model 2 had a significantly lower score than Model 4 and Model 8 as well, while Model 4 and Model 8 had no significant difference in the emotionality

score. On the other hand, Model 3, Model 5, Model 6, and Model 7 require high emotionality. Model 5 had a significantly lower score than the other three, whereas the other three models did not have significant difference among them in emotionality.

Criminal Propensity

Table 40 shows the descriptives regarding the total propensity score. Conceivably, non-criminal mind owners scored a lot lower than any CM models in this category, because they did not have any criminal propensities. Model 7 had the highest average score and Model 8 had the lowest score among all CM models. A post-hoc test following the analysis of variance revealed that Model 8 had a significantly lower score than other CM models, with the exception of Model 1. Model 7 had a significantly higher score than any other group. Model 1 had a significantly lower score than the CM models that require low morality (i.e., Model 2, Model 4, Model 6, and Model 7). It can be noticed that these four models had the highest scores.

Table 40

CM Model Comparison—Total Propensity

Total Propensity	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	12.78	2.602	.267	10	20
CM Model 1	161	23.19	5.640	.445	14	46
CM Model 2	13	33.00	8.185	2.270	24	47
CM Model 3	39	26.13	6.787	1.087	17	40
CM Model 4	31	29.52	3.846	.691	24	35
CM Model 5	89	25.70	6.606	.700	14	40
CM Model 6	13	35.23	4.816	1.336	25	41
CM Model 7	41	42.83	4.944	.772	28	50
CM Model 8	19	20.84	5.014	1.150	15	35
Total	501	24.37	9.494	.424	10	50

Another analysis regarding criminal propensity was the number of propensities. Since there were five offenses included in this project, there could be up

to five propensities encompassed in the total propensity. Non-criminal mind owners of course had zero propensities. In Table 41, the descriptives are presented. An analysis of variance confirmed there were significant differences among the nine groups. Model 8 had the fewest propensities, and it was significantly lower than Model 4, Model 5, Model 6, and Model 7. Model 7 had the highest mean, and it was significantly higher than all other groups.

Table 41

CM Model Comparison—Number of Propensities

Number of Propensities	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	.00	.000	.000	0	0
CM Model 1	161	1.70	.866	.068	1	5
CM Model 2	13	2.85	1.463	.406	1	5
CM Model 3	39	2.18	.970	.155	1	4
CM Model 4	31	2.39	.615	.110	1	4
CM Model 5	89	2.20	.944	.100	1	5
CM Model 6	13	3.31	1.032	.286	2	5
CM Model 7	41	4.78	.613	.096	2	5
CM Model 8	19	1.42	.769	.176	1	3
Total	501	1.86	1.455	.065	0	5

After criminal propensity was compared as a whole, individual criminal propensities were compared as well. Table 42 shows the descriptives about digital piracy propensity.

Table 42

CM Model Comparison—Digital Piracy Propensity

Digital Piracy Propensity	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	3.03	1.189	.122	2	5
CM Model 1	161	7.57	2.650	.209	2	10
CM Model 2	13	4.85	2.940	.815	2	10
CM Model 3	39	4.51	1.833	.294	2	8
CM Model 4	31	9.71	.588	.106	8	10
CM Model 5	89	7.96	1.918	.203	2	10
CM Model 6	13	3.31	1.548	.429	2	7
CM Model 7	41	9.56	.709	.111	8	10
CM Model 8	19	3.47	2.195	.504	2	10
Total	501	6.50	3.057	.137	2	10

The score ranged from 2 to 10 and by definition a score higher than 5 would be indicative of a propensity for digital piracy. It is quite obvious in Model 4 and Model 7, the minimum score was as high as 8. ANOVA confirmed there were significant differences among these nine groups. Excluding non-criminal mind owners, Model 6 had the lowest mean score. It was significantly lower than Model 1, Model 4, Model 5, and Model 7. These four models all require high rationality. Model 4 had the highest mean and it was significantly higher than other CM models, except Model 7. Model 4 and Model 7 were significantly higher than Model 1 and Model 5. In hypothesis 5, it was found 70% of the criminal mind owners who had a digital piracy propensity belonged to Model 1 and Model 5, while those who belonged to Model 4 and Model 7 were much more likely to possess a propensity for stealing at the same time. These findings seemed to imply the propensity for digital piracy might need to be further classified.

The second criminal propensity was the propensity for stealing. In Table 43, it can be seen there were apparent differences in the mean scores. ANOVA confirmed this. In this aspect, non-criminal owners had the lowest score but this was not significantly different from Model 8, according to a post-hoc test (Games-Howell). Model 7, the highest score, was significantly higher than Model 1, Model 3, Model 5, and Model 8. These four models all require high morality. In fact, in terms of the propensity for stealing, the CM models split into two groups. The models with low morality had a significantly higher propensity than the models with high morality. It seemed morality plays an important role in the propensity for stealing.

Table 43

CM Model Comparison—Stealing Propensity

Stealing Propensity	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	2.55	.822	.084	2	5
CM Model 1	161	4.48	2.292	.181	2	10
CM Model 2	13	8.77	2.421	.671	3	10
CM Model 3	39	4.38	2.711	.434	2	10
CM Model 4	31	9.13	1.258	.226	4	10
CM Model 5	89	5.13	2.776	.294	2	10
CM Model 6	13	7.54	2.696	.748	3	10
CM Model 7	41	8.88	1.584	.247	2	10
CM Model 8	19	3.63	2.060	.473	2	9
Total	501	5.03	2.940	.131	2	10

Table 44

CM Model Comparison—Violence Propensity

Violence Propensity	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	2.43	.846	.087	2	5
CM Model 1	161	3.97	2.373	.187	2	10
CM Model 2	13	5.00	2.858	.793	2	10
CM Model 3	39	6.79	2.867	.459	2	10
CM Model 4	31	3.29	1.488	.267	2	8
CM Model 5	89	5.78	2.815	.298	2	10
CM Model 6	13	9.08	1.038	.288	7	10
CM Model 7	41	8.76	1.496	.234	2	10
CM Model 8	19	3.63	2.241	.514	2	10
Total	501	4.71	2.896	.129	2	10

An analysis of variance showed there were significant differences among the nine groups in terms of the violence propensity. Non-criminal mind owners as expected had the lowest mean score (see Table 44) but the difference was not significant, compared to Model 8 and Model 4. Model 6 had the highest mean, and it was significantly higher than all other groups, minus Model 7. Model 7 also was significantly higher than all groups other than Model 6. The models that had higher mean scores happened to require high emotionality, including Model 3, Model 5, Model 6, and Model 7. Model 4 and Model 8 had the lowest scores, and the only

commonality they share is low emotionality. Therefore, the inference pointed to the connection between high emotionality and the propensity for violence.

Another criminal propensity included was sexual assault. Table 45 shows the mean scores each group had. Non-criminal mind owners had a significantly lower score than Model 3, Model 5, Model 6, and Model 7. These are the CM models that require high emotionality. Model 7 had the highest score but the difference was not significant compared to Model 2 and Model 6. These three models share low morality, and they were the three highest groups prone to commit sexual assault. Model 6 and Model 7 especially stood up in this aspect, and what they have in common is low morality and high emotionality. It seemed that sexual assault propensity would be more common in the CM models that require low morality. High emotionality was also important but it was not a necessity.

Table 45

CM Model Comparison—Sexual Assault Propensity

Sexual Assault Propensity	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	2.13	.443	.045	2	4
CM Model 1	161	2.34	.894	.070	2	8
CM Model 2	13	4.54	2.787	.773	2	9
CM Model 3	39	3.08	1.403	.225	2	8
CM Model 4	31	2.35	.839	.151	2	5
CM Model 5	89	2.67	1.277	.135	2	10
CM Model 6	13	6.54	1.984	.550	3	10
CM Model 7	41	6.83	1.870	.292	2	10
CM Model 8	19	2.26	.933	.214	2	6
Total	501	2.95	1.817	.081	2	10

The last criminal propensity was illegal drug use. Non-criminal mind owners had a significantly low score than all other groups. Model 2 had the highest score and it was significantly higher than other groups except for Model 6 (Table 46). In this propensity, it was unclear what aspects of criminal minds were more contributive to

the propensity. Model 1, Model 4, and Model 5 were the models least related to illegal drug use and the only commonality is high rationality. However, Model 7 also requires high rationality but it was highly related to illegal drug use propensity. The mindset underlying illegal drug use could be more complex than other offenses. Perhaps, there is a need to specify which drug is of interest.

Table 46

CM Model Comparison—Illegal Drug Use Propensity

Illegal Drug Use Propensity	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
non-criminal mind owners	95	2.64	1.031	.106	2	5
CM Model 1	161	4.83	2.666	.210	2	10
CM Model 2	13	9.85	.376	.104	9	10
CM Model 3	39	7.36	2.288	.366	2	10
CM Model 4	31	5.03	2.689	.483	2	10
CM Model 5	89	4.16	2.738	.290	2	10
CM Model 6	13	8.77	1.964	.545	3	10
CM Model 7	41	8.80	1.400	.219	3	10
CM Model 8	19	7.84	1.740	.399	2	10
Total	501	5.18	3.009	.134	2	10

Summary

In summary, non-criminal mind owners did not have particularly high or low rationality, compared to criminal mind owners. Their rationality was higher than criminal mind owners with low rationality, but was lower than criminal mind owners with high rationality. The same thing could be said about emotionality. Their morality was generally higher than criminal mind owners, but Model 8 actually had equally high morality. Even among the CM models that require high rationality, significant differences could be found in rationality. Model 4 and Model 7 appeared to have the highest rationality. Model 2, Model 6, and Model 8 had the lowest rationality. There was no significant difference among the CM models that require low morality. Model 2 had especially low emotionality, compared to all other CM models. Model 3, Model 6, and Model 7 had the highest emotionality.

In terms of the total criminal propensity, the four models that require low morality had the highest scores. Propensities in Model 8 and Model 1 were related to fewer offenses, while in Model 7, criminal propensity was more likely to be related to all offenses. When breaking down to individual criminal propensities, the propensity for digital piracy might need to be further classified into people who do not have a propensity for stealing and those who do. Low morality seemed to play an important part in stealing, although it might not be a necessary condition. High emotionality was tied to the propensity for physical violence. Low morality was crucial in sexual assault and high emotionality might also be important. Finally, illegal drug use could involve low rationality, but Model 7 seemed to be an exception.

Additional Analysis

Besides the hypothesis testing and model comparison, some additional analyses were done. The purpose of these analyses was merely to explore where criminal minds as a newly introduced construct exist among different populations in terms of gender, race, age, and other backgrounds. Hereafter the analysis would be focused on group comparison to identify any demographic variables that might be associated with criminal minds.

Gender

The gender difference was explored in several variables, including social desirability score, rationality score, general morality score, emotionality score, and total propensity score. An independent t-test showed that females scored higher in social desirability at the 0.05 significance level. Females also scored significantly higher in general morality and much lower in total propensity score, both at the 0.01 level. There were no significant gender difference found in rationality and emotionality. Females also scored lower in digital piracy moral score and all five

individual propensity scores. The results were all supported by a Mann-Whitney test. Table 47 presents the results from t-test.

Table 47

Gender Differences in Various Scores

	Gender	N	Mean	Mean Difference	Sig. (2-tailed)
social desirability score	Female	273	3.03	0.378	0.042
	Male	207	2.65		
The rationality scale score	Female	273	34.02	-0.397	0.588
	Male	207	34.42		
The general morality score	Female	273	43.73	3.177	0.002
	Male	207	40.56		
The emotionality scale score	Female	273	29.21	-0.372	0.651
	Male	207	29.58		
Total propensity score	Female	273	22.22	-4.837	0.000
	Male	207	27.05		
Digital Piracy Moral Score	Female	273	16.03	-1.290	0.024
	Male	206	17.32		
Digital piracy propensity score	Female	273	6.07	-0.920	0.001
	Male	207	6.99		
Stealing propensity score	Female	273	4.71	-0.729	0.008
	Male	207	5.44		
Violence propensity score	Female	273	4.04	-1.410	0.000
	Male	207	5.45		
Sexual assault propensity score	Female	273	2.52	-0.979	0.000
	Male	207	3.50		
Illegal drug use propensity score	Female	273	4.87	-0.800	0.004
	Male	207	5.67		

Of the 406 criminal mind owners in the sample, 20 of them did not identify their gender. Among the rest, there were 202 females (49.8%) and 184 males (45.3%). Considering the sample contained more female respondents (54.5%) to begin with, males were actually more likely to be a criminal mind owner. This consists with the finding indicating males scored higher on criminal propensity, but it could also result from the fact that females were more inclined to provide social desirable answers since they scored relatively higher on social desirability. If females indeed were less prone to commit crime, according to the analysis results, general morality was the only significant factor that accounted for the gender difference in this aspect as

females had a higher level of morality but there were no significant gender differences on the other two CM dimensions.

Age

There was a relatively wide range in the age of our respondents. 56 respondents (11.2%) did not reveal their age. The rest ranged from 18 to 79. The average age was 30.41, with 67% of the respondents under this age.

Among the 273 female respondents, 26 of them did not report their age. The remaining 247 females (90.5%) in the sample ranged from 18 to 61 years old. The average age for them was 30.07, while 68.4% of them were younger than the average. In their male counterpart, the average age was 30.90 and 65.4% of them were under this average. There were 191 male respondents (92.3%) who reported their age. There was a larger variance in male age than in female age.

When only criminal mind owners were considered, the average age went down to 28.57, with a range from 18 to 61. 64.3% of criminal mind owners were younger than the average. For female criminal mind owners, the average age was 28.26, with a range from 18 to 61. For male criminal mind owners, the average age was 28.88, with a range from 18 to 61. A t-test showed no significant difference in age between males and females. All these statistics did not generate sufficient reason to believe in the current project male and female respondents were substantially different in their age patterns. Therefore, the following age analysis would not take gender difference into account.

A bivariate regression found age was a significant predictor of rationality at the 0.05 level, but it only reduced prediction error by 1.7 %. The older a person is the level of rationality is higher, but there are many more factors that affect rationality, other than age. Age was not a significant predictor of general morality or emotionality,

according to a bivariate regression analysis which also indicated age had nothing to do with the total propensity score or any individual criminal propensity. In a nutshell, age did not appear to be a determinant in this project.

Race

There were 456 respondents who identified their race in the survey. This sample consisted of 40 African American/Black, 290 White/Caucasian, 97 Asian/Pacific Islander, 22 Hispanic/Latino, and 7 others. Table 48 shows their mean scores.

Table 48

Mean Scores for Racial Groups (3 Dimensions and Total Propensity)

		N	Mean
Rationality score	Black	40	28.88
	Whilte	290	34.34
	Asian	97	35.32
	Hispanic	22	34.73
	Other	7	36.57
	Total	456	34.13
General morality score	Black	40	38.28
	Whilte	290	44.25
	Asian	97	40.64
	Hispanic	22	39.32
	Other	7	49.29
	Total	456	42.80
Emotionality score	Black	40	31.05
	Whilte	290	28.78
	Asian	97	30.91
	Hispanic	22	24.86
	Other	7	30.14
	Total	456	29.26
Total propensity score	Black	40	30.50
	Whilte	290	22.27
	Asian	97	26.72
	Hispanic	22	26.95
	Other	7	18.71
	Total	456	24.11

An analysis of variance (ANOVA) was used to compare these racial groups. Test results indicated there were significant differences among different racial groups

in rationality score, morality score, emotionality score, total propensity, and all 5 individual criminal propensities. A post hoc test (Games-Howell) showed the difference in the rationality score resided in Black vs. Asian and Black vs. White. The difference in the morality score was attributable to Other vs. Black, Other vs. Asian, Other vs. White, and Other vs. Hispanic. The difference in the emotionality score was contributed by Hispanic vs. Asian. As for the total propensity score, the significant differences were found between White and Asian, and between Black and White.

To translate, black respondents, compared with whites and Asians, had a significantly lower rationality score. The group 'Other' had a significantly higher morality score, compared to the other 4 groups, while there was no significant difference among these 4 groups in terms of general morality. Asians had a significantly higher emotionality score than Hispanics. Blacks had a significantly higher propensity score than whites and Asians. If simply looking at the mean, blacks had the lowest rationality score and morality score but had the highest emotionality score and total propensity score.

When the 5 criminal propensities were examined separately, significant differences were found in all 5 propensity scores. Table 49 shows the mean scores. In digital piracy propensity, the only significant difference was between Asian and White. Compared to Asians, white respondents had a significantly lower score, even though whites did not have the lowest mean score and Asians did not have the highest mean score. This is probably due to the size of the standard error, which was affected by the sample size in each racial group. In stealing propensity, Black vs. White, Black vs. Other, Asian vs. White, Asian vs. Other, and Hispanic vs. Other all contributed to the significant difference. In violence propensity, the significant difference could be found between Black and White, and between White and Asian. As for sexual assault

propensity, Black had a significantly higher score, compared to White and Other. Asian also had a higher score than White or Other. Compared to Other, White had a significantly higher score. Finally, Black had a significantly higher illegal drug use propensity than all other groups, except Hispanic. Hispanic had the highest mean score for digital piracy and Black had the highest score for the other 4 offenses.

Table 49

Mean Scores for Racial Groups (5 Individual Propensities)

		N	Mean
Digital piracy propensity	Black	40	6.55
	Whilte	290	6.06
	Asian	97	7.16
	Hispanic	22	7.77
	Other	7	5.00
	Total	456	6.40
Stealing propensity	Black	40	6.98
	Whilte	290	4.43
	Asian	97	5.84
	Hispanic	22	5.50
	Other	7	3.14
	Total	456	4.98
Violence propensity	Black	40	6.45
	Whilte	290	4.08
	Asian	97	5.40
	Hispanic	22	4.91
	Other	7	5.00
	Total	456	4.63
Sexual assault propensity	Black	40	3.80
	Whilte	290	2.65
	Asian	97	3.45
	Hispanic	22	2.68
	Other	7	2.00
	Total	456	2.91
Illegal drug use propensity	Black	40	6.73
	Whilte	290	5.05
	Asian	97	4.87
	Hispanic	22	6.09
	Other	7	3.57
	Total	456	5.18

Overall racial differences were found, but the results should be interpreted with caution. The 5 racial groups in the current project did not have equal sample sizes. As a matter of fact, the discrepancies were quite sizable. Consequently, the

unbalanced sample sizes might render vulnerability to the violation of homogeneity. In the above analysis, only digital piracy propensity score and total propensity score did not violate homogeneity. In most cases, the larger group was associated with a smaller variance, which follows the null hypothesis might have been falsely rejected. This is to say perhaps no such racial differences really exist. For exploratory purposes the analysis results were kept in this report, but since it is not a crucial aspect of the current project, no further conclusion would be attempted to make about race.

Education

In the sample, 132 respondents reported they had completed high school, 169 respondents had completed a bachelor's degree, 90 people had a master's degree, and 29 people owned a doctoral or professional degree. One person had an education level less than high school. Not all respondents identified their education level. The following analysis included five groups for comparison. They were high school, bachelor's degree, master's degree, doctoral/professional degree, and missing data. The missing data accounted for 13.6% of the sample, so it was warranted to examine them for any possible patterns.

In terms of the total propensity score, respondents with a doctoral or professional degree had a significantly lower average score compared all other groups, whereas there was no significant difference among other groups. Missing data appeared to have the highest average score (27.19) in this aspect, and Doctoral/Professional had the lowest (17.62). The possible range for total propensity was from 10 to 50.

In the rationality score, Doctoral/Professional had the highest average score (36.76), and Bachelor had the lowest (33.22). The possible range for this score was from 9 to 45. Doctoral/Professional scored significantly higher than Bachelor and

High School. Bachelor scored lower than Master and Doctoral/Professional. Missing data did not have any significant difference from other groups in this aspect.

As to general morality, Doctoral/Professional again had the highest average score (46.10) on a scale ranging from 11 to 55. Missing data had the lowest score (39.16). In this aspect, Doctoral/Professional was significantly higher than High School and Missing data. No other significant differences were found among these groups with regard to general morality.

When the model was considered as a whole, the analysis of variance did not indicate significance for the emotionality score, which means there was no significant difference among the five groups. However, the post hoc test showed that Doctoral/Professional had an average score in emotionality that was significantly lower than all other groups except for Missing data. High School had the highest score (30.02) and Doctoral/Professional had the lowest (25.38). This emotionality scale ranged from 10 to 50.

Based on the above results, Doctoral/Professional had the highest rationality, highest morality, lowest emotionality, and the lowest total criminal propensity. Although Doctoral/Professional seemed to be outstanding in all aspects thus far, a further analysis showed this group scored the highest (3.93) on social desirability, ranging from 1 to 10. Their average score was significantly higher than High School and Missing data. Bachelor had a significantly higher mean score than High School and Missing data. Missing data had the lowest score (1.90), and this was significantly lower than any other groups except High School.

Missing data also had the highest mean score on digital piracy moral score (17.82) and Doctoral/Professional had the lowest (13.34). This score ranged form 6 to 30. Doctoral/Professional was significantly lower than all other groups in this aspect,

while no significant differences were found among the other groups. This follows people who had a doctoral or professional degree were less likely to morally justify digital piracy.

As far as digital piracy propensity was concerned, Doctoral/Professional had the lowest mean score (5.03). The possible range was from 2 to 10. Missing data had the highest score (7.41). The average score of Doctoral/Professional was significantly lower than Missing data. No other significant differences were found.

Missing data again had the highest mean score (5.94) on the stealing propensity score, ranging from 2 to 10. Despite this, the analysis of variance did not find significance for the model. The post hoc test also did not find any significant differences among these 5 groups.

Doctoral/Professional had the lowest score (3.17) on violence propensity and on sexual assault propensity (2.21). These scores were significantly higher than all other groups, except for Master. No other significant differences were found among the other groups.

When it came to illegal drug use, Doctoral/Professional had the lowest score (2.97), and this score was significantly lower than all other groups. Although Bachelor had the highest score (5.54), it was not significantly higher than other groups, except for Doctoral/Professional.

In conclusion, people with a doctoral or professional degree seemed to be less likely to engage in criminal behavior, regardless of the offense. They tended to have higher rationality, higher morality and lower emotionality. Nonetheless, they also were more inclined to offer socially desirable answers, relatively speaking. Missing data did not present massive differences from other groups but 64 out of 68 people in the missing data were criminal mind owners. This is 94.1%. In the

Doctoral/Professional group 55.1% (16/29) were criminal mind owners. For the High School group, 83.4% of them (118/132) were criminal mind owners, and the percentage was 76.9% for Bachelor (130/169). In the Master group, 70 out of 90 respondents (77.8%) were criminal mind owners. All in all, people with a doctoral or professional degree appeared to stand out as the least likely criminals, whereas there was no clear distinction found among other groups.

IT Background

In the sample, 64 respondents reported to have an IT background. They either majored in IT-related disciplines or worked in IT-related fields. 347 respondents did not have such a background. Comparing the respondents with an IT background and those without it, no significant difference was found with respect to social desirability. The mean difference was smaller than 1. There was also no significant difference in the propensity for digital piracy. The mean difference was smaller than 1. However, an IT background was associated with a higher digital piracy moral score, and it was statistically significant on the 0.001 level. The mean difference was about 3.5 points. Besides, a significant difference was found in the general morality score, where people without an IT background had a higher average score, higher by 6.7 points. The results suggested people with an IT background were more likely to view digital piracy as morally justifiable, and perhaps also more inclined to justify other criminal behaviors. Although they did not necessarily have a higher propensity for digital piracy, these people did have a higher score of total criminal propensity at the 0.001 significance level. The mean difference was 6.2 points.

The above results were supported by both an independent t-test and a Mann-Whitney test. In addition, of the 64 respondents who had an IT background, 60 of them were criminal mind owners. Overall it seemed that an IT background is

associated with criminal propensity. It should be noted, nevertheless, the sample size of this IT group was not substantial enough.

Sources

A relatively unconventional sampling method was adopted in this project. Therefore, the sample consisted of people recruited from all sorts of avenues in cyberspace, albeit it was assumed most of the respondents were college students. An analysis was thus conducted to examine whether the source of our sample entailed meaningful implications.

There were five sources specified in the survey, including online forums, blogs or personal websites, email from school, email from friends, and other. As shown in Table 3, 116 respondents were directed from online forums, only 8 were from blogs or personal websites, 267 respondents were contacted through email from school, and 51 people heard about this survey via email from friends, and 25 others were recruited from other unspecified sources. Missing data amounted to 34. Because when the sample sizes are highly unequal the result of mean comparison will be problematic, the following analysis only took three main groups into consideration. They were Online Forums, School Email, and Email from Friends.

School Email had a significantly higher mean score than Online Forums in social desirability, and Online Forums had the lowest mean score. Email from Friends did not have significant differences from the other two groups in this respect, nor did it have any difference in digital piracy moral score. Online Forums on the other hand had a significantly higher score than School Email with respect to the digital piracy moral score. Online Forums also had a higher score than School Email in digital piracy propensity score. In terms of stealing propensity, violence propensity, and sexual assault propensity, School Emails all scored significantly lower than Online

Forums and Email from Friends. This was also true in the total propensity score, but there was no difference among the three groups with regard to illegal drug use. Basically, except illegal drug use, School Email all had the lowest mean score when it came to criminal propensity. This group also had the highest social desirability.

As for the three CM dimensions, School Email had the lowest rationality and emotionality but it had the highest general morality. The differences among groups were not statistically significant in both rationality and emotionality. In general morality, School Email had a significantly higher mean score than Online Forums. Email from Friends had no differences compared to either group in this aspect.

From this analysis, the findings suggested respondents recruited via school emails were more prone to offer socially desirable responses. They manifested lower criminal propensity and higher morality. Even though the survey was conducted anonymously, students might still feel the need to meet social desirability since they were contacted by their departments, which might have been subconsciously perceived as a symbol of social restraints.

All the analysis presented in this additional section was merely preliminary. There were surely a lot more that could be explored. However, as the first attempt to test the CM models, it might be a good idea to leave the focus on establishing the fundamentals for now. Based on the findings abovementioned, gender, race, education, and IT background all seemed to warrant further attention in future research on the CM models. The proper method of data collection for an online survey also calls for more studies. More implications are discussed in the next chapter.

CHAPTER 7

DISCUSSIONS & CONCLUSIONS

Measurement

Before any research questions could be answered, it was especially important to validate the measurement as this project was the first attempt to test the CM models. Factor analysis confirmed there were three factors being measured by the proposed scales. Although emotionality seemed to be composed of two components, they were significantly correlated. Therefore, emotionality in the current project was still treated as one factor as originally proposed. All scales reached reliability and validity to a respectable degree. Social desirability did not appear to be a threat to the validity. The results as shown in the previous chapter rendered confidence in asserting the measurement used in this project was adequate for testing the constructs in the CM models and also the data collected through such measurement in the current project were reliable and valid. Nonetheless, this does not mean the measures are perfect. Future research should continue exploring better measures that can precisely operationalize the conceptualization of the CM models.

Research Questions

There are three research questions raised in this project. They are presented in chapter five. The first question is whether the CM models can be used to classify criminal propensity. Accordingly, three hypotheses were tested in order to answer this question. The first hypothesis posited there is no correlation among the three major dimensions of criminal minds. The testing result supported this hypothesis. No substantial correlations were found among the three CM dimensions (i.e., rationality, morality, and emotionality). The second hypothesis, on the other hand, was not supported well in that in each CM model no consistent correlation could be found

between criminal propensity and the three CM dimensions, when it was hypothesized there should be correlation. Although correlations were not found in model-specific analysis, some correlations were found when all CM models were combined. However the results warranted offense-specific interpretation, because the three CM dimensions had different bearings on different offenses.

The third hypothesis is a crucial one, since it directly examines the relationship between criminal propensity and the CM models. As presented in chapter six, Table 27 clearly shows the five criminal propensities were not distributed across the eight CM models evenly. For example, sexual assault was more salient in CM Model 6 but was completely absent in CM Model 4. All criminal mind owners in Model 6 were prone to violence but only very few of them were prone to digital piracy, while the opposite was seen in Model 4. The results apparently suggested the CM models indeed capture the variation in criminal propensity.

All in all, the hypothesis testing has addressed the first research question in an affirmative direction. It does look like the CM models can be used to classify criminal propensity. The results also confirmed that criminal propensity does not lead to all crimes, because in the current study more than half of the respondents reported a propensity for digital piracy but less than 50% of them reported a propensity for the other four offenses, especially sexual assault (11.4%). This is to say different types of criminal propensity lead to different offenses and the eight CM models may just represent the different types of criminal propensity.

As for causality, it was not the purpose of this project. Besides, according to the test for correlations, it seemed that causality needs offense-specific analysis. This was corroborated by testing hypothesis four. In testing hypothesis four, it was found that criminal mind owners tended to have lower morality and higher emotionality,

whereas rationality could work in both ways, depending on the offense in question. Hence, the CM models could be useful in classifying criminal propensity that consists of multiple offenses, but they might not be suitable for explaining such criminal propensity.

Another research question raised is whether digital piracy and stealing are essentially the same crime. In other words, do digital piracy and stealing represent the same criminality? In response to this question, the CM models were used to define criminality. It was defined that if the propensity for digital piracy is always accompanied by the propensity for stealing and vice versa, then they should be considered representing the same criminality because the underlying mindset is the same. The fifth hypothesis was proposed to address this research question. The analysis disclosed these two criminal propensities were significantly correlated. Almost 80% of the people who had a stealing propensity also had a propensity for digital piracy. In contrast, only 48% of the people who had a propensity for digital piracy had a propensity for stealing. Based on these findings, there is no denying that stealing and digital piracy are similar, but they are not exactly the same crime. While stealing will likely entail digital piracy, digital piracy does not necessarily implicate stealing. A closer examination seemed to suggest low morality plays a more important role in stealing than in digital piracy and thus it could be the factor that distinguishes digital piracy from stealing. This however does not mean digital piracy has nothing to do with morality.

The last research question asks whether justifying digital piracy infers a lower level of moral judgment. Hypothesis six corresponds to this question, and the analysis result showed that justifying digital piracy could actually be a result of low morality, for moral justification for digital piracy was significantly correlated with general

morality in a negative way. Nevertheless, this does not apply to people who had only digital piracy propensity. These criminal mind owners' justification for digital piracy was not correlated with morality and their digital piracy propensity was also not correlated with morality. Simply put, low morality was irrelevant to their criminal propensity.

Implications

Theory

A central postulation of the CM models is people are not all the same. Likewise, criminals are not all the same. Criminological theories as good as they are may need to take the type of criminal propensity into account before they can be applicable. The CM models may be useful in this aspect. Prior to applying the theory, perhaps criminals should be classified first according to the makeup of their criminal propensities. Even if they committed the same crime, if the underlying criminal minds are not the same, they should warrant different theories for explanations. Can we explain a thief having low morality in the same way as we explain another thief having high morality? Should we assume all drug users are the same when only some of them have a propensity for violence? It is fair to say that instead of striving for a general theory, the CM models would direct more attention to individual differences, and the differences being addressed here are the underlying mindsets, which have been termed criminal minds in this project. We may not need any more new theories but maybe we ought to use the existing theories with more specificity, if criminologists truly want to theorize about criminal behavior.

In chapter 3 and chapter 4, it has been demonstrated how the CM models can work with any theories, because the CM models do not intend to explain etiological factors that contribute to the formation of criminal minds. In this study some personal

factors were tested for exploratory purposes, and the findings showed that gender, race, IT background, and education all possibly influence criminal propensity. There might be some explanation for each one of them, but this is not the focal point of the CM models. Even if there is no such influence, it still does not affect the CM models because the CM models are not concerned with the causation of criminal propensity. The CM focuses on the final product regardless of the causes. Unlike most criminological theories, the CM argues the final product is criminal propensity (i.e., criminal minds) as opposed to crime itself. This position may curtail the chance for the CM to develop into an independent theory, but it allows the CM models to be incorporated in any theory testing or integration. This is the value of the CM models in theory development. They do not compete, but rather they help classify the subjects for better scrutiny.

Policy

The reason why criminologists study crime can vary. Supposedly, one of the principal reasons is to prevent crime. If this is true, identifying criminal propensity is crucial in that people with criminal propensity are potential criminals, and in terms of crime prevention, these potential criminals are the ones that need to be dealt with. To effectively prevent potential criminals from committing crime without wasting resources, it is vital to recognize the type of risk beforehand. The CM models fit in this picture seamlessly, for they classify criminal propensity and provide a scheme for estimating the risk. For instance, based on the findings in the current study, a criminal mind owner of Model 4 poses a huge risk in digital piracy and stealing, but is unlikely to commit physical violence or sexual assault. In contrast, a criminal mind owner of Model 6 would be a much bigger risk in violent crimes.

Indeed, it is inappropriate to accuse people when they have not committed a crime. Therefore, what is proposed in this manuscript does not mean to incriminate everyone who has a criminal mind. It simply presents the fact that with a criminal mind, the possibility for engaging in certain criminal activity is indelible. Practically, the CM models may best serve as a risk assessment tool in preventing recidivism, targeting known offenders. Rather than fixating on merely what the offender has done, crime prevention should be aimed to stop all kinds of future offending. Even though we successfully stop a drug offender from using illegal drugs again, he can still be a threat if he also possesses a propensity for other crimes. It could be inefficient and dangerous for the criminal justice system to handle criminals based simply on their salient offenses and ignore the potentiality for other crime, when these people apparently already manifest criminal propensity. The CM models offer a framework to inspect whether this propensity leads to other crimes and what the other crimes could be.

Moreover, rehabilitation is an important strategy for crime prevention. To supply effective treatments, understanding the offenders is unquestionably essential. People can commit the same crime for different reasons. It could be fallacious if the same treatment was imposed on offenders solely because they committed the same type of crime. If their underlying mindsets are of difference, then they might need to be treated respectively. Further, perhaps the efficacy of rehabilitation can only be found in certain CM models, while in other models punishment may be more effective in preventing future crime. The bottom line is criminals are not all the same. Treating them all in the same way is problematic, albeit some people might prefer the seeming equality. On the other hand, classifying them based on the type of criminal minds can have merit. Although the CM models do not offer a good explanation of causation,

they can at least signify a direction. For example, if an offender belongs to CM Model 1, then it could be a waste of time trying to instill a moral sense into him, since CM Model 1 already requires a high level of morality. By the same token, if someone shows low emotionality, it does not make sense to send her to anger management programs.

Simply put, the CM does not tell us why or how these criminal minds were formed, but it does show us what kind of offenders we are dealing with at hand. Policies can be enacted to address the criminogenic factors that might have contributed to the presence of criminal minds at the beginning, or they can also address what is wrong with the offender right here right now. The CM models would be helpful in the latter attempt.

Research

Being the very first study on the subject, the implication for future research can be infinite. The most important thing is to keep in mind that it takes numerous studies to establish validity for any new ideas. Before a fair chance has been given to test a new framework, we should not discredit it simply because it does not match our ideologies. This prejudice will seriously impede the progress of a discipline. Conversely, claiming success based on one single study is premature. Hence, future research should ensue.

The current study found some support for the idea of classifying criminal propensity. To say the least, the variation within criminal propensity was quite distinct. Most people's criminal propensity does not lead to all kinds of crime. In this project with five offenses considered, only about 10% of the criminal mind owners had a propensity for all five offenses. The majority of their propensities were only related to one or two offenses. Built on these findings, future research needs to further explore

the differences between people who have a mindset to do it all and others who are prone to fewer crimes. They might belong to distinctive CM models. There is also a need to research career criminals and compare their criminal minds with occasional offenders'. The CM models may have been a good tool to distinguish them. In addition, in this study age did not appear to affect criminal minds, but there were no adolescents included in the sample. It is worth studying juvenile offenders' criminal minds to discover any pattern that might help predict and prevent their continuous offending in adulthood.

As mentioned above, the CM models can be incorporated in any studies aimed to test theories. Future research should consider this possibility. Also, as far as causality is concerned, future research might need to be conducted in an offense-specific manner to figure out exactly what roles rationality, morality, and emotionality play in each particular offense, as the findings in this study seemed to suggest the three CM dimensions do not always matter in the same way when different offenses are at issue. In fact, rationality, morality, and emotionality as proposed in this paper ought to be regarded as outcomes rather than causes. It can be improper to assert they cause criminal minds because they are part of criminal minds. They are caused by other etiological factors that the CM models do not intend to address. However, if interested the relationships between the etiological factors and the CM dimensions could be good topics for research as well.

More importantly, future research should continue pursuing better measurements that can capture criminal minds as defined in the CM models. There could well be other dimensions that might render a more precise classification scheme for criminal propensity, which was beyond the scope of this project but certainly is worth considering in the future. Reality is always complex. The CM is intended to

develop as a model that tries to acknowledge the complexity while retaining practicability in the meantime. Future research efforts need to be directed in such a direction.

Limitations

The data collected in this project inevitably entail some limitations in the analysis. To begin with, the sample was not randomly selected, so it does not represent any particular population. Hence, the analysis results do not apply to anyone outside the sample. Nonetheless, the results do support the principal proposition; that is, there is variation in criminal propensity. Even if the sample is biased, it still does not change the fact that not everybody's criminal propensity is leading to the same crime.

The second salient limitation is concerned with the survey methods. The survey items were used to measure rationality, morality, and emotionality in criminal minds, as well as criminal propensities. Due to the concern regarding the length of the survey, this project could not include more offenses. Had more offenses been included, the variation of criminal propensity could have been more conspicuous and perhaps more respondents would have been identified as criminal mind owners. This is a challenge because lengthy surveys usually are detrimental to the response rates and the validity of the responses.

Another limitation related to the CM models is the lack of explanatory power. In a sense, it is actually intended this way. It is commonsensical to posit low morality and high emotionality tend to cause deviant behaviors, but they are more of the outcome than the cause. Even if they did account for criminal acts, these attributes themselves need to be accounted for by other factors. As a matter of fact, in the current project, the majority of criminal mind owners did not possess low morality or

high emotionality. Hence, the CM models are not proposed to use rationality, morality, or emotionality to explain criminal propensity or criminal behavior. They are just a tool for classifying criminal propensity, hopefully a useful one. The real limitation thus resides in the insufficiency to claim usefulness based on only one project.

Conclusions

The CM models were introduced. The idea is fairly simply. If a person has ever seriously thought about engaging in any criminal behavior, this person is considered having criminal propensity. In the CM models, criminal propensity is called criminal minds. Criminal minds are composed of three major dimensions. The rational dimension deals with rationality that renders subjective estimation on the outcome before taking action. The moral dimension involves general morality which when being lower, enhances the chance for a person to view criminal behavior as not always immoral. The emotional dimension reflects emotionality. When emotionality is higher, it is more likely a person's behavior will be dictated by emotions or impulses. Each dimension is dichotomized to be either low or high. Given all possible combinations, there are eight CM models. Correspondingly, these eight models should represent eight major types of criminal propensity.

The current project was intended as an attempt to test this newly proposed framework that is aimed to classify criminal propensity based on the assumption that there is variation within criminal propensity. Some types of criminal propensity may be more violent than other types, or some types of criminal propensity may be related to a variety of crimes whereas other types are only related to a narrower range of criminality. The findings derived from this study may not be sufficient to prove anything but they did suggest the CM models indeed indicate some variation in criminal propensity. They showed that most people's criminal propensity is not

related to all crimes. In different CM models criminal propensity manifests itself in varied ways. Therefore, the first research question has been answered with affirmation. Yes, the CM models can classify criminal propensity, although it is not yet known whether this classification is really useful in practice.

Besides criminal propensity, another concept put forth in the proposal is criminality. In the CM models, two offenses represent the same criminality if the criminal propensities always come hand in hand. In other words, they are essentially the same crime in different names. To illustrate this point, digital piracy and stealing were compared in the current study. The results denoted some similarity between them but the conclusion was they do not represent the same criminality, for the reason that these two propensities did not always exist together. There is something different about digital piracy that makes it more prevalent than stealing.

Digital piracy was a focal subject in this study. Its moral issues have been inspected as well. After examining general morality and moral justification for digital piracy, it was revealed that the tendency to justify digital piracy is associated with a lower level of general morality. A lower level of general morality means a higher likelihood to justify criminal behaviors, but this might only be true when digital piracy propensity is accompanied by other offenses.

Unquestionably, the findings were subjected to some limitations but at the same time they generated promise and confidence for future research. What needs to be stressed is the CM models might not be the best classification scheme for criminal propensity. It is possible classifying criminal propensity does not serve well in classifying offenders for practical purposes. There may be more than enough reasons to discredit the CM models entirely. Nevertheless, the idea itself can remain valid. Even if the CM models are useless, it still has merit to pay attention to dissect

criminal propensity rather than assuming criminal propensity operates in the same way on every individual, not to mention the current findings seem to have lent the CM models some credibility.

In light of all the findings so far, more research is certainly warranted. After comparing the CM models with one another along with non-criminal mind owners, a lot more questions should be asked. Why did CM Model 8 manifest a specially high level of morality? What is special about CM Model 7, since it seemed to contain all kinds of crime? What is the difference between criminals with high morality/rationality/emotionality and those with low morality/rationality/emotionality? Are there people who have a propensity for only cybercrime? Do non-criminal mind owners really have no criminal propensity? There are many offense-specific as well as model-specific analyses awaiting future research. This project is just a beginning.

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Appendix A.

Questionnaire

Are you under the age of 18?

1. Yes
2. No (If yes, terminate the survey and say thank you!)

Please rate or answer the following statements by
1. Never; 2. Rarely; 3. Sometimes; 4. Usually; 5. Always

1. I try to act rational, so I do not need to respond emotionally.
2. How important is it for people to keep promises to friends?
3. I try to understand people and their behavior, so that I seldom respond emotionally.
4. When I feel happy or excited, I can control my behavior.
5. How important is it for people to keep promises even to someone they hardly know?
6. I try to overcome all interpersonal conflicts by intelligence and reason, trying hard not to show my emotional response.
7. How important is it for parents to keep promises to their children?
8. When I feel angry or very annoyed, I can control my behavior.
9. I try to do what is reasonable and logical.
10. How important is it for people to tell the truth?
11. I try to avoid most interpersonal conflicts by relying on my reason and logic.
12. When I feel confident or bold, I can control my behavior.
13. How important is it for children to help their parents?
14. I try to act rationally in all interpersonal situations.
15. How important is it for a person (without losing his or her own life) to save the life of a friend?
16. When I feel unhappy or miserable, I can control my behavior.
17. I try to think about the consequences before I do anything.
18. How important is it for a person (without losing his or her own life) to save the life of a stranger?
19. I try to calculate the risks and the benefits when making a decision.
20. When I feel greedy or selfish, I can control my behavior.
21. How important is it for a person to live even if the person doesn't want to?
22. I try to pursue pleasure and avoid pain.
23. How important is it for people not to take things that belong to other people?
24. When I feel afraid or worried, I can control my behavior.
25. How important is it for people to obey the law?
26. How important is it for judges to send people who break the law to jail?
27. I trust my feelings.
28. My behavior is influenced by my emotions.
29. I respond emotionally to people.
30. In important situations, I trust my feelings.

Instruction: Digital piracy in this survey is defined as unauthorized copying, using, or distributing software, music, or video.

Propensity (1. Strongly Disagree; 2. Disagree; 3. Neutral; 4. Agree; 5. Strongly Agree)

1. I may commit digital piracy in the future.
2. In the past, I have seriously thought about committing digital piracy.
3. I may steal things from others in the future, regardless of what the thing is.
4. In the past, I have seriously thought about stealing things from others, regardless of what the thing is.
5. I may use violence against another person in the future, other than self-defense.
6. In the past, I have seriously thought about using violence against another person, other than self-defense.
7. I may force someone to have sexual contact with me in the future.
8. In the past, I have seriously thought about forcing someone to have sexual contact with me.

9. I may use illegal drugs in the future.
10. In the past, I have seriously thought about using illegal drugs.

Moral_piracy (1. Strongly Disagree; 2. Disagree; 3. Neutral; 4. Agree; 5. Strongly Agree)

1. Digital piracy does not really hurt anyone.
2. Digital piracy actually increases users, which is a good thing for the companies.
3. Without piracy, most people still would NOT buy software or music anyway.
4. The software or music is too expensive, and piracy is just a result of that.
5. Most people are doing digital piracy, so it's not really a big deal.
6. Digital piracy is necessary for poor people to make lives easier.

Validity Criterion (1. Strongly Disagree; 2. Disagree; 3. Neutral; 4. Agree; 5. Strongly Agree)

1. I prefer to do things when I know the outcome will be satisfying.
2. I sometimes do things only because I feel like doing it, without thinking about it.
3. Criminal behavior is always morally wrong.
4. Digital piracy is morally justifiable.
5. I have never seriously thought about committing digital piracy, even if I know I won't be caught.
6. I have never seriously thought about stealing things from others, even if I know I won't be caught.
7. Other than self-defense, I have never seriously thought about using violence against someone, even if I know I won't be caught.
8. I have never seriously thought about forcing someone to have sexual contact with me, even if I know I won't be caught.
9. I have never seriously thought about using illegal drugs, even if I know I won't be caught.

Social Desirability (0: True or 1: False)

1. I'm always willing to admit it, when I make a mistake.
2. I always try to practice what I preach.
3. I never resent being asked to return a favor.
4. I have never been irked when people expressed ideas very different from my own.
5. I have never deliberately said something that hurt someone's feelings.
6. I like to gossip at times.
7. There have been occasions when I took advantage of someone.
8. I sometimes try to get even rather than forgive and forget.
9. At times I have really insisted on having things my own way.
10. There have been occasions where I felt like smashing things.

INFORMATION

Gender (radio button)

0. Female
1. Male

Race (pull down menu)

1. African American/Black
2. Caucasian/White
3. Asian/Pacific Islander
4. Hispanic/Latino
5. Other

Birth Year (pull down menu)

In what year were you born?

1910 – 2007

Education (pull down menu)
What is the highest education you have completed?

1. Less than high school
2. High school
3. Bachelor's degree
4. Master's degree
5. Doctoral/Professional degree (e.g. Ph.D., M.D., J.D. etc.)
6. Other

IT Background (pull down menu)
Is your job or major IT-related?

1. Yes
2. No
3. Not Sure
4. Not Applicable

Source (pull down menu)
Where did you hear about this survey?

1. Online forums
2. Someone's blog or homepage
3. Email from school
4. Email from friends
5. Other