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An Approach Integrating Deterrence and Rational Choice Theory

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AN APPROACH INTEGRATING DETERRENCE AND RATIONAL CHOICE THEORY

by

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Dedication

I would like to dedicate this thesis to my son Jax. He has been the light of my world for two and a half years. I hope that someday he can fully appreciate how much he has inspired me to strive for something more. This thesis has been a long journey. I hope that one day he can view this thesis and understand that with hard work and diligence, anything is possible.

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Abstract

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This study used an integrative theoretical approach. Criminological theories (deterrence and rational choice) were utilized in the theoretical framework for this study. A massive literature review was included in this study to help connect the theories being integrated. In the fall of 2010, approximately 505 students from the University of Memphis were used as the unit of analysis to examine their perceptions about offending, specifically, illegal parking. The respondents were all given a questionnaire that was used to measure two essential components of deterrence theory: certainty and severity of punishment. The questionnaire also asked the respondents about their perceptions of illegal parking issues on campus. This component assisted the researcher in testing rational choice theory as students underwent a cost/benefit analysis. Certainty and severity of punishment both proved to be factors that deterred the students from offending. However, students' perceptions about offending were not associated with students' actual offending patterns.

TABLE OF CONTENTS

Appendices

Chapter 1

Introduction

There is a movement in contemporary criminology to better explain and predict crime by integrating certain theories. Criminological theory provides a framework to guide a researcher to more accurate explanations and predictions of crime. Critics of criminology are quick to point out that there has yet to be a theory that can explain and predict all crime (Clarke, 1980; Gibbs, 1987). In fact, Edwin Sutherland, a pioneer of criminology, was often criticized by fellow sociologists for his emphasis on criminological theory. However, criminological theory does have the potential to explain key principles of criminality. The right approach must be discovered first.

The goal of this research is to integrate two closely connected theories in an attempt to better explain certain types of crime (those unrelated to passion). The theories that have been integrated in this study are derived from the classical school of criminological thought. The classical school of criminology was based on the assumption that criminal activity can be deterred through formal sanctions associated with punishment. Classical theorists considered the threat of punishment to be as much of a deterrent factor as actual punishment.

This integrative study examines the application of deterrence and rational choice theory simultaneously. Contemporary viewpoints are also applied in this study. The overall goal, after full integration of deterrence and rational choice theory, is to share a new outlook on the classical school of criminology. The theories themselves are not outdated; the theories have merely been associated with research that has cast a somewhat negative light on them. In fact, there are some researchers (Andenaes, 1975;

Paternoster, 1989) who are trying to use classical theories in different contexts compared to how researchers previously used the theories.

This study will use deterrence and rational choice theory to test whether the certainty and severity of punishment will deter individuals from committing an illegal act, in this case, illegally parking. Deterrence stems from society's intolerance towards certain behavior (criminal). Rational choice theory comes mostly from the concept of a cost/benefit analysis. It is assumed that humans are rational thinkers who delve into a cost/benefit analysis before participating in most activities, including their involvement in illegal behavior. For instance, before a person decides to purchase an item, he or she evaluates costs and benefits. If an individual deems the item to be more beneficial to him or her than the cost of the item, it is worth purchasing the item. There are exceptions, however, particularly when dealing with crimes of passion. This fact is taken into consideration. This research is beyond the scope of this instant to explain or predict crimes of passion.

The use of illegal parking is not new to the examination of deterrence theory. Chambliss (1966) examined faculty violation of campus parking regulations. The campus atmosphere before the study was carried out was defined as follows: the severity of punishment was incredibly low ($1) and the certainty of punishment was equally low (no means of regular enforcement). After a new set of sanctions were implemented (more certainty and severity of punishment), 35% of those who had been illegally parking on a regular basis refrained from doing so after the sanctions changed. Obviously, a level of restrictive deterrence was at work.

In this study, parking offenses at The University of Memphis are used to examine the conditions under which people are more likely to commit offenses. This study also tests the effect of certainty and severity in accordance with deterrence theory. After reviewing research on previous studies testing deterrence, it was found that celerity is not significant in regards to deterring individuals (Nagin & Pogarsky, 2001). In light of these findings, celerity will be omitted from this study.

Research Questions

This study is designed to address the following research questions: does the severity of a penalty deter illegal parking, does having certainty of punishment deter illegal parking, does being punished deter students from recidivating and parking illegally in the future, does the level of urgency for getting a parking spot make a difference in the decision to illegally park, and is student classification a factor in violating rules and regulations? Other factors considered in the analysis are gender, age, race, major, employment, residential status, and whether or not the student is a student athlete, and if so, for which sport. It is a common assumption that some students are treated more favorably when it comes to receiving a parking ticket. This controlling factor will allow for clarification as to the validity of that assumption. As a final consideration, does an individual's perceived likelihood of being caught matter in his or her decision to park illegally?

Chapter 2

Theoretical Framework

Deterrence

The two theories that are examined in this study come from the classical school of thought: deterrence and rational choice. According to Beccaria, crime occurs when the benefits of the crime outweigh the costs of committing a crime (as cited in Brown, Esbensen, & Geis, 2007). This statement by Beccaria is often referred to as the main point of focus derived from the classical school. Beccaria believed that the essence of crime was to harm society (Beccaria, 1764/1963). Beccaria also stated that it is better to prevent crime than to punish crime (Beccaria, 1764/1963). Deterrence was the prevention method that Beccaria discussed in his book *On Crimes and Punishments*. The threat of punishment should be used to manipulate behavior. There are three premises that must hold true in order for deterrence theory to have a solid framework. First, people are rational. Second, behavior is a product of an individual's free will. Lastly, people are hedonistic.

People who are rational use logic in their decision making process. The goal of reaching pleasure, as well as avoiding pain, is central to an individual's decision making processes. Therefore, there is a cost/benefit analysis that often precedes action when an individual is thinking about committing a crime. If the benefits outweigh the costs, an individual is more likely to offend than if the costs outweigh the benefits of committing a crime.

There are three principles of punishment that Beccaria noted as the trademark of deterrence theory: certainty, severity, and celerity. Beccaria stated that if the proper

manipulation of these elements were implemented, then crime could be prevented (Beccaria, 1764/1963). If people do not believe in the negative consequences for violating a law, then they are less likely to conform to legal mandates of the law.

Research has seemed to indicate that the most important of the three principles is certainty, particularly when the level of certainty reaches a critical level (Rowe & Tittle, 1974). If the level of certainty of punishment decreases, then the probability of law violations will increase. Severity is a major key principle as well. One point that Beccaria makes is central to the current study. Beccaria stated that the severity of punishment must be justifiable. He further states, "For a punishment to attain its end, the evil which it inflicts has only to exceed the advantage derivable from the crime…. All beyond this is superfluous and for that reason tyrannical." (Beccaria, 1764/1963)

There are two types of deterrence: general and specific. General deterrence is the focus when punishment is designed to alter the behavior of individuals who are not the target of punishment. The offender is used as an example of what could happen if other individuals choose to commit the crime. Specific deterrence focuses on the specific person who committed a crime. It is used to dissuade that person from committing future offenses.

Some contemporary criminologists (Cameron & O'Conner, 2002) have attempted to discredit classical deterrence theory. Currently, the field of criminology is dominated by sociological perspectives about crime (Chicago School of Thought). Labeling theorists are quick to dismiss deterrence theory. Deterrence theory states that punishment diminishes crime. On the contrary, labeling theory posits that punishment can increase crime. These theories seem to discredit one another. Either one of the positions is

correct or there is a medium to be achieved. In contemporary deterrence research, the punishment fitting the crime is believed to be of vital importance. Therefore, discrediting a theory on outdated preconceived notions may not achieve the best results.

Enrico Ferri (1901/1968), a positivist, stated that we have but to look within us to see that the criminal code is far from being a remedy against crime, that it remedies nothing. Barnes and Teeters stated that the claim for deterrence is belied by both history and logic (as cited by Brown et al., 2007). Reckless stated that deterrence does not prevent crime in others or prevent relapse into crime (as cited by Brown et al., 2007).

Another criticism of deterrence theory concerns the large number of people who are in prison for the third, fourth, or nth times. Recidivists seemingly demonstrate that deterrence alone did not work. However, deterrence cannot be totally disregarded as a theory because there may be just as many cases in which deterrence has worked. If a driver received a ticket on a certain road, the next time the driver is on that road he or she is less likely to speed. The driver will be more conscientious about speeding to avoid potential punishment.

Since deterrence is not easily observed, it is equally difficult to measure. Critics point to the people who are getting into trouble or have gotten into trouble. This is measureable. However, these theorists do not think about all the people who have not committed a crime or those who have committed a crime and have been punished once and did not recidivate. It is more challenging to measure whether deterrence was at work when deciding to commit a crime, or not commit a crime, than it is to measure some of the other criminological factors (socioeconomic variables and prior criminal history). When deterrence theory is examined, there is only one obvious way to say that it is

absolutely working. There would have to be a complete absence of crime. This utilitarian view is flawed. Therefore, critics should be not so quick to discard deterrence theory. Deterrence theory, when applied correctly, can be an effective tool in preventing crime. Since there is no way to get rid of crime, we must try to curb crime. It is known that certainty and severity of punishment deter some crime (Paternoster, 1987). Therefore, deterrence theory is useful.

There are also believers in rehabilitation who think that it should be the main focal point of reducing crime. However, Robert Martinson's (1975) summary of research became the driving factor of a strong anti-rehabilitation movement. Martinson's findings were summed up by this paragraph.

> We know almost nothing about the "deterrent effect," largely because "treatment" theories have so dominated our research, and "deterrence" theories have been relegated almost to the status of a historical curiosity. Since we have almost no idea of the deterrent functions that our present system performs or that future strategies might be made to perform, it is possible that there is indeed something that works – that to some extent is working right now in front of our noses, and that might be made to work better – something that deters rather than cures, something that does not so much reform convicted offenders as prevent criminal behavior in the first place. (Martinson, Kreager, Huizinga, 1975, p. 224)

Deterrence theory should be given another try. However, this time it should be applied as it was originally intended to be used by Beccaria. The punishment should fit the crime. There should be an stronger emphasis on crime prevention as Baccaria stated that crime prevention is the most efficient and effective way to deal with crime.

Rational Choice

Rational choice ties in with deterrence theory very nicely. Perceptions of the probability of punishment are analyzed in this theory. An individual's perception of anything, whether correct or not, is a driving factor that influences his or her actions. According to W. I. Thomas, "Individuals differentiated in what ways and placed in what situations react in what patterns of behavior, and what behavioral changes in situations?" (as cited by Timasheff, 1967, p. 178). Thomas also stated, "The behavior in the situation, the changes brought about in the situation, and the resulting change in behavior represent the nearest approach the social scientist is able to make to the use of experiment in social research…" Thomas was known for his research concerning individuals' perceptions in association with decision making.

Rational choice theory expands on deterrence theory in many ways. Also, the choices of potential offenders are considered as well as the choices of victims. Rational choice assumes that rationality is the driving factor in the decision making process. Rational choice theory is pertinent to victims of crimes as well. Willits and Wadsworth (2007) presented a paper that examined convenience store robberies between 1998 and 2005 in the state of New Mexico. Over 1,500 police reports were used to better understand offender and victim decision making processes. The narrative of the incident reports were helpful to the researchers in obtaining pertinent offender and victim actions that were associated with "success and failure."

There have been more variables incorporated when researching rational choice theory than there were with deterrence theory. This is probably due to the fact that rational choice is newer than deterrence theory. The type of crime plays a role in rational

choice theory. Individuals choose what type of crime to commit based on many factors. Planning starts to play a huge role in offending when rational choice theory is examined.

Rational choice is becoming one of the most researched theoretical premises. Michael Hechter and Satoshi Kanazawa (1997) found that in 1957 there were zero articles published in the American Political Science Review that utilized rational choice theory. However, in 1992, nearly 40% of all articles published in American Political Science Review used rational choice theory in some form or another.

Herrnstein (1990) stated that rational choice theory remains unequaled as a normative theory. Thus, all academic disciplines dealing with behavior increasingly rely on the idea that humans tend to maximize utility. Many areas of study within criminology have been formed by using the rational choice theory. Victimization, defensible space designs, crime displacement, hot spots, and routine activities have all been researched with the assistance of rational choice theory. Every action is met with the perceived reaction that the individual will have to deal with. It is the perceived act versus the perceived consequence that determines one's cost/benefit analysis, not the actual act versus the actual consequence.

Crime prevention is a relatively new term in the realm of criminology. Rational choice theory is deeply embedded in the roots of all research associated with crime prevention and crime control policies. Cornish and Clarke (1987) examine this dynamic by developing the concept of "choice-structuring properties." Choice-structuring properties include opportunities, costs, and benefits. The analysis of crime displacement is observed with particular attention to rational choice theory.

Boudon (1998) wrote an article incorporating some of the researched limitations of rational choice theory. Here is an example: One of the main benefits of rational choice theory is "rational action is its own explanation." However, some would argue that actions are not rational. A postulate in rational choice theory is that individual action is instrumental. Boudon goes on to say that many sociologists have researched and found that all individual action is not instrumental. Boudon offers his solution to this criticism:

> One may promote the generality of Rational Choice Theory by supposing that actions that appear to be noninstrumental are actually instrumental *at a deeper level*. This conversion from noninstrumental to instrumental is obtained by introducing the postulate that, contrary to appearances, beliefs are the product of self-interest. (p. 818)

Chapter 3

Literature Review

Analysis of Perceived Danger

A study by McCarthy and Hagan (2005) examined danger. Specifically, their study looked at the role that perceptions about danger played in association with involvement in theft, drug selling, and prostitution among homeless youth. The hypothesis in McCarthy and Hagan's study said that perceptions of crime's potential danger influence offending. A large portion of victims of crime fight back against their assailants. Some offenders often did not commit a crime due to fear of physical harm being done to them. Conversely, some offenders said that they committed the crimes because they did not feel as if their victim posed any danger to them at all. In accordance with deterrence theory, the violence that sometimes ensues during a crime can be more certain, severe, and swift than the actual legal sanctions for committing the crime in the first place. The researchers in this study argue that some people incorrectly included many factors about committing a crime in the same cost/benefit analysis. McCarthy and Hagan said that the perception of danger is a different analysis altogether when compared to the perceptions about a crime's excitement, profit, or other considerations.

This was not a new idea. A classicist by the name of Jeremy Bentham said that danger played an important role in the "hedonistic calculus" people use in making decisions (McCarthy & Hagan, 2005). Bentham said that danger is nothing but the chance of pain (Bentham, 1789/1996, p. 144). Also, researchers have to consider that not all cultures have the same outlook on pleasure and pain. However, physical harm may be one of the only consequences that (nearly) all social groups and cultures agree is

undesirable (Jaeger, 2001, p.88). In virtually all societies, physical harm to any human being is seen as a negative action.

McCarthy and Hagan's (2005) study differs from many other related studies because they do not use arrest, incarceration, other state penalties, or other formal sanctions as measurement tools for perceptions of a crime's cost. However, when economic and social marginalization minimize a person's ties to normative society and can encourage the view that crime is a legitimate means for meeting someone's goal (McCarthy & Hagan, 2005), formal sanctions do not have as high of an impact because these individuals do not have a social stigma to avoid. Therefore, the threat of danger may be the only thing preventing some types of offenders from committing a crime.

McCarthy and Hagan took data from a study of Toronto and Vancouver, Canada, street youth in 1992. The respondents all came from different types of service agencies and street locations where the homeless are often found. Four hundred and eighty-two youth filled out a self-report questionnaire. There were three waves of data, with only 53% completing all three waves. The independent variable was the perceived danger of various crimes. One of the cost variables measured the perceptions of the likelihood of formal sanctions for an offense. Another cost variable asked for perceptions about the unacceptability of particular crimes. Also, the perceived potential return from a crime was asked. There were a large variety of control variables including family background, parental unemployment, and maternal drug addiction. There were three dependent variables: frequency of committing theft, drug selling since leaving home, and number of times the respondent sold sex since leaving home.

The results confirmed the author's expectations (a rational choice approach was taken in regards to most of the crimes). There were many examples of accounts of physical hazards of offending. Victim retribution was a common theme, especially with theft crimes. Some offenders even mentioned other perceived physical threats that had nothing to do with people. Some offenders brought up dogs and their fear of being bitten. Police brutality seemed to be a deterrent as well. Some offenders reported being attacked by their own clients, especially those who sold sex.

It was clear by these researchers' findings that a rational choice approach was taken by offenders when deciding on whether or not to commit a crime. Perceived costs and benefits are analyzed by offenders before they commit themselves to illegal activity. Danger and physical harm were also considered when offenders were thinking about committing a crime.

These researchers clearly highlighted the value of perception in relationship to a cost/benefit analysis. Danger means different things to different people. Thus, the analysis will be different for everyone. However, there is one constant. An analysis will take place during these types of crime. The next research topic looks at two postulates of deterrence theory, certainty and severity.

Threat of Punishment: Likelihood or Severity?

A study by Cook (1980) examined three questions. First, what factors influence the rate at which active criminals commit crimes? Second, which dimension of the threat of punishment has a greater deterrent effect- likelihood or severity? Lastly, what effect does the threat of punishment for one type of crime have on involvement in other criminal activities?

As Cook (1980) stated, “The core concern of deterrence research has been to develop a scientific understanding of the relationship between the crime rate and the threat of punishment generated by the criminal justice system.” Cook made a good argument in trying to combat deterrence critics. Critics are quick to discount deterrence theory because they believe the criminal justice system has little impact on crime rates. If that is in fact true, why do we not just do away with the police and eliminate all illegal sanctions? One might say that crime would be rampant. Therefore, there is a deterrence effect. The question should not be if deterrence has an effect, but what is the effect deterrence plays in society? Deterrence has a role to play, whether formally or not.

There is one general consensus in society when talking about criminals. Most people do want to see criminals punished. The question is to what degree should they be punished as appropriateness dictates? This question is greatly hindered by yet another question. How do we accurately assess the marginal deterrent effects of changes in the certainty and severity of the punishment? This factor is not easily measured or accounted for in research.

There was one study of New York City subways in which large increases in police patrol activity were effective in reducing robberies (Chaiken, Lawless, & Stevenson, 1974). The increase in the likelihood of arrest for attempted airline hijacking that resulted from the airport security measures adopted in 1973 almost eliminated this type of crime (Landes, 1978).

Cook (1980) talked about a rational potential criminal. He said that an increase in the probability or severity of punishment for a particular type of crime, or both, will reduce the rate at which that crime is committed, other things being equal. Potential

criminals will weigh in a cost benefit analysis, and take advantage of a criminal opportunity only if it is in their best interest to do so. If their perception of the benefits and costs of committing a crime are unfavorable to them, then they will abstain from committing the illegal act in question.

Cook (1980) looked at reasons why individuals responded differently to equivalent criminal opportunities. Individuals differ in their willingness to accept risks. Individuals differ with respect to "honesty preference"- the strength of their preference for behaving in a law-abiding manner. Individuals differ with respect to their evaluation of the "profit" to be gained from a crime. Individuals differ in their objective circumstances: their income, the value they place on their time, their skills in committing crimes successfully and evading capture, and their reputation in the community. All of these factors are valued differently by individual persons. Therefore, the issue becomes a little more complex.

Cook (1980) examined the visible presence of enforcers. He said, "The proximity of police emits a potent signal that the probability of arrest for a crime committed in the immediate vicinity is high" (p. 223). Cook talked about the effects that security guards have on deterring would-be robbers. When the chance of apprehension increases the likelihood of offense decreases.

Cook (1979) developed a model that simulated the criminal behavior of a population of robbers. There were three main features of this model. First, at any time, a robber's perception of arrest and punishment is influenced by his own recent experience and that of a few "friends." If his and his "friend's" recent experiences went well, then their perception of getting caught decreased which made actually committing the crime

more amenable to him. Second, even if the true effectiveness of the system remains constant, there is considerable turnover among active robbers: robbers are deterred and "undeterred" according to their own experiences and those of their friends. Lastly, an increase in the true effectiveness of the system results in a corresponding increase in the mean of robbers' perceptions of effectiveness, and an increase in the number of robbers who are deterred.

Cook (1979) describes the vast majority of the criminal population as opportunistic with respect to property crimes. Individuals see an advantage point and make the best of it. The key is to try to eliminate as many of the opportunities for criminality as possible. There were two limiting factors derived from Cook's study: the opportunity cost of time and the effects of increased income on the willingness to take risks. CPTED (Crime Prevention Through Environmental Design) is derived from these principles.

Cook's (1979) study was a massive literature review in which he focused on deterrence and rational choice studies. He analyzed the findings from all the studies and gave critiques where he thought the studies could have been improved. His conclusions derived from all of the sources studied gave him basis for his ideas on threat of punishment.

These researchers examined certainty and severity of punishment to gauge which is more important. Cook's (1979) research suggested that when offenders have a heightened since of certainty of punishment, the likelihood of offending drops substantially. The next section looks at classical criminology in a new light.

The Revival of Deterrence: General Prevention

A study by Andenaes (1975) reviewed literature to describe a revitalized approach in deterrence theory. Andenaes talked about how for many years deterrence theory was not highly thought of in the field of criminology. In the middle of the 1960s there was a massive amount of literature published that gave a slightly different outlook on deterrence theory. This research implied that maybe deterrence theory should be revisited in the search of explaining and predicting crime.

For the greater part of the twentieth century, rehabilitation and treatment have been the dominant approach in criminology. Andenaes points out that these approaches were just wishful thinking. We have yet to find a way to rehabilitate offenders. Treatment has made very little difference in the rate of recidivism. We do not know what the proper time frame is to release an offender so that he or she does not recidivate. Also, many people point to the fact that once humans are grown they are set in their ways, both positive and negative. Therefore, some people view rehabilitation as a waste of time and money. These people believe that if children are not prevented from being criminal then they will never really be "fixed" as an adult. Also, some believe that there is an "aging out of crime" process that takes place. The problem with this notion is that the damage is already done.

For many, deterrence theory has always had such a negative connotation to it. Whenever people hear the word deterrence, they automatically think of harsh punishment. Deterrence has been chastised as being primitive and brutal. However, deterrence is not so simplistic. The threat of punishment can be just as big of a factor in a cost/benefit analysis as the actual punishment. Andenaes looked at two primary

questions. How much new insight have we gained? How useful is this insight for purposes of criminal policy?

Economists have been the driving force behind the new deterrence approach. They have added two aspects to the field. First, the economists assume that crime is the outcome of a rational choice. They believe that the reduction of crime would follow an increase in the costs of crime. Secondly, economists have used an application of non-experimental, statistical models and methods.

General deterrence theory has always been associated with three principles, certainty, severity, and celerity. In this study by Andenaes (1975), there is a new principle entertained. The perceived legitimacy of the criminal justice system and of the particular statute under examination is said to be a factor in criminality as well. This new "fourth deterrence principle" may be the most important yet.

Andenaes (1975) hammered home the concept of the threat of punishment instead of actual punishment. He said, "If the threat itself is 100 per cent effective, there will be no violation" (p. 342). He said that deterrence theory should not be discredited on a simple usage of inaccurate terminology.

Andenaes (1975) talked about the problems with "change in legislation" research. These are studies that have to be comparisons over time. The studies are a sort of before and after research design. First, it is difficult to identify the impact of the change among all the other factors which have been involved at the same time. Secondly, there is a huge amount of crime that is simply not reported. The usage of victimization studies must be implemented to attempt to supplement data. Modern research has started doing

this but it is still relatively new to research and should allow for much higher "generalizability" of research findings in the future.

Andenaes (1975) said that survey research was a good way to measure general prevention. Collecting data on public perceptions and beliefs about the criminal justice system seemed to be a sensible way to measure the effect of the threat of punishment. Andenaes talked about one of the best known studies on public awareness by Miller et al. (1971). The level of awareness in the general population concerning the maximum penalties for different crimes was very low. If penalties are to deter, we must assume that members of society know what the penalties are (Miller et al., 1971). If the knowledge of the penalties is poor, deterrence cannot work.

These researchers show a new outlook on deterrence theory. There was some research unfavorable to the classical school of criminology. This led to an increase in the rehabilitation movement in criminology. However, the research associated with this movement has been negative as well. Therefore, it is only fair that classical theories be reexamined and be made applicable again. The next section of research examines choice. To offend or not to offend, that is the question.

Deterrence and the Rational Choice Model: Imperfectly Informed Choice

Paternoster's (1989) study began with an overview of deterrence theory's three propositions: certainty, severity, and celerity. Paternoster criticized classic and contemporary deterrence theorists for not specifying the specific offending decisions that are expected to be affected by subjective assessments of the certainty and severity of punishment.

Paternoster (1989) stated that the problem lies in the fact that deterrence researchers have not recognized that persons make several kinds of offending decisions that may be differentially affected by a given set of explanatory factors. The decision to participate in a crime comes first. Paternoster said that deterrence researchers have to determine the effect of sanction threats for a group of people. Also, why do some commit an offense and others do not during a given period of time? The decision to participate or not is measurable. Some call this the "prevalence of involvement" (Blumstein & Graddy, 1982). Studying non criminals may lead to important information that we are missing.

Paternoster (1989) referred to potential offenders who have previously not offended and those who have already committed an offense. Deciding whether to offend or not is the focal point. This is called a current participation decision. There are those with no previous offense history who decide to offend for the first time. This is called an initial participation decision. The next decision concerned whether or not a person repeats offending. This is called a continuation decision. This continuation decision is what drives all of the research based on why people recidivate.

Paternoster (1989) explained the rational choice model of offending in this way. People make conscious decisions to offend based upon information about offenses and decisions which have outcomes they believe will be beneficial or profitable to them. The problem is that people are not making an informed choice. If their perceived calculation in their cost/benefit analysis is wrong, then their conclusion derived from the analysis will be incorrect also.

There are several background factors that could potentially influence the decision to offend. The strength of affective ties is one factor. Another factor is the cost of material deprivations or investments made in conformity. Supportive social groups and opportunities for offending play a role. Informal social costs and perceptions of formal legal sanctions can also sway the decision to offend. Lastly, moral beliefs about the appropriateness of such actions can be a factor.

Paternoster (1989) said that there are other features of the rational choice model that should be noted. First, it is assumed that although all offending is based upon informed choice, the specific informational factors that affect such decisions vary by offense. Secondly, it is assumed that the magnitude of the effect for each of the factors may be different not only for different offenses but also for different types of offending decisions. Lastly, although each of the specified explanatory factors is presumed to affect the participation decision at different levels, it cannot be specified in advance which factors most strongly affect which decisions and each decision must be separately modeled.

The data for this study came from students who were attending nine public high schools in and around a mid-sized southeastern city. Confidential questionnaires were administered to all 10^{th} grade students at the beginning of the 1981-1982 school year. Over 99 % of the 2,700 students agreed to participate. A follow-up questionnaire was given to the same students on two subsequent occasions: once their junior year and once their senior year. Forty-six percent of the students completed all three years of questionnaires and were the data analyzed for their study.

The independent variables were categorized into seven different areas of a rational choice perspective: background factors, affective ties, material considerations, opportunities, informal sanctions, formal sanctions, and moral beliefs. The dependent variables were the student's involvement in four common delinquent offenses: marijuana use, underage drinking, theft, and vandalism.

There was one clear finding from the study. The decision to offend for the first time is unrelated to the effect of perceived certainty and severity of punishment. Those who were more likely to participate in the four delinquent acts were males who have weaker moral inhibitions against offending, males who experience lax parental supervision, and males who were more likely to socialize with peers than those who continued to abstain.

There were only two variables that had a significant effect on three of the four offenses: gender and parental supervision. The decision to drink liquor under age was affected by opportunity considerations: social activities, parental supervision, and peer sanctions. However opportunity factors did not have an effect on the two forms of opportunity factors.

Marijuana use and vandalism were consistent with the deterrence doctrine. A change in perceived certainty was significantly related to the decision to desist from offending for vandalism. Changes in moral tolerance of an act were associated with the decision to quit offending.

Paternoster made three assumptions to try to explain his findings. First, the juvenile justice system is generally lenient in the imposition of meaningful sanctions on even the most serious offenders. Secondly, the offenses examined here are minor ones

which these youths could reasonably expect would not carry heavy sanctions even if they were arrested. Lastly, the deterrent effect of formal legal sanctions may be dwarfed by the "nonlegal" consequences of apprehension and arrest and by such considerations as moral beliefs.

These researchers make an important distinction involving choice. People do make choices based on information. However, the information is not always accurate and is sometimes biased. This leads to a decision being made that has a higher chance of error or mistake. The next section of research examines a rational choice diagram.

Perceived Risk and the Rational Choice Model

A study by Matsueda, Kreager, and Huizinga (2006) looked at the perceived risks of committing crimes. An important subjective cost of crime is the perceived risk of formal sanction. The question is do individuals with higher perceptions of the risk of punishment commit fewer criminal acts?

Some research suggested that perceived rewards dominate costs in criminal decision making, presumably because criminals discount formal punishment due to its long time horizon (Piliavin, Gartner, Thornton, & Matsueda, 1986). Rational choice theory assumes that risk perceptions are rooted, at least to some degree, in reality.

Matsueda et al. (2006) used a Bayesian learning model in this study. It is based on Bayes' probability theorem. This theory states that individuals begin with a prior subjective probability of an event, such as the risk of arrest, based on all the information they have accumulated to that point. New information is then collected. This new information is used to update their probability estimates. This is called the posterior probability.

Matsueda et al. (2006) specified three sources of information from which individuals update their perceptions of risk of arrest. Some sources of information come from their own experiences with offending, including getting arrested and avoiding arrest. Their knowledge of friends' experiences with offending would be another source. Lastly, their social structural location can be a source. For example, different socioeconomic groups may not share the same collective efficacy or perception for particular crimes.

The first hypothesis in this study had to do with prior perceived risk. Future perceived risk is a positive function of prior perceived risk plus any updating. Another hypothesis had to do with Bayesian learning based on personal experience with arrest. Net of prior risk, experienced certainty of arrest is positively and monotonically associated with perceived risk of arrest. Hypothesis 3 had to do with the Bayesian learning based on personal experience with crime. Unsanctioned offenses are negatively and monotonically associated with perceived risk of arrest. Hypothesis 4 had to do with the shell of illusion. Compared to experienced offenders, naïve individuals overestimate the risk of arrest. Hypothesis 5 had to do with Bayesian learning based on vicarious experience. Delinquent peers are negatively associated with perceived risk of arrest. The sixth hypothesis had to do with social structure and perceived risk. Perceived risk is shaped by location in the social structure. Hypothesis 7 had to do with deterrence. Crime is reduced by perceptions of greater risk of formal sanction weighted by perceived utility of the sanction. Hypothesis 8 had to do with opportunity costs. Crime is reduced by opportunity costs, including schooling and work. Hypothesis 9 had to do with psychic returns to crime. Criminal behavior is associated with perceived probability of

excitement and social status from crime weighted by perceived utility of the excitement or status. Hypothesis 10 had to do with criminal opportunities. Criminal behavior is increased by perceptions of opportunities to get away with crime. Hypothesis 11 had to do with limited rationality and discounting. Criminal behavior is associated with perceptions of immediate criminal opportunities and rewards, but not by perceptions of future punishment. The last hypothesis had to do with instrumental versus expressive crimes. Rational choice and deterrence have stronger effects on theft than violence.

The data came from the Denver Youth Survey. The total sample included 1,459 respondents. Risks, returns, and opportunities were measured from the youth reports. There were two variables measured with the respect to perceived risk of arrest: experienced certainty and unsanctioned offenses.

On average, females believed the chances of arrest for theft were 11% higher than males did. Each year of age was associated with a decrease of 4% in perceived risk for theft and 1% for violence. Youth with siblings perceived a lower risk of arrest for violence.

On average, as unsanctioned offenses increased, certainty of arrest declined. Compared to naïve offenders, high offenders (10 or more offenses) perceived the risk of arrest for violence about 10% lower. Delinquency by peers was associated with lower perceptions of certainty of arrest.

Males and high impulsive individuals engaged in more theft and violence. Older youth reported more violence. Blacks engaged in more violence but not theft. Prior violence and theft exerted strong lagged effects on future violence and theft. Youth who liked to do daring things were more likely to steal and fight.

In conclusion, Matsueda et al. (2006) found support for deterrence and a rational choice model. When dealing with crimes unrelated to passion, the rational choice model seemed to prevail. Furthermore, Matsueda et al. said that they believe that the rational choice model could be complementary to any institutional theories. This notion further fuels the progression of criminology into integrating theories to better explain and predict different types of crime. An example of a rational choice model is Figure 1.

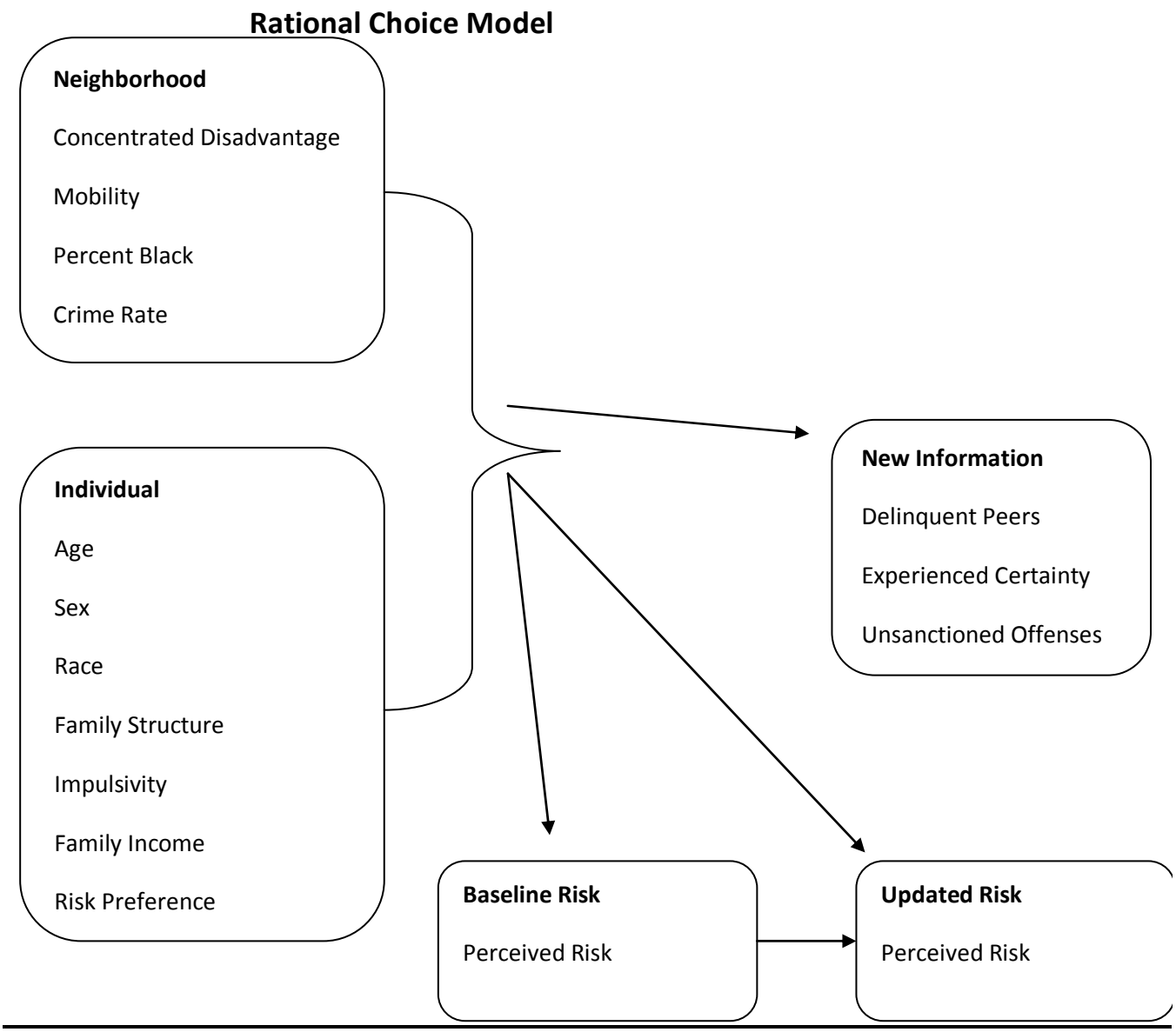

Figure 1

Source: Matsueda, Kreager, and Huizinga (2006)

Matsueda et al. (2006) used a Bayesian method of analysis to describe an individual's cost/benefit analysis. The chart above is an example of how many factors help influence someone's decision making process over a given time. Special attention should be given to the perceived risk portion of the chart. This perceived risk is commonly updated to create an updated perceived risk. This shows the cost/benefit analysis changing literally to the very second of committing a criminal act. The next section of research examines a rational choice approach in accordance with curbing airline hijackings.

A Rational Choice Model: Airline Hijackings

A study by Dugan et al. (2005) looked at attempted hijackings that occurred around the world. The researchers used continuous-time analysis to estimate the impact of many counter hijacking interventions. The analysis included different ways in which the offenders were motivated. Regression analysis was used to show some of the predictors of successful hijackings.

A rational choice model was used to guide their research questions. The researchers wanted to know if the hazard (risk) of a new hijacking attempt increases or decreases when the certainty of apprehension was increased. Will the hazard of new hijacking attempts increase shortly after earlier attempts? Will the hazard of new hijacking attempts be greater following a series of successful hijackings?

The data in this study came from United States and foreign countries' airports from 1931 through 2003. Supplemental data were also added by an additional 39 hijacking cases that were identified from publicly available data from RAND. The hijackings were divided into two types: terrorist and other related hijackings.

After the metal detectors were implemented, hijacking attempts went down, except for those related to terrorism. The hazard for another hijacking decreased significantly if the current and previous hijackings were attempted in a short period of time. If the three most recent events were primarily successful and close together, the hazard of a new hijacking attempt increased for the full sample as well as for the non-United States and non-terrorist hijackings.

The hazard of hijacking decreased substantially after this policy was enacted for both Cuban and United States' flights. Nearly three out of five flights diverted to Cuba originated from the United States.

Policies and stricter punishment seemed to have an effect on hijackers, except those with terrorist ideals. If the certainty of apprehension was increased, the chance of another hijacking attempt went down. The rate of hijacking went up significantly following a series of successful hijackings but declined following a series of unsuccessful hijacking attempts. Metal detectors and increased surveillance significantly reduced the number of non terrorist related hijacking attempts.

One limitation in this study was the fact that the offenders' motivations were not known in all the cases. These motivations would have been useful to know because how the offenders viewed the policy changes could have been a factor in their reasoning for committing the act or not. Also, with the policies changing at about the same time, it makes it hard to tell which had the largest deterrent effect.

This research discusses some of the methods used by airlines to decrease hijacking attempts. The methods are very closely related to deterrence research. When

the airlines increase the certainty of hijack detection, the attempts decrease. The next section of research examines offenders' decision making.

A Rational Choice Model: Offenders' Decisions

A study by Clarke and Cornish (1985) said that criminal behavior is the outcome of an offender's rational choices and decisions. When this approach was utilized, it had the most immediate payoff for crime control efforts aimed at reducing criminal opportunity. Clarke and Cornish chastise theorists who choose to ignore the offender's decision making.

According to Taylor, Walton, and Young (1973), a social theory must have reference to men's teleology – their purposes, their beliefs and the context in which they act out these purposes and beliefs. Thus men rob banks because they believe they may enrich themselves, not because something biologically propels them through the door.

Residential burglary was studied in relationship to the opportunity structure for crime in a study by Cohen and Felson (1979). As the increased probability for electronic goods went up, so did the increases in burglary. Also, the increase in numbers of unoccupied houses increased the number of burglaries. When the opportunity went up, so did the criminal act.

The economists believe that it is the importance of the concepts of rewards and costs and their associated probabilities that are the most essential key in explaining criminal behavior. This economic rationale is also said to be a good explanatory weapon for the phenomena of displacement and recidivism.

The view of economists is one that says criminals are "deterrable." Economists argue that if criminals had to work harder at some types of crimes they would eventually

feel that committing the crime is not worth the trouble. Unemployment is said to be a huge factor in crime. If people are less likely to have money, then they are more likely to innovate illegal means of making their money.

Some psychological studies have shown that even professionals sometimes do not handle information perfectly at all times to make the best rational decision (Wilkins & Chandler, 1965). If professionals who are knowledgeable in their own field of study do not always make the best decisions, then it is logical to infer that people sometimes do not make the best decisions.

Clarke and Cornish (1985) said that there are two fundamental aspects of crime that must be contemplated: explaining the involvement of particular individuals in crime and explaining the occurrence of criminal events. Explaining the occurrence has been somewhat neglected in criminological research.

When looking at crime through a rational choice perspective, the distinctions between the two aspects of crime have to be made and analyzed separately. For some offenses, like shoplifting, it might be easier to regard the first offense as determined by the multiple factors identified in criminological theory.

Clarke and Cornish (1985) also talk about the need for rational choice models to be specific to individual crimes. As long as criminologists try to explain crime in a general way, they will get a general answer. Burglary, for example, should be divided into two different types: residential and commercial. The crimes may seem similar. However, there are different factors that can contribute to the potential attempt for each type of burglary.

The 1985 study by Clarke and Cornish was an in-depth qualitative review of a massive amount of research. Rational choice was examined in great detail. The authors tried to better define different types of rational choice models. The importance of this study is great due to the fact that rational choice is not a general approach in criminology. There are specific models that work for specific types of criminal behavior.

Rational choice theory is used again to observe offenders' decision making. Clarke and Cornish (1985) pay special attention to specific types of crimes. There is no cost/benefit analysis that is uniform in structure. The analyses differ between offender type and crime type. The next section examines deterrence theory and what deters criminals.

Restrictive Deterrence: NARC Identification

A study by Jacobs (1996) examined restrictive deterrence. Active street-level crack dealers were interviewed in field research. Dealers used perceived shorthand to determine whether buyers in question were "narcs." This study demonstrated how interactions among marketplace democratization, marketplace volatility, transactional brevity, and threats from law enforcement affect its complexity and refinement.

There is a strong case in this study for deterrence being a heavy influencer of a decision to commit a crime or not commit a crime. The researchers wanted to know what "red flags" do crack dealers look for when they are attempting to find a buyer? What are some of the "red flags" that give police away to the crack dealers? What are some of the tests that crack dealers use when they are not sure whether a prospective buyer is a cop or not?

The data gathered in this study came from interviews from forty active street dealers of crack cocaine who were working out of a medium-sized Midwestern metropolitan area within a central city with a population of 390,000. Respondents, on average, did not sell very large amounts of crack. The average crack sale was $20. The average monthly gross income for the respondents was $2,300. Respondents averaged selling crack about 5.5 days a week. The estimated number of sales per day per dealer was about 20. All respondents except four were unemployed. Their average grade completed in school was tenth grade. Thirty three respondents reported that they lived with relatives. Seven lived with friends. Thirty four were male. Six were female. All respondents were African-American. Their average age was a little over 20. All of the male respondents were active gang members. They all sold for personal profit and did not seem to be involved in any type of a "drug gang ring." Interviews were set up in a semi-structured format which allowed for further probing if needed.

A snowball sample was formed. The first five respondents were recruited by the researcher himself. Four out of those five became contacts and provided six additional respondents. Contacts were paid $20 for each referral they made. There were criteria that each respondent had to meet to be involved in the study. The respondents had to have "trafficked" at least 4 hours a day, several days a week, for at least six months, to several different customers per day, and grossed at least $1,300 per month.

One technique that the crack dealers used to differentiate the police from "legitimate" buyers was asking them to inhale crack smoke through a pipe. Another way was to give a smaller rock than paid for. The respondents said that true crack heads would make sure that they got what they paid for. Respondents said that cops were

unwilling to taste the crack by placing it on their tongues. Another way the dealers would use would be asking them who they knew in the neighborhood.

Most of the crack dealers were users as well. The ones who had been caught by police in the past were the ones who had such an addiction that they did not even care to really examine buyers before selling. For other dealers, if buyers did not fit the "right appearance," then they were not sold to even if they were not police. In some cases, dealers reduced offense frequencies at the cost of withdrawing into their own transactional circles.

One thing remained fairly consistent throughout the study. Crack dealers did not want to be caught. This shows strong support for deterrence and rational choice. Using a cost/benefit analysis, crack dealers were fully aware of what they were doing. It was illegal, and they tried to refrain from being caught and punished. They screened potential buyers and in some cases tested potential buyers.

This study examined some of the ways that drug offenders pick up on "narcs." This research is relevant in criminological circles in two ways. First, it is helpful for police to know about these techniques used by criminals to screen "narcs." Secondly, this research proves that deterrence theory is at work with these criminals. These criminals speak of being deterred several times from offending. The common thread among them is that they offend when they are not deterred.

Chapter 4

Methodology

This study used a quantitative approach to gather primary data. The unit of analysis was individual University of Memphis students. This was the one and only qualifier/disqualifier. If a person was not a student at the University of Memphis during this study, then he or she was not eligible to participate in this study. This study was approved by the University of Memphis Institutional Review Board.

After consulting with numerous professors from the University of Memphis Departments of Criminology and Criminal Justice and English, the target goal for the sample size was 400. Those two particular departments were chosen because they have a good cross section of the university's students. Because the sample in this study was not randomly chosen, the researcher tried to get more respondents to help with the generalizability towards this group, at this time, and at this place. The final sample size was 505.

A non-probability convenience sample was used to gather participants. Professors were chosen at the convenience of the researcher and were asked if the questionnaire could be administered in their class. After a professor agreed to let his or her students participate in the study, a time was selected within the first month of the Fall 2010 semester by the researcher and professor for survey distribution. The consent form was explained to all the students prior to the distribution of the survey. The students were told that participation was voluntary and that all results would remain completely anonymous. Students were asked if they had taken the survey in a previous class. If they had taken the survey in another class, they were not eligible to retake the survey. The

questionnaires were handed out in person to help maintain the questionnaire's integrity. After the students finished the questionnaire, they passed the surveys to the front of the class where they were collected. The estimated response rate was 99%. Individuals who responded by saying they were not at least 18 years old were not included in the analysis. There were approximately five surveys discarded for this reason.

Variables

The variables employed in this study operationalized deterrence and rational choice theory. Some of the questions on the questionnaire were more about an individual's perception of decision making than an actual decision being made. For example, one question asked, "What do you perceive the chances are of you receiving a ticket for parking illegally at the University of Memphis?" This question is not actually determining the chances of an individual being ticketed for parking illegally. The question is aimed at measuring an individual's perception. As noted earlier in this study, perception can be a key factor in an individual's decision making process.

Deterrence and rational choice were measured by examining certainty and severity of punishment. One set of questions asked if the respondent had ever been given a ticket for illegally parking. The following question asked if the respondent had parked illegally after being issued a ticket. This is a measurement of classical specific deterrence. Next, respondents were asked if they would illegally park if the fine was $25. The next question was exactly the same only the fine was increased to $150. This is one of the ways severity of punishment was calculated. Another question set examines severity of punishment as well. Respondents were asked if they would park illegally to get to a final exam if the fine was $25. The next question also increased the fine to $150.

Following that set of questions was another set asking if they would park illegally if a police officer was watching them. The fines were again listed at $25 and $150. Also, the final exam period was brought into this set of questions since that is when parking pressures become extreme. Many demographics were included in the study: gender, age, race, school classification (freshman, sophomore, etc.), major, employment status, commuter status (living on or off campus), and whether or not the student was an athlete.

Statistics

This study employed a three wave analysis of data. The first wave of analysis included a frequency distribution of all variables and responses. The second wave of analysis used a bivariate measure, cross tabulation. Cross tabulation is a non-parametric test. Even though the non-parametric test is not as powerful as the parametric test, the sample size suggests that the difference would be minimal.

Chi-Square analysis was chosen to show statistical significance due to its sensitivity to data. Even though Fisher's Test gives the exact p-value, Chi-square was chosen because of the familiarity the researcher has with its functioning capacity. Also, while Chi-Square cannot give an exact measure of p-value, it can give an approximation of p-value. The sample size led the researcher towards Chi-Square as well. The higher the sample size, the less need there is for an exact p-value. Yates' continuity correction is often used to make the Chi-Square p-value more accurate. However, some argue that the correction can "over correct" or go too far. Once again, the size of the sample ruled out the need for Fisher's Test and Yates' continuity correction.

The non parametric bivariate analysis did little to show the effect of several independent control or intervening variables on the dependent variable. Therefore, the

findings were somewhat limited. Hence, the analysis progressed into the third and final wave, logistic regression. Logistic regression served as the multivariate statistical measuring instrument. Regression was chosen instead of correlation because many of the variables were presumed to cause a change in another variable. Also, regression offered the option of manipulating the X variable. OLS (linear regression) was not used due to three inherent difficulties. Demaris (1995) says that the use of a linear function, the assumption of independence between the predictors and the error term, and non constant variance of the errors across combinations of predictor values make OLS a limited statistical method when using a binary 0 to 1 technique. In addition, Bollen (1989) says the pseudo-isolation condition requires the error term to be uncorrelated with the predictor variables.

The researcher chose to have the predictor variables and the error term correlated in this study. A researcher should not assume a relationship between variables even if the relationship makes sense theoretically. When the reader glances at the data analysis section, he or she will see why this is a critical fact to note. If the researcher had assumed a relationship between predictor variables, then the regression techniques would have been misleading. The researcher chose to report the error term in all data analyses. This helps the reader identify the margin of error in each unit of analysis.

Logistic regression is a popular technique employed in the field of social science due to its sensitivity to an abundance of integral data. Given the nature of the questionnaire, logistic regression became the most obvious measurement tool. Because the respondents were forced into dichotomous responses (yes and no) the dependent variable could only have two values. Also, logistic regression deals in probabilities. The

survey used in this study asked hypothetical questions and asked specifically about individuals' perceptions of what he or she would do in certain situations. Logistic regression seemed to be a natural fit for the third and final wave of analysis.

Hypotheses

There were an abundance of potential hypotheses that could have been tested using the data collected for this sample. After looking at all of the raw data, the researcher believed that these five hypotheses were the best options to test deterrence and rational choice theories simultaneously. Also, for the purposes of length and time, these five hypotheses were chosen at this time: *Hypothesis 1:* The respondents who have been given a ticket will be less inclined to park illegally again. *Hypothesis 2:* The respondents who perceive their chances of being ticketed high will park illegally less often than those who perceive their chances of getting a ticket low. Offending is increased by perceptions of the opportunity to park illegally without being ticketed. Hypothesis *3:* Respondents who have never been given a ticket for illegally parking will be more likely to illegally park to get to their final exam when the fine is $25 than those who have been given an illegal parking ticket. *Hypothesis 4:* More respondents will say that they would park illegally to get to class if the fine was $25 than if the fine was $150. *Hypothesis 5:* More respondents will park illegally when a police officer is not watching them and the fine is $25 than if a police officer is watching them and the fine is $25.

Describing Some of the Data

One side note must be explained about the time period in which the survey was administered. The survey was administered at the start of a new semester. Parking spaces were not plentiful. One might even say legal parking spaces were scarce or not

available to many students at certain times of the day. Two parking lots were under construction at the time of the survey. One road was closed that was used for parking prior to the beginning of the new semester. Also, enrollment increased to the highest level the university had ever achieved. These unique situations combined with the historically misallocated parking slots/areas led to a potential threat to internal validity. These unique situations may have been beneficial to the overall response rate to the study. Students wanted to talk about this hot topic at its most critical point. In fact, some students took it upon themselves to make written remarks about the parking situation on campus.

Limitations to the research design were observed. If the sample were larger, it would better mirror the student population. The respondents in the sample were not chosen randomly. The sample was a convenience sample.

The University of Memphis

The University of Memphis is located in Memphis, Tennessee. It is an urban institution for higher education. The student population is estimated to be over 21,000 students. The University of Memphis is fully accredited by the Commission on Colleges of the Southern Association of Colleges and Schools. The University of Memphis participates in many intercollegiate sports, most notably men's basketball. The university has approximately 3,000 residential students. However, the university is largely comprised of commuter students. The University of Memphis is governed by the Tennessee Board of Regents.

The University of Memphis has a Parking Services Department. Every vehicle parked on the University of Memphis campus must have a parking permit displayed on

the rearview mirror. Vehicles must be parked within the area allotted by white lines on both sides. Any vehicle violating these two policies will be fined and possibly towed at the expense of the owner. There are 25 parking violations that the University of Memphis enforces with fines. These violations can be assessed with fines ranging from $10 to $200.

Chapter 5

Data Analysis

Demographic Summary

The gender distribution for the survey (58.4% female to 41.6% male) closely resembled the University of Memphis student population (61% female to 39% male), (*Common Data Set 2009-2010), and* approximately 62% of students were of traditional college age (18-21). Approximately 38% were non-traditional college age students (older than 21). The racial breakdown was 55% Caucasian, 38.6% African American, 2.4% Latino, and 4% other. The school classification breakdown was 18.8% freshman, 29.9% sophomore, 20.2% junior, 23% senior, and 8.1% graduate. Approximately 49% of the respondents were criminal justice majors, and 51.5% were non-criminal justice majors. Approximately 65% of respondents reported that they were employed. Approximately 78% of those who were employed were part-time employees. Almost 80% of respondents were commuter students. Approximately 7% of the students were athletes.

Summary of Theoretical Responses

About 71% of respondents reported that they had parked illegally before taking this survey. Approximately 57% reported that they had parked illegally at the University of Memphis. Approximately 53% of respondents have been given a ticket for illegally parking. Of those who were given a ticket, approximately 62% have not parked illegally since the ticket was issued. About 41% of respondents perceived their chances of getting a ticket low (0-30%), about 29% of respondents perceived their chances of getting a ticket moderate (31%-69%), and 30.3% of respondents perceived their chances of getting a ticket high (70-100%). Approximately 57.4% of respondents said that they would not

park illegally to get to class if the fine was $25. Approximately 98% of respondents said that they would not park illegally to get to class if the fine was $150. Approximately 87% of respondents said that they would not park illegally to get to class if the fine was $25 and a police officer was watching. About 98.4% of respondents said that they would not park illegally to get to class if the fine was $150 and a police officer was watching. Approximately 80% of respondents said that they would park illegally to get to their final exam if the fine was $25. About 67.5% of respondents said that they would not park illegally to get to their final exam if the fine was $150. Approximately 56% of respondents said that they would park illegally to get to their final exam if the fine was $25 and a police officer was watching. Approximately 74% of respondents said that they would not park illegally to get to their final exam if the fine was $150 and a police officer was watching.

Cross Tabulation of Hypotheses

The data gave no support for hypothesis 1. Those who have been given a ticket are not less likely to park illegally again. In fact, the data show that an individual who parks illegally once is more likely to park illegally again regardless of whether or not he or she was ticketed. A Pearson Chi-Square value expressed the statistical significance of this finding: $X^2 (1) = 190.419; p < .01$.

The data gave no support for hypothesis 2. Offending was not increased by perceptions of the opportunity to get away with parking illegally. Those who perceived their chances of getting a ticket for illegally parking low actually parked illegally less frequently than those who perceived their chances of getting a ticket high. A Pearson

Chi-Square value expressed the statistical significance of this finding: $X^2 (1) = 18.613; p < .01$.

The data gave no support for hypothesis 3. Those who have never been given a ticket for parking illegally did not say that they would be more inclined to illegally park to get to a final exam if the fine is $25. Those who have been exposed to the specific deterrent (illegal parking ticket) showed no significant difference in their decision to illegally park when compared to those who have been privy to only general deterrence. This finding was not statistically significant: $X^2 (1) = 1.725; p > .05$.

The data supported hypothesis 4. Approximately 42.6% of respondents said that they would park illegally to get to class if the fine was $25. Only 2.2% of respondents said that they would park illegally to get to class if the fine was $150. $X^2 (1) = 10.745; p < .01$.

The data supported hypothesis 5. Approximately 42.6% of respondents said that they would park illegally to get to class if the fine was $25. About 12.7% of respondents said that they would park illegally to get to class if the fine was $25 and a police officer was watching them. Of the respondents who said that they would park illegally to get to class if the fine was $25, 29.3% would also park illegally to get to class if the police were watching. Therefore, approximately 70% of respondents said that a police officer watching them would deter them from parking illegally if the fine was $25. A Pearson Chi-Square value shows the statistical significance of this finding: $X^2 (1) = 93.457; p < .01$.

Binary Logistic Regression Techniques

To control for several variables at once, binary logistic regression was used to show saliency with the dependent variables. Each technique has been labeled with a number so that there is a distinction made evident for discussion and clarification purposes of the different regressions. The first (1) binary logistic regression analysis was performed on the variable "Have you ever parked illegally?" Here is the output table for regression (1):

Table 1

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Gender	.540	.226	5.692	1	.017	1.715	1.101	2.672
	Age	-.727	.277	6.899	1	.009	.484	.281	.832
	Race	-.011	.224	.002	1	.961	.989	.638	1.534
	Classification	.280	.106	6.964	1	.008	1.324	1.075	1.630
	Major	-.141	.221	.404	1	.525	.869	.563	1.340
	Employed	.601	.211	8.096	1	.004	1.823	1.206	2.758
	Constant	.184	.441	.174	1	.676	1.202		

a. Variable(s) entered on step 1: Gender, Age, Race, Classification, Major, Employed.

All of the demographic variables were controlled for. Employment status registered with the highest significance level of .004. *B (Beta)* was measured at .601 indicating that those who were employed were more likely to illegally park. As visible by the chart, age, classification, and employment were all statistically significant too. The Nagelkerke R Square registered the explanation of variance at approximately 14%.

Lower classmen (Freshman and Sophomores) were more likely to park illegally than upper classmen. Interestingly enough, a *B value* of -.727 indicated that individuals age 22 and up were more likely to illegally park than individuals who were between 18 and 21. The *B value* for gender (.540) indicated that males were far more likely to park illegally than females.

The second regression (2) was controlling for several variables in response to the question "Have you ever parked illegally at the University of Memphis?" Here is the output table:

Table 2

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Gender	.247	.205	1.449	1	.229	1.281	.856	1.915
	Age	-.038	.238	.026	1	.872	.962	.604	1.533
	Race	-.502	.203	6.113	1	.013	.606	.407	.901
	Classification	.354	.095	13.854	1	.000	1.425	1.182	1.716
	Major	-.079	.200	.157	1	.692	.924	.625	1.366
	Employed	.393	.199	3.898	1	.048	1.481	1.003	2.188
	Doyouliveoncampus	-.100	.241	.174	1	.677	.905	.564	1.450
	StudentAthlete	-.067	.394	.029	1	.866	.935	.432	2.025
	Constant	-.536	.891	.362	1	.548	.585		

a. Variable(s) entered on step 1: Gender, Age, Race, Classification, Major, Employed, Doyouliveoncampus, StudentAthlete.

In this output calculation, race, classification, and employment status were statistically significant. School classification had the highest level of significance (.000).

A *B value* of .354 indicated that lower classmen were much more likely to illegally park at the University of Memphis than upper classmen. The *B value* of -.502 indicated that non-whites were more likely to park illegally at the University of Memphis than whites. Lastly, employment status again was significantly correlated with parking illegally at the University of Memphis. The *B value* of .393 showed that those who were employed were more likely to park illegally at the University of Memphis than those who were not working. The Nagelkerke R Square registered the explanation of variance at approximately 10%.

The third regression (3) was performed on the question "Have you ever been given a ticket for illegal parking?" Here is the output table for regression (3):

Table 3

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Gender	-.060	.213	.080	1	.778	.942	.621	1.429
	Age	-.196	.242	.657	1	.418	.822	.511	1.321
	Race	-.949	.213	19.954	1	.000	.387	.255	.587
	Classification	.491	.099	24.560	1	.000	1.633	1.345	1.983
	Major	-.109	.207	.278	1	.598	.896	.597	1.346
	Employed	.521	.210	6.143	1	.013	1.684	1.115	2.543
	Doyouliveoncampus	-.146	.254	.331	1	.565	.864	.526	1.421
	StudentAthlete	-.967	.427	5.134	1	.023	.380	.165	.878
	Constant	1.086	.947	1.315	1	.251	2.961		

a. Variable(s) entered on step 1: Gender, Age, Race, Classification, Major, Employed, Doyouliveoncampus, StudentAthlete.

School classification and race were the two most significant variables correlated with this question (.000). A *B value* of .491 indicated that upper classmen received more tickets for illegal parking then under classmen did. A *B value* of -.949 showed that non-whites received tickets for illegal parking much more frequently than whites. People who were employed received tickets more frequently than people who were not employed. Lastly, student athletes received tickets for parking illegally much more often than non student athletes (*B value* of -.967). This statistic was unique in the fact that there was a lot of anecdotal animosity from university staff that student athletes never get ticketed for illegal parking. These data prove otherwise at least within this sample. The Nagelkerke R Square registered the explanation of variance at approximately 21%.

The fourth regression technique (4) was run with the dependent variable being "After receiving a ticket for illegal parking, have you parked illegally again?" Here is the output chart:

Table 4

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.for EXP(B)	
								Lower	Upper
Step 1[a]	Gender	.398	.220	3.272	1	.070	1.488	.967	2.290
	Age	.011	.255	.002	1	.967	1.011	.613	1.668
	Race	-.536	.216	6.133	1	.013	.585	.383	.894
	Classification	.412	.105	15.341	1	.000	1.509	1.228	1.855
	Major	-.156	.215	.523	1	.470	.856	.561	1.305
	Employed	.636	.223	8.112	1	.004	1.889	1.219	2.926
	Doyouliveoncampus	-.415	.280	2.195	1	.138	.660	.381	1.143
	StudentAthlete	-.832	.413	4.071	1	.044	.435	.194	.976
	Constant	-.224	.940	.057	1	.812	.800		

a. Variable(s) entered on step 1: Gender, Age, Race, Classification, Major, Employed, Doyouliveoncampus, StudentAthlete.

The most significant variable in this regression was classification (.000). A -.536 *B value* showed that upper classmen continued to park illegally after being ticketed at a much higher rate than under classmen. In fact, approximately 91% of freshmen who had been given a ticket in the past reported that they had refrained from parking illegally again. Employment status was significant (.004). A .636 *B value* indicated that those who were employed parked illegally more often after receiving a ticket than those who did not work. Race was a statistically significant factor (.013). A -.536 *B value* showed that non-whites were more inclined to park illegally after being ticketed than whites. A *B value* of -.832 expressed that student athletes were more likely to park illegally after

being ticketed than non student athletes. The Nagelkerke R Square registered the explanation of variance at approximately 15%.

A fifth regression technique (5) was recorded. The dependent variable tested was "Would you park illegally to get to your final exam if the fine was $25?" More tables can be found in the Appendices.

Race was a significant factor (.000). A .902 *B value* expressed that whites were more inclined to illegally park to get to a final exam when the fine is $25 than non-whites. Perceived chances of getting a ticket was a significant factor as well (.005). In a complete counter to rational choice theory, a *B value* of .418 indicated that as the perception of getting a ticket increased so did the likelihood of parking illegally to get to a final exam when the fine was $25.

A number of other binary logistic regression techniques were run testing other dependent variables but the explanation of variances among responses was so low they were not reported in the analyses.

Chapter 6

Discussion

Results of Hypothesis 1

Because the severity of punishment is seemingly so low, respondents who were more inclined to park illegally did not seem to take into account the $25 fine. This examination of deterrence and rational choice theory should not serve as a negation of the theories. Hypothesis 1 primarily is testing specific deterrence. However, the $25 fine is apparently not a threshold for the majority of respondents to be deterred from illegally parking to get to class.

When the severity of punishment is increased ($150), respondents who have been given a ticket before are less likely to park illegally (96.6%). However, when these two variables are cross tabulated there is no statistical significance between the perceived offending patterns. Those who have been given a ticket for illegal parking have approximately the same perceived offending patterns that those who have never been given a ticket for illegal parking.

Results of Hypothesis 2

Even though prior research suggests otherwise, perceived chances of getting caught did not appear to be relevant in this study. This could possibly be explained by the level of punishment. Because the fine is only $25, respondents seemed to not really care about their chances of getting a ticket when choosing to illegally park. In addition, those who have never been given a ticket for illegally parking were less likely to illegally park.

Another factor could be at work here as well. Those who perceive a low chance of getting a ticket may have never received a ticket. Therefore, some of those respondents may not park illegally at any rate. Those who perceive their chances of getting ticketed as being high may have been given a ticket or multiple tickets in the past. Some of these respondents may not have been deterred. Therefore, even though they perceive their chances of getting a ticket high, they do not care because the severity of the punishment does not correlate with the certainty of punishment.

Results of Hypothesis 3

Once again, a principle of rational choice theory (prior experiences with offending and punishment tendencies) does not seem to have a significant effect in the respondents' decision making process. This hypothesis was testing the two types of deterrence as well, specific and general. It was thought that those who have been ticketed would be less likely to reoffend. This was not the case. There could be many explanations for this finding.

First, the hypothesis assumed that there would be future criminality without prior criminality or being punished for prior criminality. This study has brought an interesting finding to the author's attention. Some individuals may be just more likely to offend and reoffend based on factors not always associated with a rational choice decision making process.

Secondly, the question was posed in a way to include getting to a final exam. Some respondents (in this case, students) hear "final exam" and there seems to be a psychological trigger hit. Students appear to show a common bond or agreement in the way final exams are viewed. By adding in this extra element to the question, the question

advertently reverses the common theoretical basis of deterrence and rational choice. This question does not pose an increase to severity or certainty of punishment. Rather it is an examination of conditions or circumstances: under which conditions are people more likely to offend? Apparently, getting to a final exam is a common circumstance that these respondents shared in which offending was seen as highly necessary or likely.

Lastly, the fine was only $25. When a cross tabulation is run comparing those who have been given a ticket with whether or not a person would park illegally to get to a final exam if the fine was $150, there was a noticeable difference in the responses. Approximately 78% of those who have never been given a ticket said that they would park illegally to get to their final exam if the fine was $25. When the fine increased to $150, the percentage dropped to approximately 30%. The difference between those who have received a ticket and those who have not received a ticket was not statistically significant. A Pearson Chi-Square value showed

$X^2(1) = 1.434; p > .05.$

Results of Hypothesis 4 and 5

Hypothesis 4 and 5 were central in testing classical deterrence theory. Hypothesis 4 showed strong support for deterrence theory, specifically the effect of severity of punishment. As the severity of punishment increased, the respondents' perception of their likelihood of offending decreased. Money (fines) seemed to have a real impact on most students' cost/benefit analysis.

The results from testing hypothesis 5 brought one of the main principles of deterrence theory to light, certainty of punishment. Respondents were not as willing to offend when the certainty of punishment was increased. A police officer's mere presence

has been used as a deterrent for many years. This finding shows some support for that theory.

Conclusions and Implications

One goal of research is to contribute to the existing knowledge base. The instant research focused on an integrated approach using two popular classical theories. Given the findings, this research does help to fill the gap in the literature on criminological theory. In particular, this research demonstrates the value of integrating theories.

Integrated approaches are becoming more common and this research is a prime example of the benefits that come from researching with two theories rather than just one. If this research had just been testing deterrence theory, the data would not have been able to quantify respondents' perceptions about their chances of getting a ticket. Also, if this research had just been testing rational choice theory, then certainty and severity of punishment would not have come into play. Obviously, to gain the level of "explainability" that a researcher desires, it is important to employ as many theories and variables as possible.

The revitalization of deterrence theory was highlighted throughout this research. There is some research being done using classical criminology that is useful and it should not be discarded as old notions. Just because something is old does not mean that it cannot be applicable today. While rational choice theory needed no extra assistance in contemporary popularity, this research examined a unique postulate of rational choice theory, perceptions. While cost/benefit analysis is still the most common aspect of rational choice theory researched, for a theory to grow, all of its postulates must be researched and evaluated.

One of the most interesting findings in this study was related to the questions pertaining to a final exam. A large portion of this research has dealt with perception being just as important as actuality. Students' perceptions about their final exams were quite influential in their decision making processes on the survey. Even when a police officer was watching the respondent, the respondents reported that they were more likely to offend (illegally park) if they had to get to their final exam.

Perceived certainty and severity of punishment seemed to affect individuals' rational assumptions about their potential behavior. However, one interesting finding from this study showed that perception and reality are different. Those who have actually been punished before were not more inclined to conform (most of those who had received an illegal parking ticket still continued to illegally park). However, when the questions were posed about an individual's perception about offending, most respondents showed that they would be more likely to conform as their chances of getting a ticket increased (police officer watching them illegally park). In addition, those who perceived their chances of getting a ticket high were not less likely to offend than those who perceived their chances low.

Consequently, future research should delve further into this finding. This finding is exactly opposite of what rational choice theory dictates. Perhaps the fine should fluctuate a little less between the survey questions. Maybe the jump between $25 and $150 was so drastic that it altered the respondent's decision making on the survey. College students normally do not have a lot of money. Therefore, a questions pertaining to a $150 fine may be absolutely out of the question.

In the future, extra variables should be included as well. This researcher was trying to keep the survey as short as possible to assist in keeping the response rate high. However, in doing so, this study potentially missed out on a large sum of data that could have contributed to the variance in responses. For example, one question asked respondents about their employment status (part-time, full-time, or not working). Maybe the survey should have included a question about the respondent's income category (less than $20,000, $20,000-$40,000, etc…). This addition to the survey alone would have potentially explained the differences in responses between people who were poor, middle class, and wealthy.

It should be noted that any attempt to duplicate this research should follow the same theoretical framework used in this study. Deterrence theory is hard to measure. The measurement of behavior that has the capability to actually be deterred is only measuring an individuals' perception of what he or she might do in a particular situation. In addition, rational choice theory must be examined so that a true cost/benefit analysis can be measured. This is the researcher's explaining power potential. Perception versus reality will always give different output statements. The key is to be consistent with what you are measuring (internal validity). In this case, it is difficult to measure deterrence. Therefore, rational choice theory has to be utilized in order to have a valid unit of analysis to test the dependent variable.

References

Andenaes, J. (1975). "General Prevention Revisited: Research and Policy Implications." *The Journal of Criminal Law and Criminology* 66:338-365.

Beccaria, C. [1764] (1963). *On Crimes and Punishments*. Indianapolis, IN: Bobbs-Merrill.

Bentham, J. [1789] (1996). *An Introduction to the Principles of Morals and Legislation.* Clarendon Press.

Blumstein, A., & Graddy, E. (1982). "Prevalence and Recidivism in Index Arrests: A Feedback Model." *Law and Society Review, 16,* 265-290.

Bollen, K. (1989). *Structural equations with latent variables.* New York, NY: Wiley.

Boudon, R. (1998). "Limitations of Rational Choice Theory." *The American Journal of Sociology, 104* (3), 817-828.

Brown, S., Esbensen, F., and Geis, G. (2007). *Criminology: Explaining Crime and Its Context*. Newark, NJ: Matthew Bender & Company, Inc.

Cameron, M., & O'Conner, I. (2002). Juvenile Justice in Australia. In P. Grabosky, & A. Graycar, (Eds.), *The Cambridge Handbook of Australian Criminology* (pp. 211-231). Australia: Brown Prior Anderson. Retrieved December 20, 2010, from http://books.google.com/books

Chaiken, J., Lawless, M., & Stenenson, K. (1974). "The Impact of police Activity on Subway Crime." *Urban Analysis, 3,*173-205.

Chambliss, W. (1966). "The Deterrent Influence of Punishment."*Crime and Delinquency,* 12, 70-75.

Clarke, R. (1980). “Situational’ Crime Prevention: Theory and Practice” *The British Journal of Criminology* 20 (2): 136-147.

Clarke, R., & Cornish, D. (1985). “Modeling Offenders’ Decisions: A Framework for Research and Policy.” *Crime and Justice* 6:147-185.

Cohen, L., & Felson, M. (1979). “Social Change and Crime Rates Trends: A Routine Activity Approach.” *American Sociological Review*, 44, 588-608.

Common Data Set 2009-2010. (2009). Retrieved September 20, 2010, from http://oir.memphis.edu/WebReports/CommonDataSets/CDS2009_2010.pdf

Cook, P. (1979). “A Unified Treatment of Deterrence, Incapacitation, and Rehabilitation: A Simulation Study.” Durham, N.C.: Institute of Policy Sciences and Public Affairs, Duke University.

Cook, P. (1980). “Research in Criminal Deterrence: Laying the Groundwork for the Second Decade.” *Crime and Justice* 2:211-268.

Cornish, D., & Clarke, R. (1987). “Understanding Crime Displacement: An Application of rational Choice Theory.” *Criminology*, 25 (4), 933-948.

Demaris, A. (1995). “A Tutorial in Logistic Regression.” *Journal of Marriage and the Family*, 57, 956-968.

Dugan, L., LaFree, G., & Piquero, A. (2005). “Testing a Rational Choice Model of Airline Hijackings.” *Criminology* 43(4) 1031-1066.

Ferri, E. [1901] (1968). “Three Lectures Given at the University of Naples, Italy- April 22,23, and 24, 1901.” In S. Grupp, *The Positive School of Criminology.* Pittsburgh, PA: University of Pittsburgh Press.

Gibbs, J. (1987). “State of Criminological Theory.” *Criminology* 25(4) 821-840.

Hechter, M. & Kanazawa, S. (1997). “Sociological Rational Choice Theory” *Annual Review of Sociology.* 23:191-214.

Herrnstein, R. (1990). “Rational Choice Theory: Necessary but Not Sufficient.” *American Psychology,* 45, 356-367.

Jacobs, B. (1996). “Crack Dealers and Restrictive Deterrence: Identifying NARCS.” *Criminology* 34(3) 409-431.

Jaeger, C., Ortwin Renn, R., Eugene A., and Webler, T. (2001). *Risk, Uncertainty, and Rational Action.* Earthscan.

Landes, W. (1978). “An Economic Study of U.S. Aircraft Hijacking, 1961-1976.” *The Journal of Law and Economics,* 21, 1-32.

Martinson, R., Lipton, D., and Wilks, J. (1975). *Effectiveness of Correctional Treatment – A Survey of Treatment Evaluation Studies.* Westport, CT: Praeger Publishers.

Matsueda, R., Kreager, D., Huizinga, D. (2006). “Deterring Delinquents: A Rational Choice Model of Theft and Violence.” *American Sociological Review,* 71, 95-122.

McCarthy, B, & Hagan, J. (2005). “Danger and the Decision to Offend.” *Social Forces,* 83, 1065-1096.

Miller, D., Rosenthal, A., Miller, D., and Ruzek, S. (1971). “Public Knowledge of Criminal Penalties: A Research Report.” *Theories of Punishment*. Bloomington: Indiana University Press.

Nagin, D. & Pogarsky, G. (2001). “Integrating Celerity, Impulsivity, and Extralegal Sanction Threats Into A Model of General Deterrence: Theory and Evidence” *Criminology,* 39 (4), 865-892.

Paternoster, R. (1987). “The Deterrent Effect of the Perceived Certainty and Severity of Punishment: A Review of the Evidence and Issues.” *Justice Quarterly*, 4 (2), 173-217.

Paternoster, R. (1989). “Decisions to Participate in and Desist from Four Types of Common Delinquency: Deterrence and the Rational Choice Perspective.” *Law and Society Review* 23:7-40.

Piliavin, I., Gartner, R., Thornton, C., & Matsueda, R. (1986). “Crime, Deterrence, and Rational Choice.” *American Sociological Review,* 51, 101-119.

Rowe, A. and Tittle, C. (1974). “Certainty of Arrest and Crime Rates – A Further Test of the Deterrence Hypothesis.” *Social Forces* 52 (4), 455-462.

Taylor, I., Walton, P., and Young, J. (1973). *The New Criminology.* London: Routledge & Kegan Paul.

Timasheff, N. (1967). *Sociological Theory: Its Nature and Growth.* New York: Random House, Inc.

Wilkins, L., & Chandler, A. (1965). “Confidence and Competence in Decision Making.” *British Journal of Criminology* 5:22-35.

Willits, D. & Wadsworth, T. 2007-11-14 "Convenience Store Robberies and Rational Choice Theory" *Paper presented at the annual meeting of the AMERICAN SOCIETY OF CRIMINOLOGY, Atlanta Marriott Marquis, Atlanta, Georgia*. 2010-10-24 from http://www.allacademic.com/meta/p200991_index.html

Appendix A

Dear Student:

Date

I invite you to participate in a research project that will be conducted by graduate student Brad Poole. The study is titled, "An Integrated Approach between Deterrence and Rational Choice Theory." The survey will take approximately 5 minutes or less to complete. This research will serve as a component towards completion of my graduate thesis.

Attached you will find the brief survey I am asking you to complete. Your responses will remain completely anonymous. Please do not place your name or any other information that could be used to identify you on this survey.

Your participation in this survey will result in no compensation nor have an effect on your grade in this class. You may choose not to take this survey. Additionally, you may choose to take the survey but not answer all the questions. There are no anticipated physical, psychological, social, legal or other associated risks to stem from this survey.

I greatly appreciate your participation. If you have any questions or concerns, please feel free to contact me.

Sincerely,

Brad Poole
Graduate Student
Department of Criminology and Criminal Justice
The University of Memphis
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KB Turner, Ph.D.
Associate Professor and Graduate Coordinator
Department of Criminology and Criminal Justice
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For answers to questions regarding the research subjects' rights, the Chair of the

Institutional Review Board for the Protection of Human Subjects should be contacted at

678-2533.

Appendix B

"An Integrated Approach between Deterrence and Rational Choice Theory"

1. Gender: Male___ Female___
2. Age___
3. Race: Caucasian___ African American___ Latino___ Asian___ Native American___ Other___
4. Classification: Freshman___ Sophomore___ Junior___ Senior___ Graduate/Law___
5. Major _____
6. Are you employed? Yes___ No___ Full-time___ Part-time___
7. Do you live on campus? Yes___ No___
8. Are you a student athlete? Yes___ No___ If yes, what sport? _____
9. Have you ever parked illegally? Yes___ No___
10. Have you ever parked illegally at the University of Memphis? Yes___ No___
11. Have you ever been given a ticket for illegally parking? Yes___ No___
12. After receiving a ticket, have you parked illegally again? Yes___ No___
13. What do you perceive the chances are of you receiving a ticket for parking illegally at the University of Memphis? ___%
14. Would you park illegally to get to class if the fine was $25? Yes___ No___

15. Would you park illegally to get to class if the fine was $150? Yes___ No___
16. Would you park illegally to get to class if the fine was $25 and a police officer was watching you?
    Yes___ No___
17. Would you park illegally to get to class if the fine was $150 and a police officer was watching you?
    Yes___ No___
18. Would you park illegally to get to a final exam if the fine was $25? Yes___ No___
19. Would you park illegally to get to a final exam if the fine was $150? Yes___ No___
20. Would you park illegally to get to a final exam if the fine was $25 and a police officer was watching you?
    Yes___ No___
21. Would you park illegally to get to a final exam if the fine was $150 and a police officer was watching you?
    Yes___ No___

Appendix C

Codebook

1. Gender: Male=1 Female=2
2. Age: number in years
3. Race: Caucasian=1 African American=2 Latino=3 Asian=4 Native American=5 Other=6
4. Classification: Freshman=1 Sophomore=2 Junior=3 Senior=4 Graduate/law=5
5. Major: degree student is seeking
6. Employed: yes=1 no=2
7. Part or Full: part=1 full=2 no answer=8
8. Do you live on campus: yes=1 no=2
9. Student athlete: yes=1 no=2
10. What sport: sport student plays no answer=8
11. Have you ever parked illegally: yes=1 no=2
12. Have you ever parked illegally at the U of M: yes=1 no=2
13. Have you ever been given a ticket for illegally parking: yes=1 no=2
14. Have you parked illegally again: yes=1 no=2 no answer=8
15. Chances of receiving a ticket: percentage points % no answered=8
16. Would you park illegally for $25: yes=1 no=2
17. Would you park illegally for $150: yes=1 no=2
18. Would you park illegally for $25 if police were watching: yes=1 no=2
19. Would you park illegally for $150 if police were watching: yes=1 no=2
20. Would you park illegally to get to a final exam for $25: yes=1 no=2
21. Would you park illegally to get to a final exam for $150: yes=1 no=2
22. Would you park illegally to get to a final exam for $25 if police were watching: yes=1 no=2
23. Would you park illegally to get to a final exam for $150 if police were watching: yes=1 no=2

Appendix D

Demographic Frequencies

Statistics

		Gender	Age	Race	Classification	Major	Employed	PartorFull
N	Valid	505	505	505	505	505	505	330
	Missing	0	0	0	0	0	0	175

Statistics

		Doyouliveoncampus	StudentAthlete
N	Valid	505	505
	Missing	0	0

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	210	41.6	41.6	41.6
	female	295	58.4	58.4	100.0
	Total	505	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Traditional College Age	315	62.4	62.4	62.4
	Non-traditional College Age	190	37.6	37.6	100.0
	Total	505	100.0	100.0	

Race

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	caucasian	278	55.0	55.0	55.0
	african american	195	38.6	38.6	93.7
	latino	12	2.4	2.4	96.0
	asian	4	.8	.8	96.8
	native american	1	.2	.2	97.0
	other	15	3.0	3.0	100.0
	Total	505	100.0	100.0	

Classification

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	freshman	95	18.8	18.8	18.8
	sophomore	151	29.9	29.9	48.7
	junior	102	20.2	20.2	68.9
	senior	116	23.0	23.0	91.9
	graduate/law	41	8.1	8.1	100.0
	Total	505	100.0	100.0	

Employed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	328	65.0	65.0	65.0
	no	176	34.9	34.9	99.8
	3.00	1	.2	.2	100.0
	Total	505	100.0	100.0	

Part or Full

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	part	258	51.1	78.2	78.2
	full	72	14.3	21.8	100.0
	Total	330	65.3	100.0	
Missing	8.00	175	34.7		
Total		505	100.0		

Do you live on campus

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	105	20.8	20.8	20.8
	no	398	78.8	78.8	99.6
	not answered	2	.4	.4	100.0
	Total	505	100.0	100.0	

Student Athlete

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	33	6.5	6.5	6.5
	no	472	93.5	93.5	100.0
	Total	505	100.0	100.0	

Frequencies of Theoretical Responses

Have you ever parked illegally

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	361	71.5	71.5	71.5
	no	144	28.5	28.5	100.0
	Total	505	100.0	100.0	

Have you ever parked illegally at the u of m

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	288	57.0	57.0	57.0
	no	217	43.0	43.0	100.0
	Total	505	100.0	100.0	

Have you ever been given a ticket for illegally parking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	267	52.9	52.9	52.9
	no	238	47.1	47.1	100.0
	Total	505	100.0	100.0	

Have you parked illegally again

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	178	35.2	37.9	37.9
	no	292	57.8	62.1	100.0
	Total	470	93.1	100.0	
Missing	8.00	35	6.9		
Total		505	100.0		

Chances of getting a ticket

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	low	200	39.6	41.0	41.0
	moderate	140	27.7	28.7	69.7
	high	148	29.3	30.3	100.0
	Total	488	96.6	100.0	
Missing	no answer	17	3.4		
Total		505	100.0		

Would you park illegally for 25 dollars

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	215	42.6	42.6	42.6
	no	290	57.4	57.4	100.0
	Total	505	100.0	100.0	

One hundred fifty dollars

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	11	2.2	2.2	2.2
	no	494	97.8	97.8	100.0
	Total	505	100.0	100.0	

Twenty five dollars and police

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	64	12.7	12.7	12.7
	no	441	87.3	87.3	100.0
	Total	505	100.0	100.0	

One fifty and police

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	8	1.6	1.6	1.6
	no	497	98.4	98.4	100.0
	Total	505	100.0	100.0	

Final exam 25

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	405	80.2	80.2	80.2
	no	100	19.8	19.8	100.0
	Total	505	100.0	100.0	

Final exam 150

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	164	32.5	32.5	32.5
	no	341	67.5	67.5	100.0
	Total	505	100.0	100.0	

Final exam 25 and police

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	283	56.0	56.0	56.0
	no	222	44.0	44.0	100.0
	Total	505	100.0	100.0	

Final exam 150 and police

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	130	25.7	25.7	25.7
	no	375	74.3	74.3	100.0
	Total	505	100.0	100.0	

Appendix E

Haveyoueverbeengivenaticketforillegallyparking * Haveyouparkedillegallyagain Crosstabulation

			Haveyouparkedillegallyagain		
			yes	no	Total
Haveyoueverbeengivenaticketforillegallyparking	yes	Count	173	94	267
		% within Haveyouparkedillegallyagain	97.2%	32.2%	56.8%
	no	Count	5	198	203
		% within Haveyouparkedillegallyagain	2.8%	67.8%	43.2%
Total		Count	178	292	470
		% within Haveyouparkedillegallyagain	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	190.419[a]	1	.000		
Continuity Correction[b]	187.779	1	.000		
Likelihood Ratio	230.304	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	190.014	1	.000		
N of Valid Cases	470				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 76.88.

b. Computed only for a 2x2 table

Haveyoueverparkedillegallyattheuofm * Chancesofgettingaticket Crosstabulation

			Chancesofgettingaticket			
			low	moderate	high	Total
Haveyoueverparkedillegallyattheuofm	yes	Count	92	92	97	281
		% within Chancesofgettingaticket	46.0%	65.7%	65.5%	57.6%
	no	Count	108	48	51	207
		% within Chancesofgettingaticket	54.0%	34.3%	34.5%	42.4%
Total		Count	200	140	148	488
		% within Chancesofgettingaticket	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.613[a]	2	.000
Likelihood Ratio	18.619	2	.000
Linear-by-Linear Association	14.567	1	.000
N of Valid Cases	488		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 59.39.

Haveyoueverbeengivenaticketforillegallyparking * finalexam25 Crosstabulation

			finalexam25		
			yes	no	Total
Haveyoueverbeengivenaticketforillegallyparking	yes	Count	220	47	267
		% within finalexam25	54.3%	47.0%	52.9%
	no	Count	185	53	238
		% within finalexam25	45.7%	53.0%	47.1%
Total		Count	405	100	505
		% within finalexam25	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.725[a]	1	.189		
Continuity Correction[b]	1.444	1	.230		
Likelihood Ratio	1.722	1	.189		
Fisher's Exact Test				.219	.115
Linear-by-Linear Association	1.722	1	.189		
N of Valid Cases	505				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 47.13.

b. Computed only for a 2x2 table

wouldyouparkillegallyfor25dollars * twentyfivedollarsandpolice Crosstabulation

			twentyfivedollarsandpolice		
			yes	no	Total
wouldyouparkillegallyfor25dollars	yes	Count	63	152	215
		% within wouldyouparkillegallyfor25dollars	29.3%	70.7%	100.0%
		% within twentyfivedollarsandpolice	98.4%	34.5%	42.6%
	no	Count	1	289	290
		% within wouldyouparkillegallyfor25dollars	.3%	99.7%	100.0%
		% within twentyfivedollarsandpolice	1.6%	65.5%	57.4%
Total		Count	64	441	505
		% within wouldyouparkillegallyfor25dollars	12.7%	87.3%	100.0%

wouldyouparkillegallyfor25dollars * twentyfivedollarsandpolice Crosstabulation

			twentyfivedollarsandpolice		
			yes	no	Total
wouldyouparkillegallyfor25dollars	yes	Count	63	152	215
		% within wouldyouparkillegallyfor25dollars	29.3%	70.7%	100.0%
		% within twentyfivedollarsandpolice	98.4%	34.5%	42.6%
	no	Count	1	289	290
		% within wouldyouparkillegallyfor25dollars	.3%	99.7%	100.0%
		% within twentyfivedollarsandpolice	1.6%	65.5%	57.4%
Total		Count	64	441	505
		% within wouldyouparkillegallyfor25dollars	12.7%	87.3%	100.0%
		% within twentyfivedollarsandpolice	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	93.547[a]	1	.000		
Continuity Correction[b]	90.949	1	.000		
Likelihood Ratio	110.513	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	93.362	1	.000		
N of Valid Cases	505				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 27.25.

b. Computed only for a 2x2 table

Haveyoueverbeengivenaticketforillegallyparking * onehundredfiftydollars Crosstabulation

			onehundredfiftydollars		
			yes	no	Total
Haveyoueverbeengivenaticketforillegallyparking	yes	Count	9	258	267
		% within Haveyoueverbeengivenaticketforillegallyparking	3.4%	96.6%	100.0%
		% within onehundredfiftydollars	81.8%	52.2%	52.9%
	no	Count	2	236	238
		% within Haveyoueverbeengivenaticketforillegallyparking	.8%	99.2%	100.0%
		% within onehundredfiftydollars	18.2%	47.8%	47.1%
Total		Count	11	494	505
		% within Haveyoueverbeengivenaticketforillegallyparking	2.2%	97.8%	100.0%
		% within onehundredfiftydollars	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.781[a]	1	.052		
Continuity Correction[b]	2.687	1	.101		
Likelihood Ratio	4.132	1	.042		
Fisher's Exact Test				.067	.047
Linear-by-Linear Association	3.774	1	.052		
N of Valid Cases	505				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.18.

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.781[a]	1	.052		
Continuity Correction[b]	2.687	1	.101		
Likelihood Ratio	4.132	1	.042		
Fisher's Exact Test				.067	.047
Linear-by-Linear Association	3.774	1	.052		
N of Valid Cases	505				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 5.18.

b. Computed only for a 2x2 table

Haveyoueverbeengivenaticketforillegallyparking * finalexam150 Crosstabulation

			finalexam150		
			yes	no	Total
Haveyoueverbeengivenaticketforillegallyparking	yes	Count	93	174	267
		% within Haveyoueverbeengivenaticketforillegallyparking	34.8%	65.2%	100.0%
		% within finalexam150	56.7%	51.0%	52.9%
	no	Count	71	167	238
		% within Haveyoueverbeengivenaticketforillegallyparking	29.8%	70.2%	100.0%
		% within finalexam150	43.3%	49.0%	47.1%
Total		Count	164	341	505
		% within Haveyoueverbeengivenaticketforillegallyparking	32.5%	67.5%	100.0%
		% within finalexam150	100.0%	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.434[a]	1	.231		
Continuity Correction[b]	1.215	1	.270		
Likelihood Ratio	1.438	1	.231		
Fisher's Exact Test				.254	.135
Linear-by-Linear Association	1.431	1	.232		
N of Valid Cases	505				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 77.29.

b. Computed only for a 2x2 table

THE UNIVERSITY OF MEMPHIS

Institutional Review Board

To: Brad Poole
Criminology and Criminal Justice

From: Chair, Institutional Review Board
for the Protection of Human Subjects
Administration 315

Subject: An Integrated Approach between Deterrence and Rational Choice Theory (E11-13)

Approval Date: August 9, 2010

This is to notify you that the Institutional Review Board has designated the above referenced protocol as exempt from the full federal regulations. This project was reviewed in accordance with all applicable statutes and regulations as well as ethical principles.

When the project is finished or terminated, please complete the attached Notice of Completion and send to the Board in Administration 315.

Approval for this protocol does not expire. However, any change to the protocol must be reviewed and approved by the board prior to implementing the change.

Chair, Institutional Review Board
The University of Memphis

Dr. K. B. Turner