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**TESTING AND EXTENDING
SELF-CONTROL THEORY OF CRIME**

**A thesis presented in partial fulfilment of
the requirements for the degree of
Doctor of Philosophy
In Psychology at
Massey University**

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2007

**To Brian,
*You truly are my saviour in countless ways***

For Aimee and Adam

In Memory Of

**Brendan Paul Williams
1971 - 2005**

**Susan Kathleen Gough (née Counsell)
1965 - 2007**

ABSTRACT

Self-control theory of crime has had considerable impact on mainstream criminology since it was first published in 1990 by Gottfredson and Hirschi. It is regarded as the most parsimonious criminological theory currently available and has been empirically tested across diverse populations and behaviours. Considerable empirical evidence supports the generality of self-control in predicting crime and analogous behaviours, with low self-control ranked as one of the strongest risk factors for crime. Of substantive concern however is a lack of explanatory power in the theory, a problem that besets criminological theorising in general. This study attempted to integrate self-control theory with theory of planned behaviour (TPB). Whilst self-control provides a stable-dispositional explanation for propensity to crime, TPB is interested in the decision-making processes related to involvement in crime. As such, the study examined the relationship between time-stable self-control and the mediating role of situational-specific factors in the causation of crime. The purpose of the study is twofold. Firstly to investigate the underlying mechanism by which a person with low self-control may have greater propensity to crime and secondly to increase the explanatory value of self-control theory.

Three disparate groups were used to explore the single theories and the integrated theory; female students, male students, and prison inmates. Confirmatory factor analysis and structural equation modelling were conducted to examine the sufficiency of the theories to explain intention to commit crime across three groups. Low self-control was unable to explain behavioural intentions for students but was successful in explaining intentions to do crime in a prison population. The motivational elements of TPB, subjective norm and perceived behavioural control, were shown to exert considerable influence on intention to do crime across the three samples but not attitude. The integrated theory increased the explanatory value of self-control theory for prison inmates over and above its constituent theories. These findings were not replicated with male and female students, raising questions about the generality of self-control

theory. Implications for self-control theory are discussed, especially the need to include significant others and behavioural control variables in understanding the causes of crime.

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Chapter One

INTRODUCTION

*And it came to pass, when they were in the field,
that Cain rose up against Abel his brother,
and slew him (Genesis, 4:8)*

OVERVIEW

Heinous acts against others have been present since the beginning of recorded time. Expunging transgressors from the community was the central concern for law-abiding citizens in order to eradicate the stain of this “wickedness”. Apart from early philosophers such as Plato and Aristotle, it was not until the enlightened period of the 18th century that interest fell upon the problems and causes of crime. Most of the well-known and established criminological theories have been around only since the last 20 years (Bernard & Snipes, 1996).

Notwithstanding the relative recency of research into the origins of crime, criminological research has proliferated to such an extent that there are now numerous theories to account for crime (Bernard, 2002). The early theorists largely viewed crime as an anomaly and thus genetic, biological or psychological origins dominated the causal explanations for this criminal tendency (Lombroso, 1876/1972).

The rising dominance of sociology research into crime saw the rejection of crime as abnormal deviancy. Instead research focused on determining the “structural-process” of crime as greater numbers of crime were observed to occur in certain places or within certain groups (Meier, 1985). Crime causation could be found in an array of sociological explanations, such as a culture of conflict and therefore what constituted normative behaviour (Sellin, 1938), societal reaction to criminals (Lemert, 1967), anomie (Agnew, 1992; Merton, 1968), or living in economically deprived areas or communities that contained

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large populations of itinerants, migrants or dispossessed groups (Shaw & McKay, 1942).

Other theorists such as Hirschi (1969) took the view that crime resulted from differential levels of individual adherence to social conventions and the weakening of bonds to these normative influences. Rational decision-making by individuals to commit crime based on calculation of cost and benefit ratio were emphasised by Cornish and Clarke (1986). Differential association in which the effects of delinquent peer groups had on criminal behaviour were also posited as a cause of crime (Akers, 1985; Sutherland & Cressey, 1978).

Criminologists' search for a "general" theory however was perceived to be a "*fool's errand*" (Tittle, 1985, p. 95). The ubiquity, complexity, and arbitrary nature of the criminological phenomena made this task seem unfeasible. The failure and seeming futility of the quest for a general theory led to efforts in developing crime-specific or offender-specific models that would articulate the specific mechanisms of crime pathways. Theoretical models for white collar crime (Reed & Yeager, 1996), delinquency (Loeber, 1996; Moffitt, 1993), violent offenders (Megargee, 1966), sexual predators (Marshall & Barbaree, 1990; Ward, Hudson, Marshall, & Siegert, 1995), and property crime (Cloward & Ohlin, 1960) were advanced; gaining some empirical support.

The abundance of riches from this research activity has not necessarily been fecund. Bernard (2002) questioned whether many of the established theories were capable of being scientifically tested. The criticisms centred on the logical defects and untestable propositions of the theories (Bernard, 2002; Gottfredson, 1989; Tittle, 1985), "fuzzy" discursive theoretical arguments (Leavitt, 1999), circumscribed phenomenon of interest, whether it be psychological, sociological, biological or economic (Meier, 1985), and insignificant explanatory power (Bernard & Snipes, 1996; Elliott, 1985).

Bernard (2002) stated many of the theories were conceptually flawed and incapable of falsification and queried the general disinclination towards

systematic and scientific examination of the theories. Furthermore, he claimed researchers tended to take the view that theory is an “all or nothing” quest offering only explanations but little in the way of pragmatic solutions. The lack of progress in criminological theorising raised serious doubts about the utility of theories to inform criminal justice policies; in prevention and control of crime and in treatment interventions. Inter-disciplinary rivalry and insular bias towards one’s own theory reduced research efforts to what seemed, at times, more akin to a political and adversarial struggle for ideological acceptance and competing hypotheses. Theories consistent with one’s own disciplinary biases were promoted and bitter antagonism to those that differed hampered theory building (Gottfredson & Hirschi, 1990; Tittle, 1985).

Meier (1985) contended that addition of further explanations that focused on certain aspects of the criminological phenomena was not the solution. The most robust theories were capable of explaining at most 20 percent of the variance in criminal offending (Andrews & Bonta, 2006; Pratt & Cullen, 2000) and theory competition did not seem to be a particularly productive endeavour. With the multiplicity of causal factors in crime, integration of theories was advocated as an alternative to theory building (Bernard & Snipes, 1996; Buikhuisen & Mednick, 1988; Elliott, 1985; Osgood, 1998; Sorenson & Brownfield, 1995, Thornberry, 1987). By integrating theories it was hoped that increase in overall explanatory power could be achieved. As a consequence theoretical integration has dominated criminological research activity since the 1990s (Cote, 2002a; Tibbetts & Gibson, 2002).

Despite an increasing preference for integrated theories, corresponding increase in the explanatory power of the theories remain elusive. Integrationists were criticised by Gottfredson and Hirschi (1989; Hirschi, 1979; 1989) for ignoring the fact that some theories were incompatible and their contradictory propositions unable to be combined. Some theories contained multiple variables at multiple levels, hence not only making the theory untestable and impractical but lacking in parsimony. Bernard and Snipes (1996) further pointed to the lack of consensus on a framework for integrating different theories.

Hirschi and Gottfredson (1989; Hirschi, 1979; 1989) have been the main critics against integration citing theoretical incompatibilities as undermining its usefulness. They believe that the lack of a general theory has been the failure of criminology in guiding social policy, in crime treatment and prevention, and in theory construction. Gottfredson and Hirschi (1990) themselves developed what they refer to as a general theory of crime, commonly known as self-control theory. Cited as the most parsimonious theory to date (Greenberg, Tamarelli, & Kelley, 2002) it is one of the most subjected to empirical investigations. Despite this it can explain up to 20% but not much more of the variance in criminal behaviour.

ORGANISATION OF THE THESIS

The purpose of this research is, firstly, to investigate the adequacy and generalisability of Gottfredson and Hirschi's (1990) self-control theory of crime to a New Zealand population. Then, secondly, to investigate whether integration of the theory with theory of planned behaviour (TPB; Ajzen, 1991) will increase the explanatory power of self-control theory. The following chapter, Chapter 2, will present the intellectual contributions that underlie self-control theory.

Gottfredson and Hirschi readily acknowledge the importance of classicism and positivism to their own theorising and these two schools of thought will be discussed briefly. The ideological underpinning of self-control theory however is influenced principally by the control model and this is discussed more fully in the second chapter. Chapter 3 examines the empirical literature supporting self-control theory and identify its limitations. The rationale for integrating self-control theory with TPB is presented in Chapter 4. This chapter will also comprise of empirical research for TPB particularly those related to deviant behaviours. Chapter 5 presents various forms of theoretical integration and the particular structure to be used in this study. The chapter also includes a description of the study including the aims and hypotheses.

Chapter 6 presents the methodology for the study. The results section will be in two parts: the first part, Chapter 7 will contain the findings from the

measurement models for the theories. The second part, Chapter 8 will examine the structural models for the two theories separately and then the integrated theory. Chapter 9 summarises and considers the findings and finishes with some overall conclusions.

Chapter Two

SELF-CONTROL THEORY OF CRIME

“Although [science] can attain neither truth nor probability, the striving for knowledge and the search for truth are still the strongest motives for scientific discovery”(Popper, 1975, p. 278)

To appreciate Gottfredson and Hirschi's (1990) self-control theory it is important to be cognisant of the intellectual heritage underpinning their theory. This chapter will firstly outline the major influences on Gottfredson and Hirschi's self-control theory. These same influences formed the foundation of Hirschi's (1969) control or social bond theory; the precursor of self-control theory. The elements of self-control theory are discussed in detail at the end of this chapter.

INTELLECTUAL FOUNDATIONS OF CONTROL THEORIES

Classicism

Classical writing on crime is commonly associated with Beccaria (1764/1963), whose slim volume “On crime and punishments” laid the foundation for what became known as the “classical school” of criminology (Moyer, 2001). Classical thinking on crime does not generally concern itself with the causes of crime or the criminal offender per se. Rather, Beccaria's work advocated for penal reform and provided a framework for a criminal justice system based on the principles of utilitarianism. The following discussion of classicism will not focus on its undeniable contribution to the criminal justice system evident today. Instead it will concentrate on the premises derived from that contribution specifically related to crime and the criminal offender.

Nature of man and crime

The classical school is characterised by its principles of rationality, free will and the social contract (McLaughlin, Muncie, & Hughes, 2003). Its vision of a new

CHAPTER 2

social system was guided by the principle promoting “the greatest happiness shared by the greatest number” (Beccaria, 1764/1963, pg 8). As was conventional of the intelligentsia at the time Beccaria assumed all human action was motivated by hedonistic principles; that human nature was basically driven by pleasure seeking, primarily self-serving and not naturally inclined to think about the welfare of others (Bellamy, 1995). Beccaria reasoned that left uncurbed this selfishness “to make himself the centre of his whole world” would eventually lead to anarchy (p. 11).

Although not naturally inclined to forego freedom for the greater common good, man’s rationality could deduce that a state of lawlessness would ultimately be of no benefit to him. In order to achieve this “greater good”, he had to surrender a part of his own liberty and independence through a social contract with the state and the individual in order to preserve the greatest liberty of all, peace and security. This utilitarian goal was thought to protect not only individual rights and freedom but would promote altruistic behaviours as well (Beccaria, 1764/1963).

Beccaria’s (1764/1963) writings do not focus much on the offender but his views of the offender were humanitarian. He presented the criminal not as a malevolent creature devoid of humanity but as an individual not too dissimilar from law-abiding citizens. Despite the offender infringing societal norms, Beccaria advocated for humane treatment and the rights of the criminal, albeit couched in terms of “effectiveness and utility” (Roshier, 1989; p. 9). This vision of the offender as human greatly influenced later positivist criminology, in viewing the law-breaker with sympathy and worthy of investigation and rehabilitation.

Fall of Classicism

It was not long before challenges to Beccaria’s conceptions of the rationality of man were raised especially when applied in practice (Taylor, Walton, & Young, 1973). Having a system that focused on crime rather than the criminal offender and applying the principles of equality and fairness to all in sentencing did not take into account all individuals were not endowed with equal capacity for

rationality or that events were not always within one's control. For example, two factors mitigating the exercise of free-will and hence criminal "responsibility" were insanity and gross mental impairment. Children also fell within this group who because of their limited cognitive development could not be held accountable for their decisions.

More substantive attacks however eventually led to classicism falling out of favour and the emergence of positivistic doctrine during the middle to late 19th century.

Positivism

Although the influence of classicism continued into the early 19th century, it was criticised for its narrow focus on crime and punishment (White & Haines, 2004). Undisputedly influential on the evolution of jurisprudence and criminal justice practices, classicism did little to advance the study into the causes of crime and possible treatment of the criminal offender. It was seen as incompatible with positivism and its tenet of free-will an illusion (Taylor, Walton, & Young, 1973). In contrast to classicism, positivism's interest lay with the criminal offender and the search for determinate causes for their acts (White & Haines, 2004).

Equally, the "armchair" philosophising of classicism appeared antiquated as the prevailing mood shifted towards a doctrine of scientific methodology and objectivity in the study of human behaviour (Taylor et al., 1973; White & Haines, 2004). The scientific methodology employed in investigating the physical world appeared promising for the study of human behaviour as it was presumed to be governed by similar laws of nature (Matza, 1964; Taylor et al., 1973).

Rise of positivism

Two major areas of study offered evidence that countered classicism's notion of free-will. The first was by Quetelet, a French mathematician, credited with beginning the scientific study of crime (Sylvester, 1972). With a background in statistics Quetelet (1842/1972) analysed crime statistics collected in France

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during the period of 1826 to 1829. The data showed crime rates fluctuated according to environmental and personal variables. Age and gender demonstrated the most robust association with crime rate but climatic changes and the state of the economy also unexpectedly affected variations in the type and level of crime committed. Not only were these associations strong but they were consistently observed across each of the four years.

These statistics were at variance with classicist's claim of individual rationality. Quetelet (1842/1972) argued that despite one's capacity to make decisions social circumstances appeared to exert an influence on lawbreaking. He believed that crime was the resultant outcome of societal conditions in that the offender an "expiatory victim" of his social circumstances (McLaughlin et al., 2003, p. 46). Inferring from the data Quetelet maintained criminal behaviour was similarly subjected to the laws of nature and could be investigated in the same manner as that of the physical sciences.

The second support for positivist thinking came from Lombroso (1876/1972) who introduced the notion that criminal behaviour had biological origins published in "The Criminal Man". Lombroso was greatly influenced by Darwin's (1895/1979) phylogenetic findings and devoted his life to studying the causes of crime. Through his work, Lombroso identified five typologies of criminals. The one with which he is most identified was the 'criminal man'; which Ferri (1917/1972, p. 119) later termed the 'born-criminal'. This "born criminal" was atavistic in form and could be differentiated from non-criminals by his/her physiognomy, in possessing such features as abnormal dentition, asymmetric face, large ears, eye defects, and other characteristics of an evolutionary throwback.

Continuing with Lombroso's work Ferri (1917/1972) argued that criminality was created by the interaction between the individual's physical constitution and the social, economic and political environment. Under these circumstances criminal types were incapable of exercising free will as to whether to commit crime or not. Punishment of such individuals would therefore be unjust and would not

attenuate or eliminate crime. Ferri further strongly advocated for a discipline in criminal sociology, one that was based on scientific methodology to study crime and criminal offenders.

In summary, positivism emerged during the 19th century in a period of great social upheaval characterised by a rise of the proletarian classes and major industrial, social, and political conflict (White & Haines, 1996). In such social circumstances the notion of free will was anathema to the conditions individuals endured, whether they be social conditions or genetic inheritance. Using the tools of scientific methodology to systematically study society, the prevailing belief was that science would ultimately provide the knowledge to overcome existing social problems and ills, such as crime and poverty (White & Haines, 1996). The legacy of these early positivists laid the foundations for the positive school of criminology evident today.

Assumptions of positivism

Adopting the concepts and scientific methodology of the natural sciences into the realm of the social sciences, society or individuals were seen as organisms subject to laws similar to those operating in the natural world (Matza, 1964; Taylor et al., 1973). Thus, premises from the natural sciences were thought to be equally valid in the investigation of behaviour. Revolutionary for its time the foundation of science was based on three principles, with the first being the idea that social scientists were neutral and detached observers (Hagan, 1985; Taylor et al., 1973). Secondly, the key methodology of investigation was the classification and quantification of human experience and behaviours using unbiased measurements. Lastly, the social world was thought to obey general laws of nature. The task for the positivist social scientist was to uncover the causal determinants of crime and ultimately to reduce if not eliminate criminal offending.

Based on the principles of positive science, a number of postulates were derived for criminology (Matza, 1964; Taylor et al., 1973). Firstly, the offender rather than the criminal act was given central status as the focus of analysis.

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Individuals who deviated into crime were somehow fundamentally different from those who did not. Deviancy was “abnormal” and the causes for differentiation could be discovered in endogenous or exogenous factors of the criminal offender. Possible causal factors to crime such as social, environmental, family, and biological were stressed. In addition, individual variations between offenders could be measured and classified.

A second feature of the positivist's model was the notion of the determination of behaviour. Classicist's syllogism of man as a rational being with the freedom to exercise choice was antithesis to the heuristic principles of science. Under determinism every event had a cause (Matza, 1964). Rather than free-will, man's behaviour was constrained by some forces outside his/her control and his or her actions were shaped primarily by certain influences exerted upon the individual, whether they were biological, psychological, or social in origin. Crime could be explained by reference to forces and factors outside the decision-making ability of the individual, thus negating the notion of free-will and responsibility. The causes of deviancy could be determined by as yet to be discovered causal laws through careful and systematic scientific investigation.

The view of the criminal as not being totally responsible for their behaviour led predictably to the third premise, that rather than punishment offenders required treatment. The situation or conditions that caused the individual to offend needed correction or treatment and punishing the individual would not eliminate crime. As the causes of criminality differed from one offender to another, treatment had to be individualised and to be provided for as long as required to modify or change the behaviour.

Melossi (2000) contends that since the 19th century, attitudes towards criminals have oscillated between two social attitudes; one in sympathy with the criminal, who was viewed as rebelling against an unjust and restrictive social order, and the other with strong antagonism where the criminal was portrayed as immoral, violating the norms of society and undermining the social fabric of civilisation. It is not without coincidence that these opposing attitudes correspond with periods

of political and socio-economic changes, influencing the various theoretical perspectives in criminology.

Challenges to determinism in criminology

The political and social turmoil of the 1960s led to disaffection with causal determinism in criminology. The principles of positive criminology based primarily on viewing the criminal as pathological and needing to be reformed or rehabilitated appeared repressive during a period of civil rights movements, concerns about environmental issues, inequalities based on racial, gender, and class distinctions, distrust of those in authority, antipathy towards large corporations, the encroachment of capitalism, and rapid technological advances (Roshier, 1989). In this social climate, the foundations of the interactionist school of criminology were laid. This was followed in the 1970s by more strident and revolutionary form of criminology, known collectively as conflict models.

Another set of theories known as control theories were also opposed to the positivist's adherence to the deterministic causal explanations of crime (Cote, 2002b; Hirschi 1969). Traditional concepts of causation relied upon the spatial-temporal proximity of cause and effect, with the premise that the causal factor always brought about the effect and was a necessary condition for the effect to occur (Akers, 2000; Humphreys, 2000). This hard deterministic stance rejected the notion of free-will or that events occurred randomly or spontaneously. Instead, it was believed human action operated uniformly and predictably with cause and effect "contiguous and successive"; analogous to physical and chemical systems (Ray, 2000, p. 287). Matza (1964) believed the adoption of scientific determination for crime was driven by its pursuit for scientific status.

The inability of hard determinism to explain human behaviour led to it falling out of favour and acceptance of a probabilistic account of causation (Humphreys, 2000). Rather than A causing B, the probabilistic formulation asserts that in the presence of A, B is more likely or more probable to occur and be invariant across a wide range of contexts (Akers, 2000; Humphreys, 2000). This probabilistic account or "soft determinism" proposed that the cause of crime

could not be entirely explained by external or internal forces but recognised that choice still played a role, albeit constrained and influenced by a number of factors outside the person's volitional control (Matza, 1964). Dissatisfaction with the early criminological theories were increasing and in this climate control theories emerged (Cote, 2002b; Hirschi 1969).

Durkheim

Particularly influential to social control theorists (Taylor, 2001), Durkheim is credited with being the founder of sociological criminology (McLaughlin et al., 2003). In his writings, Durkheim (1893/1933) viewed society as formed by a consensus or a collective conscience. At the individual level, two types of "consciences" were present: one, the egoistic self characterised by individuality and personal self-interest, and the other represented by "collective" conscience whose interest was to pursue goals and acts in accordance with the interest of social cohesion. For Durkheim, the collective conscience moderated the urges of the egoistic self through ties to social relationships. He maintained the two consciences were mutually exclusive in that one could not pursue one's own interest whilst at the same time taking into regard the interest of the social group.

In a smaller homogenous community, the collective conscience exerted a strong influence on normative behaviour. As society became more complex, changing from an agrarian-rural base to industrialised city-base and growing in size and density, the closeness of traditional social controls and regulatory influences on relationships become weakened. In such situations, anomie (normlessness) may arise as individual becomes separated and detached from family and meaningful social interactions. The effects of anomie are illustrated in Durkheim's (1897/1951) study on suicide. Using official records of suicide rates he examined the interaction of various factors such as age, gender, religion, and family had on the individual's integration into society and the regulatory influence these social factors had on the suicide rate. He concluded that rather than being an entirely individual act, suicide was a social phenomenon. Social structures such as marriage, family, and religion which

were cohesive and in which an individual felt well integrated served a protective and preventative function against suicide. Those alienated from their social networks experienced less regulatory influence on their social behaviour with the consequence they were at greater risk of suicide.

Of particular interest to criminologists (Hirschi & Gottfredson, 2003) was the group Durkheim labelled "anomic" suicide (Durkheim, 1897/1951, p. 219). The anomic suicide group consisted of individuals already well integrated into social structures of work and marriage. As a result of unexpected trauma, disasters, loss or social upheaval the regulatory effects of these structures became absent. In such situations the person lapsed into despondency and anxiety, increasing the risk of suicide. For Durkheim, the anomic suicide reflected the state of crisis existing within society and suffering of its members.

Family was thought by Durkheim to play a primary role in protecting against anomic suicide through its influence on the development of bonds to others and into the wider social groups. The regulatory influence of well-integrated groups gave the individual a sense of purpose in life and a consistency and connectedness to society (Hirschi & Gottfredson, 2003). Work also occupied a similar function as families in exerting a regulatory influence by providing collective or common goals, a place of support, and reducing "moral isolation" (Durkheim, 1897/1951, p. 346). These two socialisation agencies played a significant role in Hirschi's (1969) social bond theory.

In addition to suicide, a rise in crime accompanied the disintegration of one's social network. Crime was defined by Durkheim as an "an act contrary to the strong and defined states of the common conscience" and elicited condemnation by the collective group (Durkheim, 1893/1933, p. 105). However with regards to crime, Durkheim (1895/1982) made the distinction between the normal and the pathological. He pointed out that crime was ever present in all societies and thus not only normal but also necessary. He further stated that crime in a sense was an integral feature in the development of a

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healthy society, reflecting the degree of progress towards an egalitarian social order.

Although strain theorists trace Durkheim's (1897/1951) anomie concept as explaining how individuals become pressured into deviancy (Kornhauser, 1978), control theorists do not view anomie as the motivation for deviancy. Rather, they regard anomie and egoism as explaining the conditions of deregulation and deviancy the natural consequence of isolation from the influence of regulatory controls (Hirschi, 1969). Hirschi believes Durkheim's (1897/1951) theory as "one of the purest examples of control theory" (p. 5, note 1).

ASSUMPTIONS OF CONTROL THEORIES

Representative of the control perspective were Hirschi (1969), Matza (1964), Nye (1958), Reckless (1961), and Reiss (1950). These theorists were influenced by early sociological researches from University of Chicago such as Shaw and McKay (1929) and Thrasher (1927) and psychology (e.g. Freud [see Rickman, 1953] and Piaget, 1932).

Social disorganisation and consensus model

Before outlining his control model of delinquency, Hirschi (1969) tried to dissociate his theory from other major contemporary theories, such as strain (e.g. Merton, 1938) and cultural deviance (e.g. Shaw & McKay, 1942). Kornhauser (1978) disagreed locating control theory as but one variant of the social disorganisation model and strain being the other. Whilst strain and control theories were regarded as fundamentally incompatible (Taylor, 2001), Kornhauser (1978) underscored major differences were in their account of the individual's response to social disorganisation. Hirschi (1986) further added that at the heart lie their differences about the fundamental nature of man, discussed in the next section.

Despite ideological differences, both strain and control theories have social disorganisation underpinning their perspectives. Social disorganisation implies that within any community there exists a consensus on moral values constituting normative code of conduct and codified in criminal statutes (Kornhauser, 1978; Nye, 1958). It also accepts that cultural differences exist between subgroups but that despite these differences all subgroups hold common core set of values related to security, health, and economic sufficiency.

Reflecting Durkheim's (Durkheim, 1897/1951; 1893/1933) writings, a well-integrated social organisation consist of individuals with multiple strong social bonds that gratify their needs and that are rewarding. These social relationships increase a person's stake to conformity and limit vulnerability to deviate from the norm. Whilst most people actively participate in the socialisation process, some will resist the controls to conformity and are impervious to the consensual values of societal standards. Thus, to some extent socialisation is never complete and varying levels of social disorganisation will exist in all societies.

Despite the existence of some social disorganisation in any society, social disorganisation may also occur through circumstances that causes a breakdown in social structure and culture. Such circumstances may be migration from rural to urban areas, immigration, and conflict of values between old and new behaviours. Normal social control and socialisation process may become ineffective and when an individual's bond to their families and society are weakened violation of norms and deviancy becomes a possibility.

Nature of man

Although there are differences between control theories, Hirschi (1969) asserted they essentially reflected fundamental principles about the nature of man and crime.

Firstly, control theorists took the framework of classical criminology which portrayed man as principally amoral whilst positive criminology viewed human

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nature as fundamentally moral (Hirschi, 1969). The notion that amorality is uniformly applied within society however is simplistic (Hirschi, 1969). Rather, Hirschi argued it referred to differential levels of adherence to social conventions. As such, the hard deterministic stance of positive criminology was rejected positing individuals were compelled or "pushed" into crime for sociocultural, psychological, or biological reasons. Control theorists adopted the position that people's actions were not constrained by their social circumstances but each had a level of freedom to choose their actions even if choices were limited by the constraints of their situation. Individuals were not passive agents of their environment but had the ability to reason and to decide conformity over non-conformity whatever their circumstances.

The fundamental nature of man leads logically to a corollary about the distinctiveness of the criminal. Given classicism's assumption that people were naturally hedonistic, criminals did not differ from non-criminals. Instead individual differentiation was based solely on the ability to reason and calculate the consequences of conformity over deviancy, directed by self-serving interests (Hirschi, 1969). This contrasts with the premise of positive criminology that differentiation between the deviant and the law-abiding can be observed whether by physiognomy, in personality or in social conditions (Matza, 1964).

Control theorists argued motivation to offend was primarily utilitarian and constant across all persons, an ever-present potential in human action. Like the classicists before them control theorists considered the search for motivational explanations for delinquency unproductive undertaking (Hirschi, 1969; Kornhauser, 1978).

Types of control

All controls are assumed to be social in origin as they arise from and are maintained by social relationships (Kornhauser, 1978). Nye (1958) identified three social control categories later extended and explicated by Kornhauser (1978). According to Kornhauser the sources of control consisted of two axes

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with both associated with deviancy. The first is the internal-external axis and are invoked by self or by others. The second is on the direct-indirect continuum.

The direct control element consisted of purposeful efforts that have the intention of effecting conformity or limiting deviancy. The indirect component referred to relationships established for purposes other than as a control mechanism but nevertheless indirectly reduces deviancy. A diagrammatic representation of the four control elements is shown in Figure 2.1.

The sources by which the constraints of normative controls are weakened are of prime interest to control theorists. Their efforts concentrated on the interaction between individual or social controls that influenced conformity.

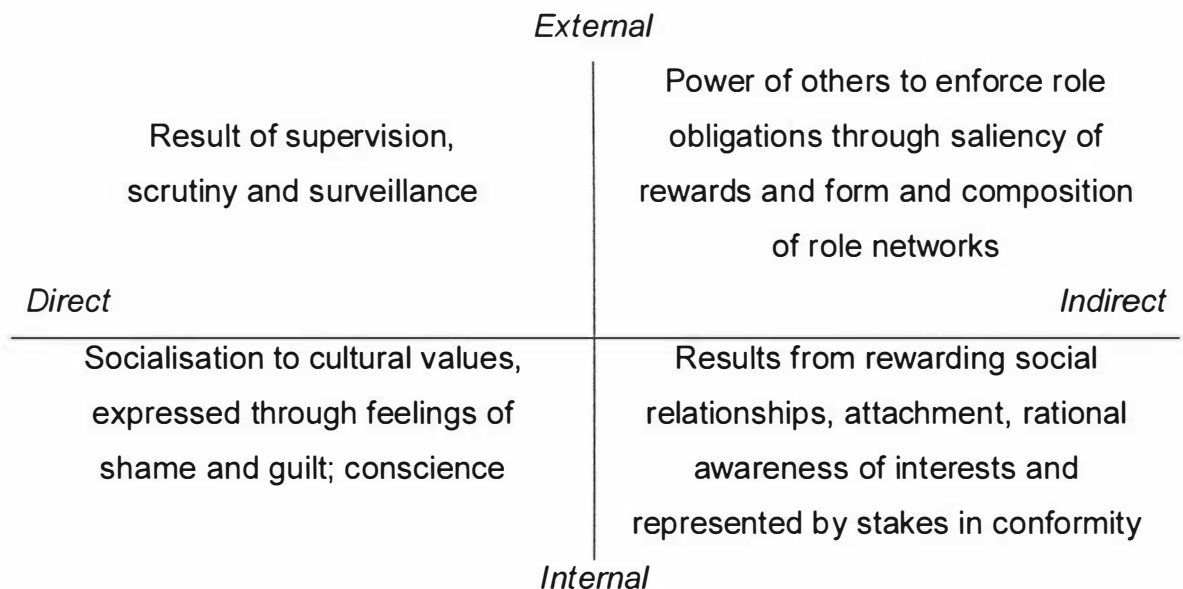


Figure 2.1. Kornhauser's (1978) typology of control

Heuristic enquiry

Given the evidence that many do not infringe despite having the opportunity to do so or regardless of extenuating circumstances that would attract them towards crime of heuristic value for control theorists is the Hobbesian (Hobbes, 1959) enquiry *why* people conform. As Hirschi (1969, p.34) stated, the question of interest is "Why *don't* we do it [crime]?" rather than "Why *do* they do it [crime]?". For control theorists deviancy rather than the offender is the problem.

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The central heuristic enquiry therefore is why people conform and *not* commit crime as opposed to positive criminology which is concerned with why people commit crime (Britt & Gottfredson, 2003; Hirschi, 1969; Roshier, 1989).

According to Hirschi (1969) the conditions for deviancy increases when the bonds to the collective norms have been weakened or are non-existent in some way. Variation in the strength of this commitment to the normative values is the primary cause of delinquency (Kornhauser, 1978). Fundamental to the control theory therefore is the uncovering of sources that account for this variation, whether external social processes or the internalised processes that maintain control to conformity (Kornhauser, 1978). The role of family, schools and community as agents in the socialisation process are generally the targets for investigation. It is the extent to which these interpersonal relationships are able to gratify the needs of the individual that explains the development and maintenance of strong social bonds.

HIRSCHI'S (1969) SOCIAL BOND THEORY

Hirschi's (1969) social bond theory of delinquency is regarded at a "pure" control theory focusing on motivation to conformity in which individuals do not follow their self-interest without due regard to the interests of others (Zahn, 1999). His theory differed from other control researchers in that he focused only on social control and ignored the role of personal control; unlike for example Nye's (1958) self-esteem model, Reckless, Dinitz, and Murray's (1956) containment theory, Reiss' (1975) ego development, and Sykes and Matza's (1957) neutralisation techniques theory.

Attempts by early control theorists to conceptualise specific control elements were criticised for being unclear and imprecise, rendering empirical validation unfeasible (Kornhauser, 1978). The major contribution of Hirschi (1969) was in specifying the specific components of control by postulating the four elements that he believed contributed to an individual's bonds to society. He

hypothesised the bonds were inter-related and that the stronger the relationship the greater the bonds to conformity and lesser likelihood of criminal activity.

The four elements postulated were; *attachment* described internalisation of norms from others and having regard for their opinion; *commitment* reflected effort invested towards conventional aspirations such as education, occupation, reputation, and material goods. As Hirschi (1969) stated the more a person devoted to attaining these goals, the greater the cost of deviancy in putting at risk this investment and/or in jeopardising future opportunities. Thus, stronger commitment to conventional behaviour effected greater attachment to conformity. *Involvement* described the level of engagement in conventional type activities. The more one was involved in a range of activities, the less were opportunities to consider or engage in deviant behaviour. Finally, *belief* explained why despite knowing the wrongfulness of a particular behaviour, one person would carry out a criminal act whilst another would not.

Hirschi (1969) contended that variations existed between individuals in their beliefs about the moral validity of societal norms. One's strength of belief about abiding by the rules of society was inversely related to the probability of breaking those rules and deviancy. Hirschi asserted, however, that no particular motivation was required to explain why some should possess weaker beliefs about the moral validity of societal rules than others apart from the fact that variability exists. The results from his research found that the stronger the attachment to conventional patterns of conduct, there was less likelihood of delinquency. The findings were the same no matter the socio-economic status of the individual concerned. However, Hirschi acknowledged that his theory was limited by not considering the influence of delinquent peers on delinquency and that future theories needed to include contributions of delinquent friends in criminological theorising.

Since publication of social bond theory, a plethora of studies have investigated the theory and generally validated the theory's propositions (Akers, 1985), although the correlations tend to be small to moderate (Akers, 2000).

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Commentators have noted that Hirschi's theory fared better than its contemporary rivals in predicting deviancy such as differential association and cultural deviance (Wiatrowski, Griswold, & Roberts, 1981).

The impact of Hirschi's (1969) theory was undeniable and was the most tested and discussed theory in criminology (Stitt & Giacopassi, 1992). It set the "benchmark for theory construction and research in the delinquency field" (Wiatrowski et al., 1981, p. 525) and it was praised by Akers (2000, p. 105) for being "internally consistent, logically coherent, and parsimonious" theory of crime and deviant behaviour. However, Greenberg (1999) attributed the attraction of social bond theory, in part, to its ideological appeal to political conservatism. The theory's concentration on the family, school, and community as principally responsible for instilling respect for social norms and conventional institutions was seen by radical criminologists as ignoring structural inequalities and social reform.

FROM SOCIAL BOND TO SELF-CONTROL THEORY

Age-effect debate

Significant shifts in criminological theorising took place between 1969 when Hirschi published "causes of delinquency" and 1990 when he and Gottfredson combined to develop "general theory of crime". In that time criminological research activity became occupied by the phenomena of maturation effect of crime within the general population. The age-effect on crime was first raised by Quetelet (1842/1972) when he observed crime rate rose steeply in the pre- to early teen years reaching its peak by the mid-teens. From there a rapid decline in crime rate was observed levelling out from late teen onwards. This relationship between crime and age was consistently observed over time, place and culture and for different types of crime.

That crime appeared to be unstable over time where most young offenders appeared to reform their delinquent ways by mid-to late teens led to

criminological research concentrating on the developmental period of the early delinquent years. Theories that did not take into account the instability of a criminal lifestyle were regarded as empirically unverifiable and ineffectual as an explanatory model for crime (Robinson, 2004). Criminological discourse focused on “career criminals”, “onset and desistance”, or the “aging effect” of crime (Hirschi & Gottfredson, 1983). Changes in social circumstances such as family, marriage, and occupation were frequently advocated as possible explanations for the transformation of the delinquent into law-abiding citizens. To this end exemplary model for investigation was the longitudinal design and regarded as the only methodology capable of investigating the association between age and crime.

In this milieu, control theories were rejected for their failure to account for the aging phenomena. These criticisms inspired Hirschi and Gottfredson (1983) to examine age-effect of crime and reformulation of social bond theory (Gottfredson & Hirschi, 1990).

Explaining age-effect on crime

Gottfredson and Hirschi (1983) found evidence that maturational trend occurred not just in crime but with non-crime acts as well such as the incidence of vehicle accidents reducing with age. In fact, not only was the instability phenomenon found amongst the high offender groups but in low offender groups as well. Even within a homogenous group such as incarcerated prisoners the number of misbehaviour indictments was shown to be inversely related to age. Again the age-effect for these groups appeared to be invariant over time, culture, and place.

From this, Gottfredson and Hirschi deduced the ubiquity of age-effect on crime could not be accounted for by current criminological theories. In fact they argued explanations emphasising life-course events as mitigating criminal activity were confounding these life changes with the effects of age. They regarded age as having an independent effect on crime differing from life-events and that reduction in crime rates could be explained purely on

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maturation or spontaneous desistance rather than life-events (Hirschi & Gottfredson, 1986). Conversely they believed no empirical evidence showed life-course events such as relationships, occupation or other events had any influence on the reduction of crime in those already criminally-oriented (Hirschi & Gottfredson, 1986). The relative stability and persistence of delinquency into adulthood during periods in which criminal activity was supposed to have declined (i.e. after mid- to late adolescence) was supported by other researchers (Huesmann, Eron, Lefkowitz, & Walder, 1984; Loeber, 1982; 1991; McCord, 1989). Hirschi and Gottfredson (1983) went on to question the utility of longitudinal research when age was found not to be useful in predicting future offending or in providing treatment for young people in order to prevent crime. This view remains contentious and much debated (Blumstein, Cohen, & Farrington, 1988; Tittle & Grasmick, 1998).

Taylor (2001, p.382) noted that Hirschi and Gottfredson's deliberations about the effects of age in the explanation of crime was a defining moment in the realisation that age-effect could be "ignored". However, their attempts to develop a theory was hampered by the inability to reconcile contradiction of delinquency as a stable construct and crime as an unstable construct (Hirschi & Gottfredson, 1986). The confusion according to Hirschi and Gottfredson (1986, (p. 57) lay in a lack of differentiation between the two constructs, "crime" and "criminality", in criminological discourse.

Crime refers to acts, events that are short-term and circumscribed (Hirschi & Gottfredson, 1986). Criminality on the other hand refers to propensity to commit criminal or analogous acts and as such is a stable characterological variation observable in any population. According to Gottfredson and Hirschi career criminal researchers used crime acts as measures for both constructs and thus a change in crime acts inferred a change in criminality. By making distinctions between these two constructs it was feasible for crime acts to change whilst criminality remained stable. Crime acts could be a partial but not necessarily an accurate measure of one's criminality. However, one's level of criminality did not require crime acts to be a measure of this trait. Differentiation between crime

and criminality was critical in the development of self-control theory (Gottfredson & Hirschi, 1990).

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Gottfredson and Hirschi (1990) regard self-control theory as a general theory of crime as it explains not only all forms of criminal activity but crime across time and place. It retains the traditional classical framework of criminality that viewed human behaviour as driven by hedonistic tendencies and integrated with the positivist tradition of trait theory (Sorenson & Brownfield, 1995; Taylor, 2001).

Defining crime

Gottfredson and Hirschi (1990) opposed contemporary criminologists' conceptualisation of crime as defined by politico-legal acts rather than by scientific endeavours. They argued that this position directed attention to "What causes crime?"; often thought of as the most sacred and fundamental question in criminology (Laufer & Adler, 1989). This question directed investigations towards factors perceived to be associated with offender variables and thus relationship between deviance and crime was considered to be cause and effect. Gottfredson and Hirschi (1990, p. xiv) contended there was no empirical support for this causal relationship. They proposed that rather than adopting unquestioningly legalistic definitions of crime scientific enquiry should seek "What is crime?" rather than "What causes crime".

In reviewing the literature Gottfredson and Hirschi (1990) found popular conceptions of crime portrayed in the media, in social science research or promoted by law enforcement bodies bore little resemblance to the actual nature of crime. The fundamental characteristic and general pattern in a range of crimes such as burglary, robbery, homicide, car theft, rape, drugs and alcohol, and white collar crime, showed they were mundane, simple, trivial, required little effort, and motivated by the immediacy of gratification for the offender. Essentially the conditions required for crime to occur were a motivated offender, a suitable target, and the lack of a capable guardian.

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The characteristics of most crimes were firstly its effortlessness with most showing little in the way of planning and preparation and having minimal or no skill required in its execution. Most targets or victims of crime were chosen for their ease of accessibility and lack of obvious deterrence factors. Secondly, crime provided benefits to the offender with crime targets usually chosen for its attraction and appeal, providing immediate, easy, and simple gratification of desires. However, the gains from crime were often negligible and fleeting even in crime typically regarded as highly profitable such as organised crime and drug dealing. Concluding from these findings Gottfredson and Hirschi (1990, p. 15) operationalised crime as "acts of force or fraud undertaken in pursuit of self-interest", invoking classicist's assumption of human behaviour as hedonistic that was rational and self-serving.

Several premises underlie this conceptualisation of crime. Firstly, not only are these elements found in crime but they are also common characteristics of acts equivalent to crime; acts which also produce similar social problems. These analogous behaviours include delinquent and reckless behaviours such as alcohol use, gambling, accidents, and promiscuity. Although not readily apparent, Gottfredson and Hirschi (1990) believed examination of the correlates and circumstances under which these analogous behaviours occurred would demonstrate they have much in common with crime; in that they offered short term pleasure for little effort. Therefore, crime and deviance were manifestations of a single cause. Causal variables for deviance were identical to causal variables for crime and are not cause and effect.

Secondly, all crimes have the same etiological causation. This assumption ran counter to prevailing opinions on the multiplicity and diversity of crime acts and that separate theories or multiple-factor theories were required to explain them (Tittle, 1985). Finally, by shunning the legal definition of crime Gottfredson and Hirschi (1990) avoided the problem of particular behaviours being illegal at one point in time but not in others and in some societies but not in others. For this reason, they defined their theory as a general theory of crime in that it was not bound to specific historical period or culture.

Defining criminality

Although Gottfredson and Hirschi (1990) employed the classical framework in conceptualising crime, they found it unhelpful in understanding criminality. A purely classical control framework tends to ignore the criminal with the assumption that individuals were not dissimilar in their inclination towards illegal behaviour. On the other hand empirical evidence showed consistent individual differences in propensity to engage in criminal, delinquent, and reckless acts and these differences remained stable throughout the person's lifetime (Loeber, 1982).

Gottfredson and Hirschi's (1990) major consideration in conceptualising criminality was that it closely aligned to and was consistent with the nature of crime. Considering characteristics of crime as acts pursued for self-interest (the benefits of which were meagre and short term and requiring little in the way of effort, planning or skill) readily led to inferences about the characteristics of the individual likely to engage in such events. According to Gottfredson and Hirschi crime appealed to those unconcerned with long-term consequences of their behaviour as crime and analogous behaviours would be incompatible with long-term aspirations and goals. Individuals with long term aspirations would resist the transitory pleasures and short-term gains offered by crime.

Assigning this general disposition as "self-control", self-control was defined as the ability to exercise restraint when faced with the temptation and opportunities to commit deviant and antisocial acts (Gottfredson & Hirschi, 1990, p. 87). Difference in self-control is the causal explanation at the individual level not only of propensity to crime but also for a range of related behaviours and life outcomes. Early socialisation primarily through childrearing practices was the main influence on the formation of self-control. By late childhood stability of self-control was evident and this enduring trait remained throughout the individual's lifetime. By implication the stability of self-control suggested longitudinal studies were unnecessary.

Manifestations of low self-control were impulsivity, seeking easy and simple self-gratification, risky acts, engaging in physical as opposed to mental activities, short-sightedness, and insensitivity to others. As a consequence of the stability of self-control diversity of imprudent and deviant behaviours would be noticeable throughout all periods of the individual's life. Although persons with low self-control are characterised by an inability to consider the long-term consequences of their behaviour Gottfredson and Hirschi (1990) denied this inexorably led to crime. Rather it suggested that low self-controlled individuals did not consider the long-term consequences of their behaviour and thus the probability would be greater of yielding to the pleasures and gains of the moment offered by crime and related acts.

Defining opportunity

By itself low self-control was not the primary determinant of crime but dependent on situations offering opportunities to deviancy. Crime opportunity is the second determinant of crime. It is the interaction between low self-control and the opportunities afforded by the immediate environment that produces criminal and deviant acts. Opportunity provides the situational explanation under which particular crimes occur and the sources of opportunities are limitless. Some of the factors that maximise opportunities and restrict situational constraints are derived from Cohen and Felson (1979) routine activity approach such as low risk of detection, ease, and immediate gratification. Thus together with self-control and the influences of opportunity and early socialising influences the determinants of crime or analogous behaviours are shown in Figure 2.2 below.

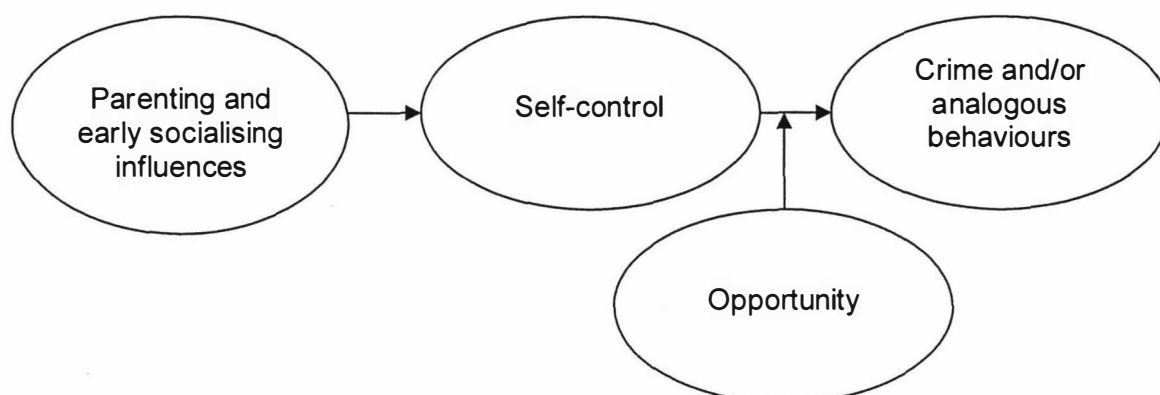


Figure 2.2. Gottfredson and Hirschi's (1990) general theory of crime

Compatibility with social bond theory

Whilst Gottfredson and Hirschi (1990) make no reference to earlier social bond theory Taylor (2001) regards the two theories as incompatible, particularly in the formulation of the control component of the theory. The various control mechanisms in social bond theory are dynamic and interdependent with interplay between the social environment and the internalisation of control. Whilst the influence of the social bonds can vary throughout the lifespan self-control is enduring and stable once established in the early formative years. In the formulation of self-control theory the enquiry into *why* people conform has less significance. Furthermore, Taylor (2001, p.383) contends self-control theory downplays sociological influences and is "much more individualistic" taking a probabilistic account of self-control as a predisposition rather than a causal factor in crime.

Despite this the connections between the two theories are apparent in their mutual emphasis on the classical tradition, the primacy of family in the socialisation of control, criminality having an inverse relationship with conventional aspirations, and its view that a consensus exists on normative conduct. In fact Hirschi and Gottfredson's (1990) inclusion of an internal control construct, neglected in the earlier theory is similar to that of other control theorists (such as Nye, 1958, Reckless, 1955; and Reiss, 1950). In keeping

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with earlier theorising, parsimony is also an emphasis in a general theory. The empirical findings related to self-control theory are discussed in the next chapter.

Chapter Three

EMPIRICAL STATUS OF SELF CONTROL THEORY OF CRIME

"Once and for all I wish to record my unbounded admiration for the work of the experimenter in his struggle to wrest interpretable facts from an unyielding Nature who knows so well how to meet our theories with a decisive No or with an inaudible Yes" (Weyl, 1931, p.xx)

Like its predecessor, social bond theory, Gottfredson and Hirschi's (1990) self-control theory has had considerable impact on mainstream criminology (Taylor, 2001) and is regarded as the most parsimonious currently available (Greenberg, Tamarelli, & Kelley, 2002). It has been the most cited in criminology and criminal justice journals (Cohn & Farrington, 1999) and, together with social control theory, is the theory most favoured by criminologists (Walsh & Ellis, 1999).

Many of the empirical research testing the self-control theory have been conducted in North American or Canadian states (e.g. Brannigan, Gemmill, Pevalin & Wade, 2002; Junger & Tremblay, 1999; Lagrange & Silverman, 1999; Nakhaie, Silverman, & Lagrange, 2000b; Perrone, Sullivan, Pratt, & Margaryan, 2004), or with minority groups in North America (e.g. Burt, Simons, & Simons, 2006; De Li, 2005; Morris, Wood, & Dunaway, 2006; Vazsonyi & Crosswhite, 2004). A small number of studies have been carried out in Europe (e.g. Marcus, 2003; Romero, Gomez-Fraguela, Luengo, & Sobral, 2003), including a four-nation comparative study in Hungary, Switzerland, Netherlands and United States of America (Vazsonyi, Pickering, Junger, & Hessing, 2001), and in Asia (e.g. Russia [Tittle & Botchkovar, 2005], Iran [Allahverdipour et al., 2006], and Japan [Vazsonyi, Wittekind, Belliston, & Van Loh, 2004]).

Research participants have been overwhelmingly university or high school students (e.g. Arneklev, Grasmick, Tittle, & Bursik, 1993; Benda, 2005; Bolin, 2004; Chapple, Hope, & Whitford, 2005; Cochran, Wood, Sellers, Wilkerson, &

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Chamlin, 1998; De Li, 2004; Gibbs & Giever, 1995; Gibson, Schreck, & Miller, 2004; Gibson & Wright, 2001; Higgins & Makin, 2004; Mansfield, Pinto, & Parente, 2003; Mason & Windle, 2002; Muraven, Pogarsky, & Shmueli, 2006; Nagin & Paternoster, 1991; Nakhaie et al., 2000b; O'Gorman & Baxter, 2002; Perrone et al., 2004; Peter, LaGrange, & Silverman, 2003; Piquero & Tibbetts, 1996; Romero, Gomez-Fraguela, Luengo, & Sobral, 2003; Schreck, 1999; Sellers, 1999; Sorenson & Brownfield, 1995; Stylianou, 2002; Vazsonyi, Pickering, Junger, & Hessing, 2001; Vowell & Chen, 2004; Winfree, Taylor, He, & Esbensen, 2006; Wood, Pfefferbaum, & Arneklev, 1993). A small number, such as Junger and Tremblay (1999), Lagrange and Silverman (1999), Swigert (1989) and Unnever and Cornell (2003), included young pre-adolescent children in their studies. Even less evident are studies with the general population (e.g. Arneklev et al., 1993; Evans, Cullen, Burton, Dunaway, & Benson, 1997; Grasmick, Tittle, Bursik, & Arneklev, 1993; Keane, Maxim, & Teevan, 1993; Latimore, Tittle, & Grasmick, 2006; Redmon, 2003). Gender differences were examined by Benda (2005), Blackwell and Piquero (2005), Burton, Cullen, Evans, Alarid, and Dunaway (1998), Higgins and Tewksbury (2006), Keane, Maxim and Teevan (1993), Lagrange and Silverman (1999), Nakhaie et al. (2000b), and Tittle, Ward, and Grasmick (2003a).

Despite Gottfredson and Hirschi's (1993) exhortation to use disproportionate sampling to test their theory only a handful of studies have attempted to validate self-control theory with an offending sample. These focused on white collar criminals (e.g. Benson & Moore, 1992; Langton, Piquero, & Hollinger, 2006; Spahr & Alison, 2004), adjudicated shoplifters (Deng, 1994), juvenile offenders (Longshore, Change, & Messina, 2005; Miller, 1999), drug users (Longshore, Turner, & Stein, 1996), homeless street youth (Baron, 2003) and imprisoned offenders (De Li, 2005; Mitchell & MacKenzie, 2006; Morselli & Tremblay, 2004; Piquero, MacDonald, Dobrin, Daigle, & Cullen, 2005). Collectively, empirical investigations of Gottfredson and Hirschi's (1990) theory are considerable and extensive with participants in these studies numbering from hundreds to over 13,000.

This chapter will, firstly, examine the manner in which the three constructs of the theory have been empirically investigated. This will be followed by a brief review on the current state of the theory and, finally, considerations of its limitations.

EMPIRICAL TEST OF SELF-CONTROL THEORY

Self-control

Although central to their theory, self-control was not explicitly operationalised by Gottfredson and Hirschi (1990). Using the premises outlined by Gottfredson and Hirschi, however, Grasmick et al. (1993) developed a self-control measure to investigate the theory. The measure incorporated six dimensions of self-control identified by Gottfredson and Hirschi and these included Impulsivity, Simple Tasks, Risk-Taking, Physical Activities, Self-Centred, and Temper. Analyses of the psychometric properties of the measure found it to be adequate (Arneklev, et al., 1999; DeLisi et al., 2003; Williams, Fletcher, & Ronan, 2007 [see Appendix B-1]) and the measure has been widely used to test self-control theory (e.g. Arneklev et al., 1993; Benda, 2005; Cochran et al., 1998; DeLisi, Hochstetler, & Murphy, 2003; Deng, 1994; Gibson & Wright, 2001; Longshore, 1998; Mansfield, Pinto, & Parente, 2003; Nagin & Paternoster, 1993; Nakhaie et al., 2000a; Piquero & Tibbetts, 1996; Schreck, 1999; Sellers, 1999; Vazsonyi & Crosswhite, 2004; Wood et al., 1993).

Grasmick et al.'s (1993) study showed self-control to be a unidimensional construct rather than multidimensional. The unidimensionality of self-control was also supported by Piquero and Rosay (1998) who found the measure to be invariant across gender. Arneklev et al. (1993) and Wood et al. (1993) however discovered that risk-seeking had the most predictive power for misdemeanours over and above that of the combined dimensions of self-control. Other researchers also found risk-taking and impulsivity to perform at least equal if not better than the overall composite score (Longshore et al., 1996; Romero et al., 2003; Winfree et al., 2006). Furthermore, the two components simple tasks and physical activities appeared to have little predictive ability and

their relationship with the criterion variable was contrary to that anticipated (Arneklev et al, 1993; Piquero, MacIntosh, & Hickman, 2000). Wood et al. (1993) recommended that self-control should be treated as multidimensional as aggregation of the trait into a composite scale concealed differential motivation for delinquent behaviours. In subjecting the measure to item response theory (IRT) Piquero et al. (2000) found insufficient justification to rate self-control on a single score.

Piquero et al. (2000), furthermore, identified differential response style on the attitudinal scale depending on the individual's level of self-control. They recommended independent or behavioural reports be obtained in conjunction with self-report measures. This reinforced Hirschi and Gottfredson's (1993) recommendation that corroborating information should be obtained to assess self-control rather than reliance on self-report. Junger and Tremblay (1999), Paternoster and Brame (1997), Polakowski (1990), Tremblay et al. (1995) studies utilised additional measures from teachers, parents, and/or peers in their investigation of self-control theory.

In addition to the Grasmick et al. (1993) self-control scale researchers either adapted other scales such as Elliott and Huizinga (1983) National Youth Survey (e.g. Paternoster & Brame, 1997) or developed their own self-control measures for specific populations (e.g. Burton, Evans, Cullen, Olivares, & Dunaway, 1999; Evans et al., 1997; Gibbs & Giever, 1995; Junger & Tremblay, 1999; Sorenson & Brownfield, 1995). Case scenarios were used in small number of studies (e.g. Piquero & Tibbetts, 1996; Simpson & Piquero, 2002).

In reviewing the adequacy of the self-control measure, it was clear Hirschi and Gottfredson's (1993) preference was for behavioural measures rather than self-report scales. They regarded behavioural indicators as consistent with their conceptualisation of self-control citing Keane, Maxim, and Teevan (1993) study as an exemplary example. For example, Keane et al. (1993) investigation of drinking and driving operationalised self-control as wearing a seat belt. Other studies included behavioural indicators of self-control as the number of criminal offences (Evans et al., 1997) or behaviours analogous to crime, e.g. number of

divorce, motor vehicle accidents or risky driving behaviour, smoking cigarettes, alcohol use, sexual behaviour, and pathological gambling (Arneklev et al., 1993; Benda, 2005; Gibson et al., 2004; Hope & Chapple, 2005; Jones & Quisenberry, 2004; Love, 2006; Piquero & Tibbetts, 1996; Simpson & Piquero, 2002; Wood et al., 1993). Typically imprudent behaviour scales operated as the criterion variable. Whilst Marcus (2003) believed behavioural scales superior to attitudinal measures of self-control, he believed the former should function as the predictor rather than the criterion variable.

Pratt and Cullen (2000) conducted a meta-analysis of the twenty-one studies available and found no significant difference in effect size as to whether self-control was measured by behavioural or attitudinal scales or whether Grasmick et al. (1993) attitudinal measure was used or not. According to Pratt and Cullen and later Tittle, Ward, and Grasmick (2003b) this emphasised the robustness of self-control, in that it was not affected by differential measures of the construct. Benda (2005) however found behavioural indicators to have stronger predictive ability than the attitudinal measure.

Despite Gottfredson and Hirschi's (1990) objection the similarity of the self-control construct to existing personality theories had been noted. Using mainstream personality instruments and the standard attitudinal self-control measure Marcus (2003; 2004), O'Gorman and Baxter (2002) and Romero et al. (2003) attempted to identify the latent factor underlying self-control. Their studies confirmed self-control construct overlapped on a number of personality traits. Polakowski (1990) who included psychological, behavioural and cognitive measures in his study also found self-control to subsume several personality traits. These findings questioned the value of self-control being seen as a composite measure of heterogeneous personality factors.

In summary, most studies have used an attitudinal scale as a measure for self-control whilst much less have favoured behavioural indicators. Controversy remain as to whether the construct is unidimensional or multidimensional. Proponents of the unitary construct (such as Polakowski, 1990 and LaGrange &

Silverman, 1999) cite support for the composite scale as it provided a superior fit to the data compared to a multidimensional model. Others, particularly those from the personality perspective, question this view and advocate for the multidimensionality of self-control. Whether self-control is construed as a personality trait or conceptualised as unidimensional or multidimensional, further investigation of self-control needs to be undertaken.

Opportunity

Gottfredson and Hirschi's (1990) conceptualisation of opportunity has been criticised as a weakness of the theory, especially its insufficient clarity (Grasmick et al., 1993). Gottfredson and Hirschi (2003) countered the criticisms by stating that opportunity was ubiquitous and readily available and therefore the theory was capable of being examined without due concern with opportunity factors.

Relatively few studies have included opportunity factors in investigating the interactional effect of self-control and opportunity with crime or analogous behaviours. LaGrange and Silverman's (1999) approach was to measure opportunity as the extent to which parental supervision and frequency of peer interaction affected level of deviancy. Gibson and Wright (2001) operationalised opportunity as co-worker delinquency in order to investigate the interactive effect of self-control and co-worker delinquency on work-related deviancy. Seller's (1999) study of intimate violence defined opportunity as the frequency of contact and cohabitation status of the partner, whilst Longshore and Turner (1998) conceptualised opportunity as criminal friends and gender. To investigate cheating in an academic setting, opportunity was defined by Cochran et al. (1998) as the number of credit hours for which students were enrolled, and Smith (2004) used report of exam results as their measure of opportunity.

The findings on the interactive effect of opportunity on self-control and crime/analogous behaviours have been inconsistent. Gibson and Wright (2001) found self-control on its own had insignificant effect on work-related deviancy

but was dependent on opportunity, co-worker delinquency. Grasmick et al. (1993) and Longshore and Turner (1998) found that explanatory power for acts of fraud seemed largely dependent on opportunity factors but not for acts of force. Not only did opportunity have a moderating effect on the criterion variable but was found also to have a direct effect on delinquency (Grasmick et al., 1993). Longshore and Turner (1998) proposed that differential pathways may operate for fraud and force, in that committing fraud was dependent on situationally-determined variables over and above self-control but not for acts of force. Higgins and Tewksbury (2006) investigated the linkage between opportunity, delinquency and gender and found the association between opportunity and delinquency was stronger for males than for females. The researchers suggested that differences in socialising practices for males and females gave greater opportunities for delinquency in males and increased their likelihood to deviancy.

However, the interactive effect of opportunity was not replicated by other researchers. For example, LaGrange and Silverman (1999) did not find any significant interactive effect between self-control and opportunity for delinquency, property offences and violent offences but did so for drug offences. Sellers (1999) and Smith (2004) found no significant effect from opportunity in their respective studies. Pratt and Cullen's (2000) meta-analysis of self-control theory showed that when opportunity was controlled for the magnitude of self-control on crime was unaffected. This seemed to support Gottfredson and Hirschi's (2003) contention that opportunity could be ignored in investigating their theory.

Crime and analogous behaviours

Studies have varied widely in how the criterion variable has been operationally defined. Crime, analogous behaviours, or a combination of both have been used as an index of the criterion variable. For example, Arneklev et al. (1993) "imprudent behaviours" consisted of three items that included smoking cigarettes, drinking alcohol, and gambling. Burton et al. (1999), Evans et al.

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(1997), and Paternoster and Brame (1997) employed both imprudent behaviours and crime measures for their study. Imprudent behaviours included activities such as smoking cigarettes, gambling, public disorder, resistance to school attendance (Nakhaie et al., 2000a), driving behaviours (such as speeding and driving under the influence (Keane et al., 1993), accidents at home or motor vehicle accidents (Junger & Tremblay, 1999), academic misbehaviour or dishonesty (Bolin, 2004; Cochran et al., 1998; Gibbs & Giever, 1995; Romero et al., 2003; Vowell & Chen, 2004), and substance use (Allahverdipour et al., 2006; Chapple et al., 2005; Gibson et al., 2004; Sorenson & Brownfield, 1995).

Studies employed varying definitions of delinquent or criminal behaviours. Some included a range of criminal acts in their studies such as theft, vandalism, property and violent offences, status offences, and general deviance (Benda, 2005; Longshore & Turner, 1998; Nagin & Paternoster, 1993; Nakhaie et al., 2000b; Stylianou, 2002; Vazsonyi & Crosswhite, 2004; Vazsonyi et al., 2001; Wood et al., 1993), whilst others had limited but broadly defined offences such as fraud or force (Grasmick et al., 1993), lewd acts (Redmon, 2003), shoplifting (Deng, 1994), occupational crime (Benson & Moore, 1992; Gibson & Wright, 2001; Langton et al., 2006; Reed & Yeager, 1996; Simpson & Piquero, 2002; Smith, 2004; Spahr & Alison, 2004), credit card use (Mansfield et al., 2003), intimate violence (Sellers, 1999), and software piracy (Higgins, 2005; Higgins & Makin, 2004).

Measures of crime or analogous behaviours are generally based on self-report. Concerns about the reliance on self-report measures are not new especially when highly sensitive questions are employed in the measures (e.g. Short & Nye, 1957). In general, the problem of reliability and hence validity of self-report instruments have been ignored. Some researchers have tried to address the problem by obtaining objective measures such as blood alcohol concentration (Keane et al., 1993) or gaining collateral information (Bartusch, Lynam, Moffitt, & Silva, 1997). Others have used longitudinal research designs in which the measures were repeatedly administered (Bartusch et al., 1997; Nagin &

Paternoster, 1991) or employed a prospective design in which research participants recorded the number of crimes they committed over a certain period (Longshore, 1998). In most cases, the criterion measure had not been reliably or empirically validated across different studies.

In summary, the criterion variable has been investigated using crime and/or analogous behaviours. Some studies have focused on narrowly-defined behaviours, others broad categories that encapsulated a number of deviant/criminal behaviours, and still others have used a range of behaviours to test the theory of self-control. As self-control is defined as a generality to commit a range of antisocial or illegal acts, it would be expected that measures containing multiple indicators of crime and/or analogous behaviours would have greater reliability than instruments with few measures of the variable of interest. However as emphasised by Sampson and Laub (1993; 1997) and summed up by Nagin and Paternoster (1993, p. 489) "any criminological theory must include stable individual differences in propensity to offend as a central construct", and this has not always been apparent.

CURRENT STATUS OF SELF-CONTROL THEORY

Qualitative reviews of the studies have shown consistent but qualified support for the role of self-control on crime and analogous behaviours. Five years after the publication of Gottfredson and Hirschi (1990) self-control theory, Gibbs and Giever (1995) reviewed the studies investigating self-control and crime and found that six out of the seven studies showed an inverse relationship between self-control and crime. These results were achieved despite different methodological approaches in research designs, such as cross-sectional or longitudinal designs; non-random, stratified, or randomised sampling; sample characteristics such as adult, adolescents, young children, community or school/university population, gender and cross-cultural groups; and data collection, whether they were through self-report surveys or interviews, or objective measures such as observation of behaviour, behavioural indicators, and physiological measurements. In sum, low self-control was found to be predictive of imprudent behaviours (Arneklev et al., 1993), official and self-

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reported delinquency (Brownfield & Sorenson, 1993; Polakowski, 1990; Wood et al., 1993), and general law violations (Grasmick et al., 1993; Keane et al., 1993).

By the first decade after publication of self-control theory the number of studies had increased substantially and it was possible to subject the studies to meta-analysis (Pratt & Cullen, 2000). As Pratt and Cullen reported this form of analysis was the first ever conducted on a criminological theory. Previous analyses were largely based on anecdotal evidence. The purpose of the meta-analytic investigation was to identify the magnitude of the relationship between self-control and crime and the variability of self-control under different methodological conditions. Self-control showed to have a mean effect size over .20, usually between the range of .20 and .30, as a predictor for crime (Pratt & Cullen, 2000; Tittle, Ward, & Grasmick, 2003a). Compared with other known correlates of criminal behaviour, Gottfredson and Hirschi's (1990) central construct, self-control, ranked as one of the stronger correlates of risk found for crime (Pratt & Cullen, 2000). The generality of self-control was supported in that no matter whether crime or analogous behaviour was used the effect size remained similar. Consistent with Gibbs and Giever's (1995) earlier review the significance of the relationship remained regardless of the characteristics of the sample; for gender, community or offender samples, racially homogenous or heterogeneous groups, or adults or juvenile samples. Concluding from their findings, Pratt and Cullen (2000, p. 951) reported "impressive empirical support for Gottfredson and Hirsch's theory".

Furthermore, Evans et al. (1997) found low self-control not only had significant effect on crime but a negative impact on future life outcome as well. Even when controlling the variables from competing criminological theories such as social control (De Li, 2004; Junger & Tremblay, 1999; Longshore, Chang, Hsieh, & Messina, 2004; Longshore et al., 2005; Nakhaie et al., 2000b; Polakowski, 1990), social learning/peer influence (Chapple, 2005; Deng, 1994; Evans et al., 1997; Gibson & Wright, 2001), rational choice (Deng, 1994; Nagin & Paternoster, 1993; Piquero & Tibbetts, 1996), strain (Peter et al., 2003), and

developmental (Bartusch et al., 1997; Paternoster & Brame, 1997), there was support for self-control in exerting significant contributions to crime. Using a comparative study of the four main criminological explanations of crime (social bond, self-control, strain, and differential association) in explaining academic misconduct, Vowell and Chen (2004) found modest support for self-control theory. However, significant increase in effect size was found when social learning or social control variables were included with self-control (Brannigan et al., 2002; Evans et al., 1997; Tittle et al., 2003a). This poses challenges to Gottfredson and Hirschi's (1990) claim that self-control was sufficient as a sole predictor of crime. Thus in conclusion, with some caveat, there is considerable empirical evidence supporting the utility of self-control as an explanatory model of crime.

Critique of self-control theory

Despite substantial empirical support for self-control theory, Pratt and Cullen (2000) noted the theory has been criticised on conceptual, ideological, and logical grounds. Ideological criticisms appear to be underpinned by the theory conflicting with dominant sociological constructionist perspective of crime causation (Evans et al., 1997; Hirschi, 1986). Although important, this will not be addressed here as it is not the purpose of this thesis to challenge these ideological differences.

The logical and conceptual criticisms however are pertinent to theoretical claims about the adequacy of self-control to explain crime. These criticisms are mainly directed at its tautological conceptualisation and whether self-control as a stable construct is as versatile and general as alleged.

Tautology

Akers (1991) first brought attention to the tautological nature of Gottfredson and Hirschi's (1990) theory and this has been echoed by Barlow (1991), Geis (2000), and Meier (1995). The tautology centred on the theory's proposition that a person with low self-control could be identified when they committed a crime or

analogous behaviour and that indicators of self-control were inferred from properties of crime. Lack of an operational definition for self-control distinct from propensity to commit crime meant that the premise of self-control theory could be stated as "low self-control causes low self-control" (Akers, 1991, p. 204).

Hirschi and Gottfredson (2000) concede the difficulty with tautology is confusion over its two forms. They reported that the first is of measurement or empirical interest and the second is concerned with conceptual or logical structure of the theory. This misunderstanding, Gottfredson and Hirschi maintain lead to incorrect and unjustified criticism of the theory. The Popperian requirement of a theory is that it contains "logical adequacy of the propositions" and that these propositions are testable and falsifiable (Robinson, 2004, p. 30). The quality of the theory therefore rests on the assumption that theoretical statements are not derived from or cannot be distinguished from the concepts which they attempt to define (Burgess & Akers, 1966; Hirschi & Gottfredson, 2000; Robinson, 2004). If the proposition is no more than a restatement of the definition of the construct, then the theory is claimed to be circular or tautological. It is, thus, non-falsifiable, not logically constructed and ultimately untestable.

Hirschi and Gottfredson (2000) assert however theories were logical systems and therefore by deduction circular. As Lipton (2000, p. 185) pointed out self-evidencing explanations occur regularly in science in which the explanation of a phenomenon was "often supported by the very observations they are supposed to explain". Although such explanations were tautological Lipton regarded them as benign. Hirschi and Gottfredson further defended the validity of self-control theory by claiming its theoretical statements were empirically testable and therefore falsifiable. Theories capable of falsification then could not be charged with being tautological (Marcus, 2004).

Rather, empirical tautology was the real concern as this related to measurement issues (Hirschi & Gottfredson, 2000; Marcus, 2004). Two kinds of measurement tautologies were identified; the first in which the predictor variable contained overlapping items with the criterion variable. The other concerned situations in

which indicators for the predictor variable came from measures of crime so that the criterion and the predictor variables were one and the same (Hirschi & Gottfredson, 2000). In both circumstances, artificially raised correlations would confirm the results were spuriousness and misleading.

The confusion may partly be created by the lack of clarity in defining the theory's constructs. For example, Evans et al. (1997) used imprudent behaviour both as an outcome and as an indicator of self-control. To overcome the problem of measurement Akers (1991) recommend an independent scale for self-control be used. Marcus (2004) provided various strategies to circumvent the problem of construct validity such as using imprudent behaviours as indicators of self-control as they were independent of crime as the criterion variable. It is for this reason that Evans et al. (1997) recommended the use of an attitudinal self-control measure as it was developed independent of crime.

Self-control

Stability problem

The stability of self-control over the lifespan is a fundamental assumption of self-control theory. Whilst the stability of deviancy over the lifespan is not in contention (Huesmann et al., 1984; Loeber, 1991), what is arguable is the explanation to account for this durability. For Gottfredson and Hirschi (1990) the explanation lies in self-control; the origins of which stems from early childhood socialisation patterns and established by early adolescence. Once established, self-control remains stable throughout adulthood and is immutable over time or situational context of the individual. It is this trait that lies at the heart of one's propensity towards criminality (Gottfredson & Hirschi, 1990).

Few researchers have explicitly investigated the stability claim of self-control. Early studies found self-control to be moderately stable with correlations of .82 found over a short time period (Arneklev et al., 1999; Tittle & Grasmick, 1998), and in children over a four year period (Polakowski, 1990). Using more sophisticated research designs, recent studies have investigated the stability

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issue with longitudinal studies. Turner and Piquero (2002) followed young children into late adolescence and compared those identified as offenders with non-offender groups. They found some support for the stability of self-control with correlations in the range of .33-.68, although this was higher in the short term. However as the participants reached late-adolescence and early adulthood, levels of self-control fluctuated so that convergence was observed between those deemed to be high on self-control and those with low self-control. Winfree et al. (2006) also found self-control to be unstable within the individual over a five year period, in young people during their early to late adolescence years and in both non-offending or offending population. However, despite the fluctuations, individual's ranking across the groups remained the same. Females showed greater levels of self-control than males at each period of the investigation.

The small number of studies limits claims to the stability of self-control. There appears to be support that although self-control is relatively stable over the short-term, the adolescent years showed self-control to be changeable and capricious and that in the long term there was considerable variability within and between groups. In contradiction to Gottfredson and Hirschi (1990), Burt et al. (2006) and Mitchell and MacKenzie (2006) also found self-control to be malleable to influences from social interactions and situational contexts.

Versatility issue

According to Gottfredson and Hirschi (1990) theory of crime, it was predicted low self-control would be manifested in a variety of criminal and analogous behaviours. Pratt and Cullen's (2000) meta-analysis provided empirical support that self-control was related to a wide range of behaviours that included driving under the influence of alcohol (Keane et al., 1993), delinquency and antisocial behaviours (Junger & Tremblay, 1999; Romero et al., 2003), drug use (Wood et al., 1993), shoplifting (Deng, 1994), white collar crime (Simpson & Piquero, 2002), gambling (Arneklev et al., 1993) and academic dishonesty (Gibbs & Giever, 1995).

The ubiquity of self-control however has been criticised by Geis (2000) on two points. Firstly, self-control does not include behaviours typically regarded as characteristic of low self-control such as overeating or having extramarital relationships. Secondly, for inclusion of behaviours that, although no longer illegal, was previously illegal such as abortion. The reach of the theory to explain organisational crime has also been disputed by Barlow (1991) and Tittle (1991) in depicting individuals as having weak internal controls. They argued that those involved in organisational crime would be expected to display traits contrary to that of low self-controlled individuals. Reed and Yeager (1996) also noted self-control theory ignored the structure and culture of corporate organisations in creating opportunities and incentives to lawbreaking. Herbert, Green, and Larragoite (1998) disagree arguing that individuals can still create opportunities to offend. Mason and Windle (2002) found self-control predicted major delinquency but not involvement in minor delinquency. Whether self-control is versatile enough to predict white-collar or minor misdemeanours is debatable (Benson & Moore, 1992; Britt, 2000; Mason & Windle, 2002; Reed & Yeager, 1996). Barlow (1991) deemed successful challenges to the versatility of the self-control construct would undermine the validity of the theory.

CONCLUSIONS

Whilst some of the criticisms directed at the theory are of less concern, of particular significance is the adequacy of the theory. Lack of clarity around opportunity is not seen as particularly worrying by Gottfredson and Hirschi (2003). Likewise, the issue of tautology can be avoided if the operationalisation of the predictor variable, self-control, and its criterion are carefully considered.

Of more substantive concern is a lack of explanatory power in the theory, a problem that besets criminological theories in general (Longshore, 1998). Marenin and Reisig (1995) and Elliott (1985) claim the theory could be more appropriately conceived as a classical hypothesis as it contained only a single explanatory variable rather than a theory of crime. When other moderating variables were investigated with self-control such as association with delinquent

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peers and family emotional support, the predictive value of self-control on delinquent behaviour increased (Mason & Windle, 2002). The next chapter will discuss the rationale for extending self-control theory and provide support for integrating it with theory of planned behaviour (TPB; Ajzen, 1991).

Chapter Four

THEORY OF PLANNED BEHAVIOUR

*"...the pursuit of truth is accountable to nothing and to no one
not a part of that pursuit itself" (Kaplan, 1964, p.3)*

RATIONALE FOR EXTENDING SELF-CONTROL THEORY

Gottfredson and Hirschi (1990) would deny self-control as a personality trait especially as defined by fundamental determinism. Despite this, their operationalisation of self-control has properties similar to contemporary personality scales (Marcus, 2003; O'Gorman & Baxter, 2002; Polakowski, 1990; Romero et al., 2003) and to subsume several psychological constructs such as ego formation (Block & Block, 1980), delay of gratification (Mischel, 1981), self-regulation (Kanfer, 1977; Thoresen & Mahoney, 1974), impulse control (Pulkkinen, 1982; 1986) and undercontrol (Block & Gjerde, 1986).

Already well-established in the psychological literature is the notion that limited utility is gained in explaining behaviour with trait dispositions only. As pointed out by Ajzen (1988) knowing one's personality in order to predict future behaviour is not particularly illuminating. Whilst lacking explanatory power, the underlying nature of the disposition or the underlying causes of the behaviour remain unclear. Pervin (1985) also questioned the usefulness of a trait framework in understanding behaviour. Knowing a person's tendency to respond or behave in certain ways, he contended, was only descriptive. In Akers' (2000) review of criminological theories he found trait theories fared worse than sociological or socio-psychological explanations of crime.

The amount of variance explained by self-control theory is small (Cohen, 1992). Although acceptable given the effect size generally found in criminological theories it indicates self-control does not account for a large percentage of the cause of crime. It may be that other variables have potential to explain how self-control is influenced by or interacts with these variables (Tittle et al., 2003a).

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Although characteristic tendencies may be temporally enduring, the relationship between trait and behaviour has been shown to be tenuous (Mischel & Peake, 1982). Gottfredson and Hirschi (1990) would regard self-control as unvarying and sufficient to predict homogeneous patterns of behaviour but there is evidence that self-control patterns can be discriminatory. Mischel (1981) found there were high levels of specificity in behaviour in that what people did in one situation did not necessarily lead to what they would do in another. Whilst important individual differences existed dispositional tendencies were characterised both by stability and change and this was dependent on the particulars of the activating situation.

Theory of planned behaviour (TPB; Ajzen, 1991) and its predecessor, theory of reasoned action (TRA; Ajzen & Fishbein, 1980), are theories designed to explain and predict human behaviour in general. Two decades ago Tuck and Riley (1986) proposed TPB looked promising in explaining criminal behaviour. Derived from the subjective-expected utility paradigm TPB, in brief, states that a person's intention to perform a behaviour is the single best predictor of behaviour. Intention captures the motivational aspect that influences behaviour. It indicates how hard people are willing to try and the amount of effort they will exert toward performing the behaviour of interest. Although not generally applied to criminal behaviour, it has been used as a framework to investigate antisocial and unethical behaviour (e.g. Beck & Ajzen, 1991; Seipel, 2000).

This chapter will, firstly, provide the intellectual developments in the attitude-behaviour research. Scientific progress in this area was central to the development of TRA/TPB (Ajzen, 1991; Ajzen & Fishbein, 1980). Components of the theories will be then be outlined and finally the application and empirical evidence for TRA/TPB.

ATTITUDE-BEHAVIOUR RELATIONSHIP**Historical perspective**

For lay observers it would seem self-evident that a person's behaviour is generally consistent and predictable. Even more compelling is the intuitive belief that stability of behaviour can be accounted for by some underlying disposition. Personality and social psychologists were two main sub-disciplines within psychology that investigated the underlying latent factors to explain this phenomenon. In reviewing the literature spanning over 30 years on attitude in predicting behaviour, Wicker (1969) found empirical evidence did not support the stability or predictability of behaviour. In fact the variance in overt behaviour accounted for by attitude seldom reached 10%. It was more common to find that attitude had no or at best a trivial relationship with behaviour. Further validating this finding was Mischel's (1968) review of personality traits in which he found similar weak relationship between traits and behaviour.

The studies revealed that not only did people behave inconsistently across situations but their behaviour was discrepant with global measures of attitude or personality traits. Such was the evidence that Mischel (1968) questioned the utility of the personality paradigm to investigate and explain behaviour. Wicker (1969) reiterated this position, stating

"The present review provides little evidence to support the postulated existence of stable, underlying attitudes within the individual which influence both his verbal expressions and his actions". (p. 75).

The reviews seriously undermined the core foundations of psychological theories in explaining and predicting human behaviour. Disenchantment and pessimism during the 1960s with trait-behaviour and attitude-behaviour research was replaced by critical re-examination of the assumptions of

personality and attitude concepts. The weaknesses identified in the studies were concerned with measurement and conceptual issues.

Measurement issues

The weak relationship between attitude and the prediction of behaviour was underpinned by measurement of problems of aggregation and compatibility.

Principle of aggregation

The principle of aggregation had been highlighted earlier by Epstein (1979) and Mischel (1968; for a review of this literature see Ajzen, 1988). Early researchers attempted to predict global attitudes and trait using small numbers of behaviours for a single occasion. Correlations under these conditions rarely exceeded .30 with most generally around .15 (Wicker, 1969). As it was believed much of behaviour is subjected to arbitrary influences affecting performance or non-performance of a behaviour, aggregation of behaviour over many instances appeared to be a solution. Aggregation reduced effects of extraneous variables on behaviour giving more reliable indication of an individual's stable behavioural tendency across different situations. The principle of aggregation proved not only to be successful in demonstrating behavioural consistency but cross-situational consistency as well.

Although aggregation showed promise it could at best only confirm broad constructs of personality and attitudes were implicated in explaining behaviour (Ajzen, 1988). Aggregation however was unable to explain discrepancies in behaviour across situations or predict specific behaviours in a particular situation.

Principle of compatibility

Another source for the low relationship between attitude and behaviour was the unreliability of the measurement scale (Fishbein & Ajzen, 1975). Attitudes and traits were generally measured on broad global constructs to predict specific

behavioural phenomena (Ajzen, 1988; Ajzen & Fishbein, 1977). These broad domains were themselves composed of narrowly defined dimensions representing the construct. Thus behavioural dispositions, whether they were attitudes or traits, were defined by indicators that ranged from the very general to the very specific. Ajzen and Fishbein (1977) argued there was often little correlation between broad attitude or trait domain and the specific behaviour being investigated. Global dimensions of trait or attitude however may still influence the probability of pattern of responses. This lack of correspondence, termed “compatibility” by Ajzen (1988), between determinants and behavioural criterion contributed to the low association between constructs.

Ajzen and Fishbein (1977; 1980) stated there were four elements to behaviour and attitude relationship: the target to which behavioural disposition is directed towards, the particular action involved, the context in which it occurs, and the time of its occurrence. The elements can vary in their level of specificity, ranging from the general to very specific. When indicators are consistent in their level of specificity on the four elements, the greater the statistical relationship should be. The principles of compatibility maintain that if the four elements on behavioural indices and measure of attitudes or trait are closely approximated, predictability of the behaviour would increase. This principle applied both to global behaviour and specific response tendencies.

Defining attitude

Even though widely used defining attitude remained elusive. Reviewing the extant literature, Allport (1967, p. 8) perceived the essential features of attitude was the “preparation or readiness for response” so that attitude was seen as a prerequisite to behaviour. He further elaborated attitude as “a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related”. In this definition attitude was a unidimensional construct and distinct in provoking a bipolar reaction; one that was favourable or unfavourable towards an object or class of objects according to the attitude.

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Thurstone (1931, p. 261) favoured this concept of attitude and further elaborated it as “the affect for or against a psychological object”. It is this description that was used by Fishbein and Ajzen (Ajzen, 1991; Ajzen & Fishbein, 1980; Fishbein, 1967) in their theorising.

Based on this premise, intuitively, it would predict that a person holding favourable attitude towards an object would be more likely to engage in behaviour consistent with that attitude than someone who did not. Despite the seeming logic this relationship was not borne out by evidence as one-to-one correspondence between attitude and behaviour was often not found (Ajzen & Fishbein, 1977; Fishbein, 1967). In addition, individuals holding the same attitude did not necessarily behave in similar manner but often quite differently from each other.

Other factors appeared to be implicated in attitude-behaviour relationship with a lack of progress undermined by an absence of conceptual clarity in the area (Fishbein, 1967; Fishbein & Ajzen, 1972). Early researchers often considered attitude as multidimensional consisting of beliefs, opinions, intentions, and affect. Lacking clear distinctions between these constructs they were often used interchangeably and were indistinguishable from one another (Ajzen & Fishbein, 1980; Fishbein, 1967). According to Fishbein regarding attitude as multidimensional was misleading. He regarded beliefs and intention were distinct and independent constructs although related to attitude and behaviour. Rather than viewing attitude as multidimensional Fishbein and Ajzen (Fishbein, 1967; Fishbein & Ajzen, 1975; 1980) deemed beliefs and intention to be independent variables. Intention was seen to mediate the relationship between attitude and behaviour. Based on these premises they reconceptualised the relationship between beliefs, attitude, intention, and behaviours in formulating TRA (Ajzen & Fishbein, 1980), later modified to TPB (Ajzen, 1991). The theory not only attempt to predict behaviour but to identify its causal antecedents as well.

THEORY OF PLANNED BEHAVIOUR

Major assumptions

TRA/TPB is based on the assumption that most behaviour is under volitional control in that people engage in certain behaviours if they are motivated to do so and do not if they have no desire for the behaviour of interest. As such, attitude was not the proximal determinant of behaviour as conventionally assumed. Instead attitude was mediated through behavioural intention (Armitage & Christian, 2003). Attitude however was not the only influence on intention but included a person's perception as to whether significant others approved or did not approve the behaviour. Once people form an intention to perform the behaviour then it can be expected they will do what they say they intend to do (Ajzen & Fishbein, 1980).

Theory of reasoned action (TRA) however was restricted to behaviours under volitional control. Although people may be highly motivated or have strong intention to carry out the behaviour attempts may fail due to non-motivational factors (Ajzen, 1988; Sarver, 1983). These factors could be the availability of opportunities and resources. It was envisaged that if the requisite opportunity and resources were available and an individual was motivated sufficiently to perform the behaviour then s/he should succeed in doing so. Ajzen categorised these non-motivational variables as either internal or external factors. Internal factors include information, skills and abilities, emotions and compulsions. External factors are situational or environmental aspects that impinge on the attainment of behavioural goals such as opportunity. Other external factors may be reliance on others in the completion of the action, such as cooperation and interdependence. Opportunity factors can either hinder or facilitate the behaviour or prevent or force a change in plans but it does not necessarily effect change in intention, attitude, or subjective norm. This suggests that an individual will most likely try again at a different time as the underlying disposition would remain the same. Situations in which a person is frustrated in carrying out the plan due to unanticipated events, however, may cause a

change in intention. For example, receiving new information about the behaviour of interest may effect change in attitude, subjective norm, and intention in the light of this new information.

For these reasons, TRA was extended to include these influences on behaviour and modified to theory of planned behaviour (TPB; Ajzen & Fishbein, 1980). If behaviour is under volitional control TRA was assumed to be sufficient in predicting intention through attitude and subjective norm (Ajzen, 1988). If behaviour is not under volitional control, then intention needs to be considered in relation with perceived behavioural control as outlined in TPB.

A second assumption underlying TRA/TPB is that there is logical consistency between a person's belief and his/her behaviour. This phenomenon was first noticed by social psychologists in the 1940s in that people were more likely to behave in a manner consistent with their affect and belief systems (Ajzen, 1988). As Festinger (1957, p.3) showed when cognitive dissonance between one's belief system and behaviour arises the individual will extend efforts to reduce psychological discomfort in order to achieve "consonance". Thus in general, people's attitude "flow reasonably and spontaneously from beliefs, so are intention and actions seen to follow reasonably from attitudes" (Ajzen, 1988; p. 33).

The predictive value of the model relied however on the determinants being at the same level of specificity in relation to action, target, context and time as the behaviour (Ajzen, 1988; Fishbein & Ajzen, 1975). These elements may vary from the most specific to the very general but if the correspondence between the behaviour and attitude is high then significant relationships will be observed (Ajzen & Fishbein, 1977). This should be more so when the timeframe between measuring intention and the performance of the behaviour is brief so the possibility of other influences effecting changes on intention are minimised.

The model for TPB is shown in Figure 4.1. The various components are elaborated in the next section.

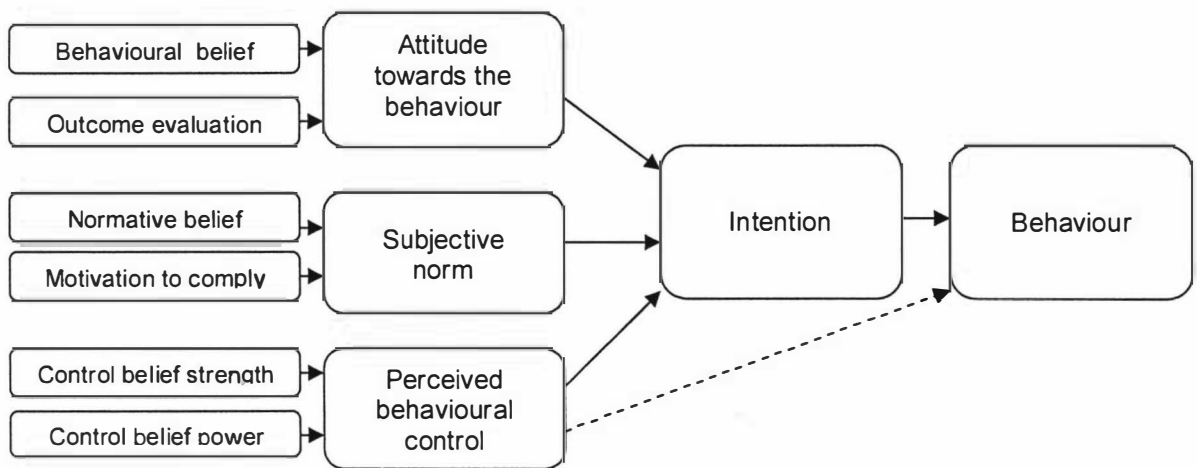


Figure 4.1. Theory of planned behaviour

Components of TPB

Behaviour

Behaviour is the manifest indicator of the predictor variable intention. Frequently outcome of behaviour is erroneously construed as the behavioural criterion. For example, success on an academic paper is defined as an outcome as it consists of a number of behavioural components or actions that precede the outcome. These behavioural components may include attending classes, studying, completing assignments, or going to the library; all of which are different behaviours that may contribute to the goal, academic success. For TRA/TPB, it is the specific behaviours that are of interest rather than the outcome itself in the prediction and understanding of behaviour.

The principles of aggregation and compatibility are fundamental to accurate prediction of behaviour. Of the two, compatibility is the most significant for the theory. Behaviour is defined by its four elements; target, actions, context, and time, and these elements can range from the very general to the specific (Ajzen, 2002d). The level of generality can be increased by means of aggregation and thus not all four elements will be relevant when defining the behaviour for investigation. The level at which behavioural criterion is defined, whether

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general or specific is arbitrary depending on the nature of the study. The fundamental notion behind compatibility however is that behaviour can be predicted accurately as long as the elements are defined in exactly the same terms for behaviour and its latent constructs (i.e. attitude, perceived behavioural control, and subjective norm; Ajzen, 1988; 2002d).

Intention

Intention is the proximal antecedent of overt behaviour and generally has a strong predictive relationship with behaviour (Ajzen, 1988; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). The stronger the intention the more likely an individual will perform the targeted behaviour. However behaviour-intention relationship is subject to the influence of moderating variables such as behaviour not being under volitional control or there is a delay between measuring intention and performance of the behaviour.

Behavioural intention commonly captures the motivational elements (e.g. "Do you intend to....."). However as pointed out by Sheppard, Harwick, and Warshaw (1988, p.327) researchers often "failed to distinguish between the individuals' intention or motivation to perform a behaviour or achieve a goal, and their subjective estimates about whether they will actually perform the behaviour or achieve the goal". Estimation questions would typically be "Are you likely to..?" or "Will you do...?" They recommend both types of intention be used in assessment.

The greater the temporal stability of intention and perceived behaviour, the greater should be the proportion of variance accounted for in behaviour (Ajzen, 2001). Not only does the strength of intention predict behaviour, it is more resistant to manipulation and should remain stable over time. However knowing one's intention to engage in certain behaviours does not provide any explanations for the behaviour. It is the three determinants of intention (viz. attitude, subjective norm, and perceived behavioural control) that need to be assessed.

Determinants of intention

Attitude toward the behaviour

Unlike the more common understanding of general attitude toward objects or people that have been widely researched, attitude toward the behaviour is a person's personal evaluation toward the particular behaviour of interest. Evaluations toward the action are generally positive or negative, favourable or unfavourable. Generally, individuals who hold more favourable attitude toward the behaviour will have stronger intention in performing the behaviour of interest.

Subjective norm

The second determinant of behavioural intention is an individual's perception of social pressure placed upon them by important others to perform or not to perform the behaviour under consideration. This perception need not reflect what important others may think in reality but is influenced by an individual's idiosyncratic belief system. With all things being equal the more a person believes important others condone the behaviour the stronger the intention would be to perform the behaviour. In most instances however significant people in an individual's life tend to approve desirable behaviours and disapprove undesirable ones. Ajzen (2002d) thus recommends that subjective norm also investigate whether important others perform the behaviour themselves.

Perceived behavioural control

Perceived behavioural control (PBC) is the extension to TRA to account for behaviours where people had incomplete volitional control. Although people may be motivated to perform the behaviour a lack of opportunities, resources, or possessing the requisite skills may prevent them for doing so. Ajzen (1991) asserts that PBC is compatible with Bandura's (1977; 1982) theory of self-

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efficacy in that perception of one's personal efficacy to execute an action determines the amount of motivation and level of effort activated and sustained in performing the task to achieve a goal even in the face of adverse experiences and obstacles.

In TPB perceived behavioural control is both an antecedent to intention and, by proxy, predictor of behaviour if the behaviour is not under volitional control (Ajzen, 1991). Ajzen's rationale for this is that people who have confidence in their ability to achieve the behaviour will expend more effort to succeed than those who have less confidence, even if intention is held constant. If the behaviour is not under a person's volitional control it would not matter how much that person desired to perform the behaviour. For instance, people are unlikely to succeed if they have neither the opportunity nor the requisite resources to accomplish the act (Armitage & Conner, 2001). Furthermore, PBC if realistic can be substituted as a measure of actual control.

Summary

Attitude towards the behaviour, subjective norm, and perceived behavioural control are the three determinants of intention. If attitude and subjective norm are positive towards the behaviour and PBC is high then it would be expected that intention to perform the behaviour would be strong. However each determinant in the model is independent of the other and the contribution of each in predicting behaviour would depend on the behaviour and situation of interest. As such, only one of the determinants may have a significant effect on intention whilst in other situations all three may contribute significantly to intention. In most situations prediction of behaviour through intention and its determinants may be sufficient. However the goal of TRA/TPB sought to explain, not just predict, behaviour. Belief-based measures were hypothesised to achieve this goal.

Indirect measures of intention

Formation of attitude is based on the expectancy-value framework (Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975). Beliefs are the explanatory part of the theory and, as such, are the cornerstone of the theory in providing an insight into a person's attitude towards the behaviour. Beliefs are defined as those readily accessible to memory especially those that are salient. They reflect a person's idiosyncratic beliefs about the behaviour under consideration (Ajzen, 2002d). People generally form certain attitude towards a behaviour or object by "associating it with particular characteristics, qualities, and attributes" through past experiences and learning (Ajzen & Fishbein, 1980, p. 63). Some beliefs are unyielding whilst others are malleable to change through new experiences and information. The three beliefs are discussed below.

Behavioural belief

Consistent with the expectancy-value model of attitude behavioural belief comprise two components; an outcome belief and an outcome evaluation (Ajzen, 1988; Ajzen & Fishbein, 1980). Firstly, a person will have salient beliefs associated with the behaviour in question that includes attainment of certain goals, values, or outcomes resulting from performing the behaviour. These beliefs may be both positive and negative. For example, positive attributes of weight loss may be being slim or being more active. Negative attributions may be its cost and requiring too much effort. The idiosyncratic evaluations of outcomes are associated with attitude and ultimately as to whether the behaviour in question is seen as favourable or not.

Secondly, the object or behaviour is perceived to possess the attributes in question; that is, weight loss will lead to being slim and fit. If a person perceives a behaviour is associated with mostly desirable outcomes and the subjective probability that performance of the behaviour will lead to that desired outcome, then attitude toward the behaviour will be favourable. Based on the relationship

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between belief strength and outcome evaluation toward behaviour, investigators are able to explicate the cognitive foundations for attitude.

Normative belief

Similar to behavioural belief, normative belief comprises two components: referent belief and motivation to comply. People generally take into consideration what others think about them performing the behaviour of interest and whether they are motivated to comply with that expectation. The influence important others exert is defined as normative belief.

Consistent with the expectancy-value model, normative belief is measured in two parts. Firstly, referents are groups of people or individuals whom an individual takes into account when considering those who would approve or disapprove of him/her performing the behaviour (Ajzen, 1988). The strength of referents' approval or disapproval toward the behaviour is subjectively judged indicating the strength of belief held towards the behaviour.

Secondly, whether an individual is motivated to comply with each of the referents is assessed. Together the extent of support or lack of support for the behaviour by important others and the motivation to comply with the referents represents perceived normative pressure to perform the behaviour. The two components form salient normative belief.

Control belief

Congruent with the expectancy-value theory, control belief consists of two components; control belief strength and control belief power. Control belief strength is associated with availability of opportunities and resources required to perform the behaviour. If people perceive they have requisite resources and skills and few obstacles in performing the behaviour, it would be anticipated perception of control would be greater. Generally, subjective evaluation of

opportunities and requisite resources are influenced by personal experiences or from experiences of others.

Control belief strength measures frequency of factors that inhibit or facilitate performance of the behaviour concerned. Control belief power is the subjective probability that control factors hinder or facilitate the performance of the targeted behaviour. These two components form control belief.

Summary

At the most fundamental level it is the beliefs that ultimately determine intention and behaviour (Ajzen & Fishbein, 1980). Salient behavioural belief underpin attitude, normative belief underpin subjective norm, and control belief underpin perceived behavioural control (refer Figure 4.1). Ajzen (2002d) however states that unlike the determinants of intention, beliefs are the indirect measures of intention and that there would be some correlation between these elements

The utility of investigating beliefs is not only in understanding the formation of attitude, subjective norm, and perceived behavioural control but the substantive information obtained can be used in designing interventions to change beliefs, attitude, and intention (Ajzen, 2002c).

Empirical validation of TPB

Since the publication of the TPB and its predecessor, TRA, a number of reviews and meta-analyses have been conducted (e.g. for TPB [Ajzen, 1991; 2001; Armitage & Conner, 2001; Conner & Armitage, 1998], for TRA [Conner & Sparks, 1995], and for health behaviours [Godin & Kok, 1996; Randall & Wolff, 1994; Sheeran & Orbell, 1998; Sheppard et al., 1988; Sutton, 1998]). The theories have been applied to a wide range of behavioural domain such as health related behaviours, illegal activities, voting, consumer behaviour, academic achievement, and job seeking (Ajzen, 1991; 2001; Sheppard et al., 1988).

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Strong predictive evidence supports the usefulness of the theory (Ajzen 2001) even when the behaviours breached the parameters of the theory (Sheppard et al., 1988). Sutton (1998) reviewed the meta-analyses of TRA conducted over the past 17 years and found intention-behaviour relationship had correlations ranging from .44 to .62, explaining between 19% and 38% of the variance of the relationship. This was not just for prosocial behaviours but for drug/alcohol-related behaviour as well (Randall & Wolff, 1994). Prediction of intention had consistent and large explained variances between 40% and 50% (Sutton, 1998). This was substantiated by Armitage and Conner's (2001) review that found TPB accounted for 28-34% of the variance in behaviour and 39-42% of the variance explained for intention. When the effects of methodological artefacts and measurement error were parcelled out, Kim and Hunter (1993) found the magnitude of the correlation between intention and behaviour increased to .82. Such is the strength of the intention-behaviour relationship that investigators have used intention as the proxy for behaviour (Armitage & Christian, 2003).

In addition, Kim and Hunter's (1993) meta-analysis found support for the causal relationship between attitude, behavioural intention, and behaviour with intention acting as a mediator between attitude and behaviour. As summed up by Armitage and Christian (2003, p. 192) "the theory of planned behaviour is arguably the most dominant model of attitude-behaviour relations" attracting broad attention from a number of disciplines, such as nursing, information technology, social policy, sociology, and psychology.

Whilst applications of TRA/TRB have been overwhelmingly in health-related and prosocial behavioural domains, the theory has been applied to socially unacceptable behaviours as well, albeit limited in number. They include illegal drug use (Armitage, Conner, Loach, & Willetts, 1999; McMillan & Conner, 2003; Morrison, Golder, Keller, & Gillmore, 2002; Orbell, Blair, Sherlock, & Conner, 2001; Schlegel, D'Avernas, Zanna, & DeCourville, 1992; Umeh & Patel, 2004); alcohol consumption (Dempster, Newell, Cowan, & Marley, 2006; Morrison, Simpson, Gillmore, Wells, & Hoppe, 1996; Norman & Conner, 2006;

O'Callaghan, Chant, Callan, & Baglioni, 1997; Schlegel et al., 1992); gambling (Moore & Ohtsuka, 1999); driving violations (Elliott, Armitage, & Baughan, 2003; Marcil, Bergeron, & Audet, 2001; Parker, Manstead, & Stradling, 1995); unethical behaviour in business (Buchan, 2005; Chang, 1998; Kurland, 1995; Powpaka, 2002; Randall, 1989; Uddin & Gillett, 2002), sports (Vallerand, Deshaies, Cuerrier, Pelletier, & Mongeau, 1992), IT (Leonard, Cronan, & Kreie, 2004), and academia (Beck & Ajzen, 1991); and music piracy (Chiou, Huang, & Lee, 2005). The usefulness of the TRA/TPB in predicting and understanding norm-violating behaviours appears promising (Randall, 1989).

University students as a convenience sample have dominated the studies with the general population much less so (Armitage & Christian, 2003). When offenders have been used as participants in the study, the behaviour of interest was on safe health practices in prison rather than on offending per se (Bryan, Ruiz, & O'Neill, 2003; Hogben, St. Lawrence, Hennessy, & Eldridge, 2003). Thus very little research with TPB has been conducted with an offender population.

Critique of TPB

Substantial support for TRA/TRB as a parsimonious theory accounting for a large proportion of behaviour is well-supported (Ajzen, 1991; Armitage & Christian, 2003; Conner & Armitage, 1998, Sutton, 1998). The theory however has been criticised in how the components have been conceptualised (e.g. Armitage & Conner, 2001), measurement issues (Sutton, 1998), and its sufficiency to explain behaviour. Whilst most of the concerns come from studies on health and prosocial behaviour, attention will be given to studies addressing antisocial behaviours as well.

Conceptual and measurement issues

Intention

Sheppard et al.'s (1988) review noted that a number of different terms have been used in assessing intention. Participants are asked if they *intend* to or *want* to or *try* to engage in a particular behaviour, or whether they *will* do a particular behaviour. The former, they contend, is a measure of intention or desires whilst the latter measure behavioural expectation or self-prediction. Intention has been defined as the motivational component of the TRA/TPB and Fishbein and Stasson (1990) deem desire (e.g. "I intend to...") is more reflective of intention than self-prediction (e.g. "I will...").

Fishbein and Stasson (1990) argue that implicit in the theory is that people believe the behaviour is under their total control. If so, they then typically believe they can or would try to do whatever they intend to do. Thus measure of intention or desire is a valid indicant of the theoretical construct. The distinction between self-prediction and desires is evident when the behaviour is non-volitional or when dealing with outcomes/goals. If the behaviour of interest is non-volitional or outcome oriented then measures of motivation and self-prediction could be used to predict intention (Sheppard et al., 1988).

Although correlations between intention-behaviour are strong (Ajzen, 1991), Connor and Armitage (1998) found that in many instances intention did not lead to successful performance of the behaviour. The predictive strength of intention decreased when assessment of intention and execution of the behaviour was distal (Sheeran & Orbell, 1998). Ajzen (1991) contend this may be due to unreliable measure of intention or that the behaviour was not under the person's control. Chatzisarantis, Hagger, Smith, and Phoenix (2004) proposed that when intention is unstable motivation for the behavioural outcome devalues over time. Connor and Armitage (1998), following the work of Gollwitzer (1993), claimed intention may actually consist of two stages. The first, the motivational stage is identical to that defined by Ajzen and Fishbein (1980; 1991). The second stage,

the implementation of intention is the critical phase as it transforms motivational intent into action. At this stage actions and plans are specified and implemented to achieve the goal. Reviewing the few studies that investigated this two stage approach, Connor and Armitage (1998) found participants who had formed an implementation plan for intention were much more likely to succeed in performing the behaviour than those who did not.

To investigate the discrepancy between intention and behaviour, Ajzen and colleagues (Ajzen, Brown, & Carvajal, 2004) used two experimental conditions, a hypothetical and a real life situation. They found people in a hypothetical payment situation over-estimated their willingness to pay into a fund compared to those in a real-life payment situation. Intention was more closely aligned to behaviour in the real condition especially when participants were given information about the consequences of their donation into the fund. Normative considerations appeared to be implicated in decision-making process for those in the real behavioural situation but not in the hypothetical situation. This seemed to suggest that under real-life situations, people are more likely to act consistently with their intention than in a hypothetical situation. Whether these concerns would apply to immoral or deviant behaviour has not been investigated.

Subjective norm

Several reviews on subjective norm found this to be the weakest aspect of the theory (Ajzen, 1991; Armitage & Conner, 2001; Sheppard et al., 1988) and in some studies it was removed as a predictor of intention (Armitage & Conner, 2001). Typically the construct has been measured by a single item. Conner and Sparks (1995) suggested that the low predictive performance of subjective norm may be partly accounted for by measurement rather than conceptual problem. A follow-up review of studies supported this supposition showing that multiple-item measures of subjective norm performed considerably better than a single item scale (Armitage & Conner, 2001).

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Of the few studies that investigated unsociable or morally unethical behaviours, the results for subjective norm are mixed. Subjective norm was found to exert considerable influence on attitude and behaviour in decision making about whether to engage in unethical behaviour in the workplace (Chang, 1998; Leonard et al., 2004; Vallerand et al., 1992), in influencing young people's intention to smoke (Morrison et al., 1996), to use ecstasy (Orbell et al., 2001), in drinking alcohol (O'Callaghan et al., 1997), in predicting intention to use drugs by female prisoners (Morrison et al., 2002) and in driving whilst under the influence of substances (Gastil, 2000). On the other hand, significant others had no influence over drinking for problem drinkers (Schlegal, D'Avernas, Zanna, & DeCourville, 1992), for cannabis users (Armitage et al., 1999), or for drinking and driving behaviours (Marcil et al., 2001).

Due to difficulties with subjective norm, Beck and Ajzen (1991) and Parker et al. (1995) decided to include measures of personal or moral norm in their investigation of unethical and socially undesirable behaviours. Personal norm or moral norm questions were typically "It would be wrong for me to....", "It would be against my principle to". The inclusion of personal norm confirmed the researchers' hypothesis that additional predictive power over and above subjective norm and attitude would be found. Kurland (1995) believed this was especially so in situations where there was a conflict between self-interest and the interest of others in the decision making.

Despite the mixed findings, the studies indicate the importance of investigating normative pressure for behaviours that are deemed socially unacceptable. The assumptions of TRA/TPB imply that each determinant of intention would vary in their contributions depending on the behaviour of interest. Sufficient evidence suggests significant others have important socialising influence not only on intention but in the formation of attitude for behaviours deemed antisocial or immoral (Andrews & Bonta, 2006). As Beck and Ajzen (1991) concluded understanding the determinants of unethical and unacceptable behaviours appear to be more problematic than for socially-valued behaviours. Further investigation needs to be undertaken to examine these influences.

Perceived behavioural control

Considerable debate exists with regards to the role of perceived behavioural control (PBC; e.g. Ajzen, 2001; 2002a; Armitage & Conner, 2001; Fishbein & Stasson, 1990; Kraft, Rise, Sutton, & Roysamb, 2005). Although Ajzen conceived PBC as similar to Bandura's (1977; 1982) concept of self-efficacy other investigators differ (e.g. Armitage & Conner, 2001; Fishbein & Stasson, 1990; Kraft et al., 2005; Sheppard et al., 1988). They maintain the construct is ambiguous and can be conceptualised in different ways. Armitage et al., (1999) believe distinctions can be made between measures of self-efficacy (the ease or difficulty of performing a behaviour), the controllability element (the extent to which the person perceives to have control of the behaviour), and perceived behavioural control. The researchers agree that internal control factors appear to be consistent with Bandura's self-efficacy theory but that the controllability component more resemble Rotter's (1966) perceived locus of control theory.

In an attempt to clarify the theoretical ambiguity of PBC, Ajzen (2002a) maintain self-efficacy and controllability are not independent or operate separately from each other. Rather sufficient evidence indicates commonalities exist between them and the two components could be treated in a hierarchical model. Different indicators should be used to measure each component but together the two components contribute to the overarching construct, PBC. Depending on the research query, the two components could be combined to form a unitary construct or treated separately for predictive analysis. Kraft et al. (2005) found support for PBC to be conceived as two distinct but interrelated constructs.

Notwithstanding the theoretical ambiguity of PBC, Fishbein & Stasson (1990) expressed misgivings about the utility of extending TRA with this construct. Comparing the two theories Madden, Ellen, and Ajzen (1992) found an inverse relationship between prediction of behaviour and level of perceived control over the behaviour. When behaviour was perceived to be not under volitional control then TPB performed better than TRA in predicting behaviour. Empirical support for the addition of PBC as an extension of the model is growing especially for

CHAPTER 4

non-volitional acts (Ajzen, 1991; Chang, 1998; Conner & Sparks, 1995; McMillan & Conner, 2003; Sutton, 1998). Although only a small number of studies examined the interactive effect between PBC and intention, Armitage and Conner (2001) found if the level of PBC was high then the link between intention and behaviour was similarly high. In their meta-analysis, TPB added 6% of the variance to intention over and above that of attitude and subjective norm. A few studies however have found PBC to be problematic; having poor reliability and not contributing significantly to the explanatory power of the model (Beck & Ajzen, 1991; Kurland, 1995).

Independence of the determinants of intention

The independence of attitude and subjective norms was one of the assumptions of the theory and it was expected that the amount of variance explained by the three predictors of intention (that is, attitude, subjective norm, and PBC) would vary depending on the purpose of the study (Ajzen, 1988; 2001; Ajzen & Fishbein, 1980; Conner & Sparks, 1995).

While this seemed to be confirmed in a number of studies (Ajzen, 1991), evidence contrary to this has been found (e.g. Chang, 1998; Vallerand et al., 1992). It was first noted by Eagly and Chaiken (1993) that whilst control (relating to opportunities, resources, and motivational factors) would be expected to be strongly associated with intention this may not be the case when behaviours are socially unacceptable such as smoking cannabis. In such situations, it would be anticipated that control would be negatively correlated or show no relationship at all to intention. For example, in the case of cannabis use people may believe they have sufficient control as to whether or not to smoke cannabis but may also hold strong negative attitude towards the behaviour. This would then lead to having no intention of performing the behaviour.

This hypothesis was confirmed by McMillan and Connor (2003) in their study of illicit drug use. Positive attitude towards the behaviour was correlated with

strong perception of control and intention. However, when attitude was negative control was unrelated to intention. This indicates that control may become less important to the formation of intention when the behaviour is perceived negatively. As most studies tended to examine socially desirable behaviours and in which participants had reasonable volitional control, Armitage and Conner (2001) believe this may explain why PBC rarely contributed to the prediction of intention or behaviour.

With regards to the normative component of the theory, Vallerand and colleagues (1992) examined moral behaviour in sport. Not only did a strong correlation exist between the normative and attitudinal components but normative belief was the sole causal agent in attitude. This indicates that important others had a significant role in the formation of attitude toward moral behaviour in sport. Guided by similar findings Chang (1998) and Vallerand et al. (1992) conducted a structural equation analysis of TRA/TPB and found the model to be better fitting when subjective norm was associated with attitude. Thus it appears that for immoral/unethical behaviours, important others have considerable influence over attitude and that the motivational elements may not be independent as believed.

Belief-based indices

Belief-based indices have been the least investigated of the theory with most investigators finding the predictors of intention sufficient to inform their research goals (Conner & Sparks, 1995). Studies have shown that the relationship between belief structures and their determinants are weak (Ajzen, 1991) with mixed support for the multiplicative rule of the expectancy-value model (Armitage et al., 1999; Vallerand et al., 1992). For instance, normative referent was a better predictor of subjective norm than the multiplicative aggregation of normative referent and motivation to comply (Vallerand et al., 1992). The function of beliefs underlying subjective norm, attitude, and perceived control have not been well-established. Armitage et al. (1999) recommend a

hierarchical regression technique be used when analysing belief-based measures to determine the most meaningful effect.

Ajzen (1991) however cautions against premature pessimism about the viability of beliefs to explain behaviour. It may be the utility of the expectancy-value model that is in question and recommends further empirical validation of belief-based measures be carried out.

Sufficiency of the theory to predict behaviour

Researchers have questioned the sufficiency of the theory in predicting intention-behaviour relationship (Eagly & Chaiken, 1993) and that other factors may improve the prediction and explanatory value of the theory (Connor and Armitage, 1998; Cooke & Sheeran, 2004). These included self-efficacy and moral norms but two others relevant to this study were personality traits and past behaviour. Although receptive to the inclusion of other factors into the theory, Ajzen and Fishbein (1980; 1991) believed external factors affected behaviour only indirectly and its effect would be mediated by constructs contained within TRA/TPB.

Personality trait is generally viewed as a “predisposition to perform a class of behaviours (e.g. aggressive behaviours or altruistic behaviours)” (Ajzen & Fishbein 1980, p. 87), or “generalized dimensions of individual differences in tendencies to show consistent patterns of thoughts, feelings, and actions” (Rhodes, Courneya, & Jones, 2002, p. 1722). Although attempts to relate personality traits to specific behaviours have not been fruitful, Courneya and colleagues (Courneya, Bobick, & Schinke, 1999; Rhodes et al., 2002; 2004) examined the mediating relationship between personality traits and TPB with exercise behaviours. Using hierarchical regression and structural modelling, they found personality traits (Neuroticism and Conscientiousness) improved prediction in exercise behaviour by an additional 6.8% of the variance over and above TPB. Although partial support for the mediating effect between TPB and personality trait was demonstrated one particular personality dimension,

Extraversion, had a direct effect on exercise behaviour independent of TPB variables. Ajzen (2001) observed only a small number of studies have been carried out in this area and the findings needed to be generalised to other behavioural domain.

The role of past behaviour in the prediction of behaviour has been intensely debated (e.g. Ajzen, 1991; 2002b; Conner & Armitage, 1998; Eagly & Chakin, 1993). Although past behaviour is not the causal determinant of future action, accurate prediction of future action can be made if a person's previous behaviour is known (Conner & Armitage, 1998). In a review of 60 studies that investigated past behaviour Ouellette and Wood (1998) found that if performance of a behaviour is carried out repeatedly over time and situation, it would eventually become habituated and automatic. Thus, conscious deliberations would no longer be relevant. For these behaviours if the conditions that led to the performance of the behaviour remained constant, temporal stability of the behaviour would be high and have a direct relationship to intention. However, in situations when the behaviour was difficult or impeded then cognitive decision making processes were activated and past behaviour would have an indirect effect through subjective norm and attitude to intention to perform the behaviour.

Assuming the determinants within TPB are sufficient in predicting behaviour, Ajzen (1991) maintained addition of past behaviour to the model would not significantly improve the prediction of future behaviour. Instead it would be mediated by the predictors in the model particularly PBC. Review of the research employing past behaviour revealed considerable evidence that past behaviour significantly increased the variance explained in behaviour over and above that of TPB in a number of behavioural domain (Ajzen, 2002b; Conner & Armitage, 1998; Honkanen, Olsen, & Verplanken, 2005; Ouellette & Wood, 1998; Shim & Maggs, 2005). Furthermore, attitude or PBC did not fully mediate the past-future behaviour relationship. These findings would appear to contradict the theoretical assumption of TPB theory.

Elliott, Armitage, and Baughan (2003) point out however that the sufficiency of TPB is not an issue and agreed with Ajzen (1988) that knowing one's prior behaviour to predict subsequent behaviour is not particularly informative. Instead they suggest research efforts should concentrate on enhancing understanding of the mediating effect of prior behaviour on the theory's constructs. This would be more meaningful if the goal of research is in effecting behavioural change through some form of intervention.

CONCLUSIONS

Despite the deceptive simplicity of TRA/TPB, the debate highlights the complex nature of this model. Some of the less than ideal findings Sutton (1998) argued are results of methodological violations. Although TPB has not been extensively investigated with criminal/deviant behaviour, Tuck and Riley (1986) maintain the theory has much to offer this area. The utility of a static trait-based model in explaining human behaviour that plagued psychology seem to have been ignored by Gottfredson and Hirschi (1990). An impressive body of research has highlighted the relative specificity and discriminativeness of behaviour across situations and that individual's subjective expectations, prior learning, and particulars of the evoking situation were determinants of future behaviour.

In addition, although prediction is an important aspect of scientific research the goal of theorising is to increase empirical understanding of our world (Newton-Smith, 2000). The ultimate criteria for measuring the adequacy of a theory is in its explanatory value (Gibbs, 1985). Despite its defects, a theory can be accepted as long as an understanding exists that it forms the basis for further development and improvement. It is for this purpose and as a contribution to theory building this study integrated TPB with self-control theory of crime. In the next chapter, different types of integrative models were discussed. This was followed by the integrative model used for this study and finally the specific aims and hypotheses.

Chapter Five

CURRENT STUDY: INTEGRATION OF TWO THEORIES

*Hypotheses are nets: only he who casts will catch
(Novalis, in Popper, 1975, p.11)*

TYPES OF INTEGRATION OF THEORIES

Akers (2000) maintain there are three methods in which a theory can be evaluated and developed; the first through theory falsification (Popper, 1972), with the theory examined on its own merit and its survival rests on its success through increasing empirical testing; the second, by pitting one theory against another; and the third, through synthesis of two or more theories to produce a superior explanation of deviancy than the single theory alone. The first approach is straightforward but there is dispute within criminology about the merits of theoretical competition or integration (Akers, 2000). Gottfredson and Hirschi (1990; Hirschi, 1979) and Chilton (1989), leading proponents of theoretical competition, argue integrationist efforts have unified fundamentally incompatible theories, citing Elliott, Ageton, and Cantor's (1979) efforts as an example.

Other researchers disagree maintaining the complexity and diversity of the criminological world means no one theory would be expected to account for all available data (Akers, 2000; Bernard & Snipes, 1996; Worrall, 2000). Theoretical development required alternative strategies other than continuous theoretical testing and competition. In fact, integration of theories was a response to growing dissatisfaction with traditional oppositional methods seen as futile and ineffective (Bernard & Snipes, 1996; Elliott, 1985). Although integration is regarded as alternative to falsification, in practice theory building involves both elements of integration and competition and are not necessarily mutually exclusive.

The rationale for considering theoretical integration generally hinge around the need for simplicity or parsimony and increasing the explanatory power of a single theory (Bernard & Snipes, 1996; Hooker, 2000; McAllister, 2000). Parsimony is preferred over more complex theories or those with a narrower reach. Terminology such as elaboration, synthesis, unification, and reductionism are often used synonymously with integration and although conceptually different (Liska, Krohn, & Messner, 1989; Thornberry, 1989; Tittle, 1989), for the sake of simplicity theoretical integration will be used to cover all these various forms.

Liska et al. (1989) outlined two main types of theoretical integration. The first is propositional in which propositions from different theories are retained but connected into a larger theory guided by a particular principle. Hirschi (1979) described the three structural forms that propositional integration may take; "end-to-end", "side-by-side", and "up-and-down". "End-to-end" features a sequential strategy in which the dependent variable in one theory becomes an independent variable in the larger theory. For example, Elliott and colleagues (1979; 1985) combined the dominant criminological theories of strain, control, and social learning into a broader perspective of delinquency. In their integrated theory, propositions from the different theories were linked by strain as the causal factor to the weakening of social bonds to conformity. The undermined social bonds, in turn, mediated attachment to delinquent peers leading essentially to delinquency. A purely end-to-end form, however, has been questioned by Elliott (1985) as to its ability to increase the variance in the dependent variable.

"Side-by-side" propositional integration refers to combining theories that explain a particular type of offender (e.g. race or gender) or the type of offences (e.g. property or violent crimes; Bernard & Snipes, 1996). This particular propositional form is particularly suited to typological construction of deviancy and crime (Liska et al., 1989). An example of this "side-by-side" procedure is Moffitt's (1993) theory of delinquency which draws upon neuropsychology and

developmental psychology to explain the differential pathways between life-course and adolescence-limited deviancy.

The final strategy for propositional integration, “up-and-down”, involves either raising the level of abstraction of the theory so that it becomes conceptually a broader paradigm of deviancy or combining variables from other theories unexplained by the other. Isomorphism or reductionism is the standard technique for this type of integration, common in natural sciences. It involves unifying elements of individual theories that are similar or equivalent so that a broader range of phenomena can be explained by the same structure (McAllister, 2000). It may be also that a theory can be reduced to a lower-level theory especially if the microstructure of the phenomena has been discovered. Cohen and Machalek’s (1988) and Bernard’s (1989) theories are examples of this type of procedure.

The second type of theoretical integration is conceptual. In this type of integration, concepts from one theory seen as similar or overlap with another infer the theories are the same. Akers’ (2000) theory is one such example in which the concepts contained in social bond theory were absorbed and subsumed under his social learning theory. Bernard and Cohen (1996, p. 322) described conceptual integration as potentially creating “theoretical mush”. Although the value of conceptual integration may be limited, Liska et al. (1989) believe its deductive method is potentially useful for conceptual parsimony.

Not only are there two main types of theoretical integration but they can occur within various levels of explanation; namely “micro” and “macro” (Munch & Smelser, 1987; Short, 1985). Micro and macro are frequently regarded as distinct categories with “micro-level” referring to an individual or the interactional patterns occurring between an individual and small groups (Short, 1985). “Macro-level” on the other hand refers to properties within population groups such as large social groups, cultural values, and subcultures. Whilst most theories tend to focus on being either micro- or macro-level explanation, Bernard and Snipes (1996) believe this distinction is arbitrary. Rather than

dichotomous they are in fact continuous. It is plausible for an understanding of crime to contain elements that includes the individual within a social unit (micro-level) and the social environment and social structure (macro-level) in the commission of crime. The level of explanation is better distinguished by whether individual level or aggregated data are used to test the theory as this clearly differentiates most theories.

In addition to the types of integration, theories have also been classified as occurring at the structural-processual (Akers, 1985) or individual difference level (Bernard & Snipes, 1996). In the structure/process model, the rates and distribution of deviancy are explained by the variations in the characteristics of the structural environment. The processes by which otherwise normal individuals are shaped by such environments and respond with deviancy is the explanatory goal; strain theory (Merton, 1938) is one such example. Rather than structural conditions being the cause of criminal behaviour, individual difference theories view variation in individual characteristics as the cause of crime; Gottfredson and Hirschi (1990) self-control theory is an example. Similar to micro-macro level explanations, structural/process and individual difference level explanations are generally seen as mutually exclusive and conflicting. Gottfredson and Hirschi and Bernard and Snipes disagree stating that whilst they may differ they are not necessarily contradictory.

Integration of theories is relatively recent but burgeoning in criminology (Akers, 2000; Bernard & Snipes, 1996; Liska et al., 1989; Tibbetts & Gibson, 2002). Despite its attractiveness, its success has been variable (for reviews see Akers, 2000; Bernard, 2002; Bernard & Snipes, 1996). Examples of theoretical integration include Hagan and McCarthy (1997) and LeBlanc and Loeber (1990) differential association, trait, and structural theory, Elliott et al.'s (1985) control, strain and social learning theories, Brannigan's (1997) general theory, social learning theory, and power control theory, Akers (1985) social learning theory incorporating differential association theory and behaviourism, and Lahey, Waldman, and Burnett (1999) self-control and developmental theory).

Most integrative efforts have been side-by-side and end-to-end forms. Although Elliott (1985) believe up-and-down holds promise few have adopted this approach. Even less has taken a cross-disciplinary approach although Akers (1985) could be seen as an example of this effort. Construction of comprehensive broad ranging theories that connects structure/process and individual elements of crime across micro- and macro-levels is not necessarily desirable (Bernard & Snipes, 1996). The complexity of such a theory would be impractical and limited in its usefulness.

Integration of theories should firstly be compatible (Hirschi, 1979; 1989). Structural arguments should be integrated with other structural theories and individual difference level arguments with other individual difference theories, as Hirschi (1979; 1989) believe their question was more empirical than theoretical. Bernard and Snipes (1996) suggest structural-processual arguments are more suited to competitive theory testing as they may be contradictory and would avoid ecological fallacy error. Secondly, conceptual integration is not recommended for theory building except for deductive purposes. The effort and result can be meaningless and unfruitful. Thirdly, the level of data analysis needs to be compatible with the level of theoretical arguments. Aggregated-level arguments cannot be tested using individual-level self-report data and vice-versa. Bernard and Cohen (1996) maintain the only meaningful strategy to integration is the propositional approach.

INTEGRATION OF SELF-CONTROL WITH THEORY OF PLANNED BEHAVIOUR (TPB)

Previous studies

Integration of self-control theory with other theories has not been extensive. With few exceptions most integrative efforts have included social control and social learning or differential association theories (Elliott, 1985) and a small number with rational choice models (e.g. Deng, 1994; Nagin & Paternoster, 1993; Piquero & Tibbetts, 1996; Sorenson & Brownfield, 1995). Of the rational choice integrative approach the studies generally found self-control contributed

a significant amount of explained variance for crime apart from Sorenson and Brownfield (1995). They found self-control provided no greater explanation than other deviancy theories. Self-control however was not the sole determinant in committing deviant behaviours (such as driving whilst drunk, theft, or sexual assault). Other factors such as perceived risks and benefits of the crime situation, perceived sanctions, and deontological factors increased the overall explanatory power from 22% to 27%. Tibbetts and Gibson (2002) concluded a comprehensive explanation of crime needed to include both time-stable and situational-specific elements in its theorising.

To date only two studies, Eifler (2004) and Seipel (2000), have specifically combined self-control with TPB. Eifler's (2004) integration involved an end-to-end form, examining the effectiveness of the combined models to explain health-related behaviours. In this model, self-control was proposed as the antecedent influence to attitude formation and subjective norm. They in turn mediated the relationship with intention to use condoms with casual partners. An important aspect of Eifler's integrative effort was the manner in which she extended Gottfredson and Hirschi's (1990) conceptualisation of low self-controlled individuals. Low self-controlled individuals did not only have greater propensity for deviancy but they were also capable of placing themselves into situations in which risky/deviant opportunities were accessible. Thus, low self-controlled individuals did not only take advantage of available opportunities but also proactively increased opportunities for risky behaviours. The results of Eifler's study supported her hypothesis that individuals with low self-control were more likely to place themselves into risky situations. There was no support however for self-control influencing attitude towards condom use or subjective norm. Intention to use a condom with a casual partner was largely determined by perceived control factors and to a lesser extent attitude towards the behaviour.

In the second study, Seipel (2000) investigated the sufficiency of self-control theory and TPB to explain driving a car whilst under the influence of alcohol. He systematically investigated the theories separately before integrating them into

an end-to-end form. Whilst Seipel found self-control theory to be better fitting of the two models, the determinants of TPB explained 35% and self-control only 8% of the variance for intention to drive a car under the influence of alcohol. Simultaneous analysis of both theories increased the variance explained to 38%; not much more than TPB on its own. Seipel then integrated the two theories in an end-to-end form. The elements of TPB (viz. attitude, subjective norm, and perceived behavioural control) were the dependent and mediating variables for self-control in determining intention to drink and drive. The explanation accounted for by the integrated model was not larger than previous models but when self-control was allowed to have a direct effect on intention, a marginal increase in variance was observed.

Current study

The discussion in this and the previous chapter indicate the usefulness of integrating Gottfredson and Hirschi's (1990) self-control theory of crime with TPB (Ajzen, 1991). The compatibility between rational choice theories and self-control has been noted for some time (Cornish & Clarke, 1986; Hirschi, 1986; Tibbetts & Gibson, 2002), with both theories showing predictive ability for deviant/unethical behaviours.

Although opposing integration in general Gottfredson and Hirschi (1990) were not averse to combining their theory with another as long as the theories are compatible in their basic assumptions. As Hirschi (1986, p. 117) commented he saw "considerable merit in efforts to combine compatible theories that have developed independently of each other". He however cautioned against over-emphasising the intellectual sophistication and foresight of the criminal offender in the commission of crime. He contended rational choice framework was more suited to assessing crime events rather than criminality; a view opposed by Cornish and Clarke(1986). They propose that rational choice models are not only about involvement in crime generally but to decisions relating to the commission of specific crimes as well.

It is within this perspective that TPB is proposed; by integrating the decision-making process to commit crime with variation in individuals with propensity to crime, given the opportunity. The intention is not only to contribute to understanding the underlying mechanism by which people with low self-control are at greater propensity to commit crime but potentially to improve the explanatory power of the theory as well.

Both self-control theory and TPB conceptualise human action as based on rational choice, motivated by the avoidance of pain and the maximisation of pleasure. Whilst self-control theory provides an explanation for why one person gives greater emphasis to short-term pleasure by engaging in risky and seemingly irrational/harmful behaviour and another person does not, the theory does not explicate the process by what these choices are based; believing self-control is sufficient explanation. Self-control is a time-stable phenomena and it is well-known that stable characteristics do not necessary lead to accurate prediction of behaviour or to be consistent across situations (Fishbein & Ajzen, 1975; Mischel, 1984). Other variables (whether externally or internally-driven) were found to mediate the relationship between stable propensities and behaviour. TPB explicitly outline factors important in the decision-making process in order to accurately predict future behaviour. These are attitude, subjective norm, PBC, and intention. It may be that components of attitude formation in TPB operate as the dependent variables of self-control. These will then mediate the relationship between self-control and intention to do crime.

In addition, self-control theory describe the formation of self-control as primarily through parenting and other socialising influences during the early years. Once established it remains stable throughout the life-course. Although inconclusive, some studies have shown that self-control is not immutable but fluctuates into early adulthood (Turner & Piquero, 2002; Winfree et al., 2006). The role of socialising influences has generally not been examined in self-control theory. Yet this factor has been shown to be important in explaining criminal and analogous behaviours, especially during the adolescent years (Akers, 1985; Andrews & Bonta, 2006; Higgins & Makin, 2004; Paternoster & Brame, 1997).

Subjective norm in TPB portrays the regulatory influence and expectations referent groups such as family and other significant influences have on the individual. The importance of investigating normative pressures for socially unacceptable behaviours, especially when they are seemingly contrary to the long term well-being and aspirations of the individual, would seem pertinent given the salience and proximity of these normative referents to the individual.

Not only do the two theories have central to their explanatory model person-specific motivations but situation-related variables as well; opportunity in self-control and PBC in TPB. Whilst Gottfredson and Hirschi (1990) would regard opportunity as an external factor and uninfluenced by the individual, Ajzen's (1990) description of PBC construct contains similar elements of opportunity as defined by self-control theory. These include the availability of resources (such as self-efficacy, requisite skills and abilities) and opportunity (situation and environment). Eifler's (2002) study showed low-self controlled individuals effecting situations that increased opportunities for risky behaviours. This suggest persons with low self-control could more readily perceive and thus facilitate opportunities for deviant actions rather than wait for opportunities to arise per se. Opportunity, in this sense, could then be seen as internally-defined construct mediating the relationship between self-control and intention rather than being independent of self-control. The role of opportunity has not been well-investigated in self-control theory and PBC may help to illuminate this aspect.

The proposed integration of the two models will take a partial end-to-end form in which self-control variable will be mediated by the three direct indicators of intention towards the behaviour. In this model (see Figure 5.1) self-control is antecedent to the components of planned behaviour (viz. attitude, subjective norm, and PBC). Time-stable variables, such as self-control, are expected to precede and influence situational-specific variables (Piquero & Tibbetts, 1996). Intention to commit crime would act as proxy for the behaviour of interest as the study is cross-sectional and retrospective. Self-control in this model would be mediated by the motivational elements of intention to commit crime but

investigations would explore whether it directly influenced intention as well. In this study, it was expected that components of TPB would provide additional explanatory value underpinning self-control theory.

In addition, past criminal behaviour was included into the model. Although past behaviour is strongly associated with future behaviour on its own past behaviour is not particularly informative. However, it may assist in understanding whether past deviancy offers alternative explanations over and above self-control and attitude in post-hoc analysis. Thus, it was expected that past criminal behaviour would have both an indirect and direct effect on intention to commit crime as depicted in the model.

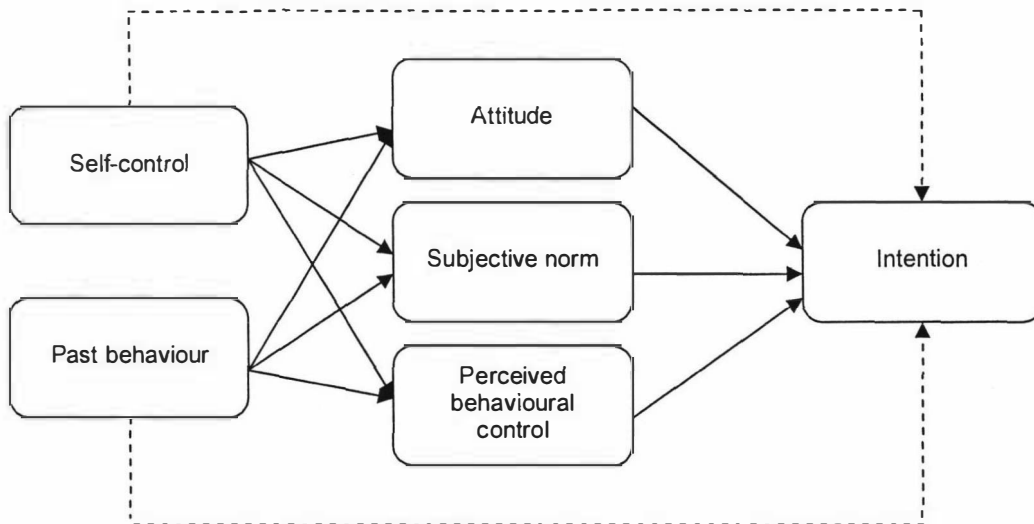


Figure 5.1. Hypothesised integrated model of self-control theory of crime and theory of planned behaviour

AIMS AND HYPOTHESES

The purposes of the study are as follows:

1. Firstly, to examine the generalisability of self-control theory to New Zealand population. Despite Gottfredson and Hirschi's (1993) recommendation that disproportionate sampling of low-self controlled individuals be included in testing their theory, in the main, student groups have been the most researched. Furthermore, few studies have investigated whether self-control theory is

applicable across disparate groups. As a consequence, this study used three groups (female students, male students and prison inmates) to assess whether the groups differed in their self-control propensity and intention to commit crime.

The utility of self-control theory would be demonstrated and this would be observed in the following hypotheses:

- H1.1 There would be a positive relationship between low self-control and intention to commit crime across all groups. This suggests that individuals with low-self control would have stronger intention to engage in crime than individuals who have greater levels of self-control, regardless of the population they come from.
- H1.2 Female and male students would show greater levels of self-control than the prison group although variability on this trait would be observed within the groups.

2. Secondly, to avoid the problem of tautology non-crime measures were used as indicators of self-control. Two self-control measures were used and operationally defined as behavioural self-control and attitudinal self-control. The behavioural self-control measure consisted of behaviours deemed reflective of low-self control by Gottfredson and Hirschi (1993). The attitudinal self-control measure used was Grasmick et al.'s (1993) self-control measure. This enabled the two self-control measures to be compared in terms of sufficiency to predict intention to commit crime. According to Gottfredson and Hirschi (1993) the behavioural measure should be a better predictor of crime than the attitudinal scale.

The hypotheses for this study were as follows:

- H2.1 The behavioural measure of self-control would have a stronger effect on intention to commit crime than attitudinal self-control.
- H2.2 There would be a modest relationship between the two measures of self-control.

H2.3 Self-control, as measured by the attitudinal instrument, would be unidimensional rather than multidimensional construct.

3. Thirdly, very little research has empirically tested TPB with criminal behaviour. Thus, the purpose of this study was to explore the sufficiency of the TPB to explain intention to commit crime with student and prison populations.

The effectiveness of TPB would be found and as such the hypotheses for this study were as follows:

H3.1 The belief-based measures would have an indirect influence on intention through their respective motivational component (viz. attitude, subjective norm, and perceived behavioural control).

H3.2 For prison inmates, attitude and subjective norm would be strongly supportive of crime and have a positive association with intention to commit crime.

H3.3 For university students, attitude and subjective norm would show negative support for crime and this would be associated with low intention to commit crime.

H3.4 As individuals would perceive committing a crime is within their control perceived behavioural control would have little effect on intention to commit crime for all groups.

4. Fourthly, the integrated theory would demonstrate greater explanatory power for intention to commit crime than the two single theories. This would be observed in the hypotheses for this study as follows:

H4.1 For all groups, the integrated theory would show an increase in explanatory power for intention to commit crime over and above the two theories independently.

H4.2 Self-control would be fully mediated by attitude, subjective norm, and PBC. Self-control would have no direct effect on intention to commit crime for all groups.

H4.3 For all the groups, there would be an inverse relationship between low self-control and attitude towards crime and normative supportive for crime.

5. Finally, past criminal behaviour would be examined as a determinant of intention to commit crime in the integrated theory. Support for past crime in the integrated model would be seen in the hypotheses for this study as follows:

H5.1 Past criminal behaviour would have an indirect effect on intention to commit crime and this would be reflected through its relationship with attitude, perceived behavioural control, and subjective norm.

H5.2 In addition, past criminal behaviour would have a direct influence on intention to commit crime.

METHODOLOGY

OVERVIEW OF RESEARCH DESIGN

The study is cross-sectional and retrospective design. Two disproportionate groups of research subjects were used in this study; university students (male and female) and prison inmates. Self-control theory and theory of planned behaviour (TPB), especially, have not been well-investigated with crime in general. Few studies have used confirmatory factor analysis to examine the validity and robustness of the models. The validation of the separate theories with a New Zealand population sample and its generalisability to a culture different from North American student groups would, firstly, need to be examined. Given the sufficiency of the theories with New Zealand population, the next step would be to examine the integrated model and whether increased explanatory power can be achieved over and above that of the individual theories.

The study consisted of two parts. The first was the preliminary phase in which information was gathered from university students and prison inmates to construct items for TPB questionnaire for use in the main study. The procedures and results for this preliminary stage are reported in Appendix A-1. The second stage was the main study and is reported in this thesis. In the main study three groups (male and female university students and prison inmates) were administered the same self-report measures to investigate self-control theory and TPB.

The research was reviewed and approved by Massey University Human Ethics Committee (MUHEC) to conduct the study with university students (Appendix E-1) and prison inmates (Appendix E-2). Consent from Policy Development, Department of Corrections, Wellington to conduct the study with prisoners was also obtained (Appendix E-3).

Issues about university students in a study of crime

Concerns about the representativeness and over-reliance on university students in criminal research have been expressed by a number of researchers (Hagan & McCarthy, 1997; Hirschi & Gottfredson, 1993; Jensen, Erickson, & Gibbs 1978; Williams & Hawkins, 1986). Of particular concern is insufficient variability on the construct of interest (Hirschi & Gottfredson, 2000); a concern not only for criminal justice but for psychological research as well (Kazdin, 1998). Hirschi and Gottfredson do not believe the general or student population provide sufficient incidence of delinquency or analogous behaviours to give meaningful inferences about crime causation. They suggested the use of “stratified disproportionate sample to ensure sufficient numbers of low self-control subjects” (Hirschi & Gottfredson, 1993, p. 48). In order to overcome these concerns, it was decided to include a prison population in this study. Not only is there a paucity of research testing TPB with crime but few studies have used a general criminal offender group to investigate self-control theory or TPB. Having a student and a prison group would allow the sufficiency of the theory to be tested across disparate populations.

RESEARCH SETTING

University students

University student participants came from two Massey University campuses; Palmerston North and Auckland. Massey University has three campuses; one in Palmerston North, which is the foundation institution, one in Auckland, started in 1993 and one in Wellington, a recent addition in 1999. Between the three campuses, they cater for 19,000 local and international students (Massey University, 2007).

Prison inmates

The research with prison inmates was carried out in two public prisons, Manawatu and Mt Eden prisons, and one private prison, Auckland Central Remand. Manawatu Prison was originally set up as a youth prison in 1979 to provide training and educational opportunities for its young inmates. From 1985 it became an adult prison catering to sentenced inmates from its catchment area, housing up to 278 male inmates with security ratings from minimum to medium. Mt Eden Prison together with Mt Eden Women and Auckland (generally known as Paremoremo) prisons make up the prisons in the Northern region. Mt Eden Prison holds remand offenders for the Auckland catchment area and is generally the processing area for all newly sentenced inmates. Turnover of offenders is high as once sentenced inmates are processed and transferred either to Auckland Prison or to other prisons throughout New Zealand. Mt Eden Prison is a medium security institution and houses up to 421 male inmates including those on remand. Auckland Central Remand Prison is New Zealand's only privately-run prison opened in 2000. It was set up primarily as a remand prison taking offenders from the Northland region and specialising in the care of inmates with special needs; those deemed as high risk for self-harm and young offenders. Although most of the 380 offenders at Auckland Central Remand Prison have not been sentenced, it holds 30 sentenced inmates who carry out all the kitchen, laundry, and maintenance work in the prison.

RESEARCH PARTICIPANTS

University students

Subjects in the main study were 269 undergraduate students attending Massey University Auckland and Palmerston North campuses. Fifty-five percent were female and forty-five percent were male. Of the potential nine hundred and eighty-one students attending the courses, the response rate was 27.4%. The low response rate is surprising given this population sample, raising concerns

about the representativeness of this group. An explanation for the apparent low rate of response may be that potential pool of participants was based on student numbers enrolled in undergraduate courses. Given that a number of students withdraw from the course, do not attend class, come in late, or are away on the day, it is most probable that the full complement of students were not present on the day. In addition, large numbers of students in some courses made it impossible to count accurately those who were present. Other factors included a high percentage of international students in some courses whose English was not their primary language. Unlike other universities, Massey University students do not receive course credits to participate in research. However, those who took part in the study encouraged their friends to participate and some snowballing effect occurred.

As shown in Table 6.1, the average age of participants was 23.8 (*SD* 7.22, range 16-73 years). The majority identified as New Zealand-Pākehā (56.5%). Most students were studying Business degrees (49.5%) with 30.2% from Science and 24.9% from Humanities and Social Sciences. Ninety-four percent of students studied full-time whilst a small group (6%) were studying part-time. Despite the fact that most were full time students, 58% worked part-time and 3% had full time employment. The average number of years studying for the current degree was 2.4 years, with the range being 0-16 years.

Information on internal students obtained from the Massey University's database system showed 54% of the students were females and 46% were males. Most students identified themselves as Pākehā /European (45.9%), with the next largest group being Asian (37.9%). Of the students who studied in the three facilities, 50% were from Business, 29% from Science, and 21% were from Humanities and Social Sciences. The students' age ranged from 15 to 78 years with the average being 25.7 years. Most of the students were in full time study (79.2%) with 20.7% studying part time.

In summary, the participants in the study showed similar demographic characteristics to the students studying internally at Massey University. They

were slightly younger, more studied full time, and more New Zealand-Pākehā students took part in the study. Thus concerns about the representativeness of the students in this study were alleviated.

Prison inmates

Sentenced inmates who had served one year or less of their sentence were eligible for the study. Only sentenced inmates could participate in the study because of the sensitivity of disclosure for prisoners on remand and the ethical concerns in approaching this group. In addition, inmates who had served one year or less were used due to the research question which asked for criminal activity a year prior to imprisonment. This circumvented problems of memory and accuracy of recall if inmates had been in prison for more than one year. Of 252 inmates approached 116 sentenced inmates from Manawatu, Mt Eden, and Auckland Central Remand prisons volunteered to participate in the research, making a response rate of 46%. This is consistent with studies with an offender population (DeLisi et al., 2003; Williams, Skogstad, & Deane, 2001, refer Appendix B-2). Of these four participants subsequently withdrew; one because of language difficulties, two because of peer influence about fears that the responses were not entirely anonymous or confidential and the fourth withdrew without explanation. Data from seven participants were eliminated as their questionnaires were incomplete. In total eleven participants were omitted from the study, making a total of 105 questionnaires used in this study from the prison group.

As summarised in Table 6.1, the average age of prison inmates was 36.05 (*SD* 12.24, range 18-78 years). Seventy-five percent of inmates in this study indicated they left school with no educational qualifications. Most identified as New Zealand/Pākehā (43.9%) and 41.9% solely as Māori. Of those who consented to their files being viewed (78% of the total), the mean sentence length was 41.44 months (range 3-148 months). The most frequent sentence length was 1-2 years (36.6%) with over half (56.1%) serving sentences two years or less.

Table 6.1. *Summary of demographic characteristics for university students and prison inmates*

Demographics	University students			Prison inmates
	Male n=121	Female n=148	Total N=269	Male N=105
AGE		(n=147)		(n=104)
Range	17-47	16-73	16-73	18-78
Mean (SD)	23.16(5.48)	24.37(8.38)	23.86 (7.2)	36.05(12.24)
GENDER	121(45%)	148(55%)	269	105
ETHNICITY				
NZ/European/Pākehā	71(58.7%)	81(54.7%)	152(56.5%)	46(43.9%)
Māori	2(1.7%)	3(2%)	5(1.9%)	44(41.9%)
Māori/Pākehā	7(5.8%)	8(5.4%)	15(5.6%)	1(0.9%)
NZ/Māori/Pacific Islander				3(2.9%)
Pacific Islander	2(1.7%)	2(1.4%)	4(1.5%)	5(4.8%)
Asian	37(30.6%)	49(33.1%)	86(32%)	2(1.9%)
Other (Canadian, American, etc)	2(1.6%)	5(3.4%)	7(2.6%)	4(3.8%)
MARITAL STATUS				
Married/Partner	14(11.6%)	24(16.2%)	38(14.1%)	35(33.3%)
Single/never married	106(87.6%)	119(80.4%)	225(83.6%)	46(43.8%)
Widowed	0(0%)	2(1.4%)	2(0.7%)	2(1.9%)
Divorced/separated	1(0.8%)	3(2%)	4(1.5%)	22(20.9%)
YEARS STUDYING				
Range	0-7 yrs	0-16 yrs	0-16 yrs	
Mean (SD)	2.46(1.2)	2.29(1.6)	2.37(1.43)	
CURRENT DEGREE (N=268)				
Business	60(49.4%)	73(49.3%)	133(49.5%)	
Science	46(37%)	36(24.4%)	81(30.2%)	
Humanities and Social Sciences	17(14%)	49(33.1%)	69(24.9%)	
LEVEL OF EDUCATION (N=268)				
Primary school only	0(0%)	0(0%)	0(0%)	9(8.6%)
Some secondary (Forms 3-4)	6(5%)	6(4.1%)	12(4.5%)	66(62.9%)
Higher secondary (Forms 5-7)	87(71.9%)	93(62.8%)	180(66.9%)	12(11.4%)
Tertiary	27(22.5%)	49(33.1%)	76(28.3%)	18(17.1%)
STUDENT STATUS				
Full-time student	117(96.7%)	137(92.6%)	254(94.4%)	
Part-time student	4(3.3%)	11(7.4%)	15(5.6%)	
EMPLOYMENT STATUS				
Full-time work	5(4.1%)	4(2.7%)	9(3.3%)	
Part-time working	68(56.2%)	87(58.8%)	155(57.6%)	
Not working	48(39.7%)	57(38.5%)	105(39%)	
YEARS STUDYING				
Range	0-7 yrs	0-16 yrs	0-16 yrs	
Mean (SD)	2.46(1.2)	2.29(1.6)	2.37(1.43)	

NB: Total is more than 100% as some participants were doing double degrees

Taking into account the most serious offence (as some inmates are in prison for more than one index offence) the most common offence was violence-related (39.4%, including sexual). A number had drug-related charges (15.5%).

Compared with the 2001 census of prison inmates (Harpham, 2004), inmates participating in this study were considerably older than the general prison population. Whilst nearly half (45%) of the inmates in prison were under the age of 30 years, in this study only 29% were in that age group. Seventy-six percent of inmates in the general prison population had no formal educational qualifications. In the prison census only 31.5% identified as European/Pākehā and 44.6% solely as Māori. Violence was the most common offence (62%) compared to 7.8% for drug-related crime. Thirty-three percent were serving sentences two years or less.

In summary, inmates who participated in this study were older, with nearly similar numbers who identified as Pākehā /New Zealander or Māori, were serving lower prison term and committed less serious offences than the sentenced inmates in the 2001 prison census (Harpham, 2004).

PROCEDURE

University students

A draft version of the full questionnaire was trialled prior to the main study with three undergraduate psychology students and two facility staff members. They were asked to complete the questionnaire, noting the time it took to complete, give comments about the ambiguity or readability of the items, and ease in completing the questionnaire. The feedback was used to modify the questionnaire into its final version for the main study (see Appendix C-1).

Students studying papers from the Business, Science, and Humanities and Social Sciences facilities at Massey University Auckland and Palmerston North campuses were approached. The decision to contact the Schools was based on

the courses taught internally and on-campus. Students in the School of Psychology were not approached for the main part of the study as it was considered there was a potential conflict of interest with the researcher being a lecturer in the School.

Permission was obtained from the Heads of School/Department/Institute to approach their staff and talk to students about the study and seek volunteers. With consent from the course controllers the researcher talked to students about the study prior to the lecture starting. Information Sheets (Appendix C-2) were attached to a sheet in which interested students could leave their name and contact details. At the end of class, the researcher or her research assistant came back and collected the sheet. Students were contacted and a time set up when they could come and complete the questionnaire in a room booked for that particular purpose. Once the participants arrived, they were given the Information Sheet again and Consent Form (Appendix C-3) before completing the questionnaire (Appendix C-1).

Each questionnaire was number coded and matched with the consent form. The number code was to identify the follow-up data (not reported in this study). Once completed, the students were given \$10 as reimbursement for costs. Most questionnaires were completed within 45 to 60 minutes.

Prison inmates

Managers at Manawatu, Mt Eden and Auckland Central Remand prisons were contacted to outline the study and obtain their consent to undertake the study in their prison. Once obtained, the researcher arranged a time with the individual units when inmates could be seen. As a number of units were working units, this was frequently in the evenings. Inmates were seen individually or in small groups and the research presented to them. Interested inmates were given an Information sheet (Appendix D-2) and Consent Form (Appendix D-3) before completing the questionnaire (Appendix D-1), in a room allocated for that purpose. Most participants completed the questionnaire without assistance

within one and one and a half-hour. All eligible units in the three prisons were visited. Research assistants accompanied the researcher in some phases of the data collection in the prisons and universities. They were trained in research and prison protocol after signing a confidentiality agreement (Appendix G-1).

MEASURES

Demographic information

Demographic information was obtained on age, gender, ethnicity, marital status, educational level, and year when secondary schooling was completed (refer Table 6.1). University students were asked additional questions about their current degree, number of years studying for the degree, student status (whether part-time or full-time) and whether they were working in addition to their university study.

Self-control measures

Two self-report self-control scales were used; an attitudinal and a behavioural measure of self-control.

Attitudinal self-control

The Grasmick et al. (1993) scale is the most widely used attitudinal measure in testing self-control theory and was used in this study. Lacking an operational definition of the construct, Grasmick et al. developed the scale corresponding to Gottfredson and Hirschi's description of the characteristics of an individual with low self-control. They initially examined the California Psychology Inventory (CPI; Gough, 1975) Self-control (Sc) subscale as a possible measure of this trait. Although some of the items in the Sc subscale were consistent with Gottfredson and Hirschi's definition, others lacked face validity or did not match those traits described. Lacking a suitable instrument to test self-control theory,

the researchers constructed their own instrument by using some of the items from the Sc subscale of CPI or making slight modifications to them.

The items were pre-tested on several groups of college students and those with sufficient variance and unidimensional in their factor structure selected for the final instrument. The final scale consisted of 24 items with equal number of items reflecting each of the six dimensions of self-control. These were labelled "Impulsivity", "Simple tasks" reflecting a preference for simple rather than complex tasks, "Risk seeking", "Physical" indicating a preference for physical rather than cerebral activities, "Self-centred" orientation, and "Temper" indicating a person with a volatile temper was linked to low tolerance for frustration.

Using a 4-point Likert scale, participants were asked to rate the strength of their agreement with the statements from (1) strongly disagree, (2) disagree somewhat, (3) agree somewhat, and (4) strongly agree. The scores were summed, with high scores on the scale signifying low self-control. Grasmick et al. (1993) found the reliability of the scale to be satisfactory with Cronbach's coefficient alpha = 0.81. Principal components factor analysis revealed five factors, with impulsivity and simple task items combining into one factor, and eigenvalues ranging from 4.66 to 1.11. The researchers decided that as the difference between the first and second factor was large the first factor accounted for most of the explained variance observed. The lowest loadings were for Physical Activities subscale but deletion of the items reduced the reliability of the full scale. For empirical purposes, Grasmick et al. believed a strong case existed for the six dimensions to form a single personality attribute rather than perceive self-control as multidimensional. Results showed a positive and significant relationship between self-control and imprudent behaviours such as smoking, drinking, and gambling (Arneklev et al., 1993). Since its development the attitudinal self-control scale continues to be widely used.

Cronbach's coefficient alphas for this study for the full self-control scale were female students = 0.80, male students = 0.78, and prison inmates = 0.90.

Behavioural self-control

According to Gottfredson and Hirschi (1990) people who lack self-control not only pursue immediate and short-term pleasures in crime but in non-criminal activities as well. They supported behavioural measures of self-control as opposed to an attitudinal scale in testing their theory. Behavioural indicators of low self-control could be observed in “difficulties in interpersonal relations, employment instability, automobile accidents, drinking, and smoking”, irrespective of crime (Hirschi & Gottfredson, 1993, p. 53). The following four categories were used as measures of behavioural self-control:

1. Number of relationships was identified by one question “The [number of] close relationships I have had are...” Although information about the quality of those relationships was obtained, given that a number of participants (16.7% and 11.5% for students and prison inmates respectively) reported never having experienced a close relationship, this could not be used and therefore the “number of relationships” was used as the best available indicator of difficulties in interpersonal relations.
2. Employment stability was defined by the number of instances of “paid work since leaving secondary school”. Higher scores indicated employment instability. The question may be problematic with university students as they typically work in a number of different jobs part-time or of short duration; such is the nature of employment for this group.
3. To assess for alcohol use items were replicated from the measures used in Elliott and colleagues’ (Elliott & Ageton, 1980; Elliott & Huizinga, 1983; Elliott, Huizinga, & Menard, 1989) self report of delinquency (SRD) measure. Research participants were asked the frequency of their alcohol use, “How many times in the last year have you used.....?”beer, wine, and hard liquor. In addition Ready-to-Drinks (RTDs, such as Vodka Cruisers, KGB, Tattoo, etc) was added to the list as they were commonly drunk by young people. The frequency of

consumption for the four substances was aggregated and summed so that high scores indicated greater frequency of alcohol use. Cronbach's coefficient alphas for the four items were female students = 0.76, male students = 0.53, and prison inmates = 0.78.

4. Problems associated with alcohol use were also obtained from the SRD scale. It assessed six problem areas associated with alcohol use that were not crime-related. The question posed was "In the last year have you....? "...gotten into trouble with your friends, "...with your family", "...gotten into physical fights", "...had problems with your physical health", "...had an accident while driving", and "...missed work". Participants rated this on a 5-point rating scale of "Never", "Once or twice", "3 or 4 times", "5 or 6 times", and "More than 6 times". Responses were dichotomised into two categories of "Never" or "Once or more times". The six problem areas were then summed to give a score that ranged between 0-6, with "0" indicating no problems associated with alcohol use and 1-6 indicating problems with alcohol in at least one or more of these areas. Cronbach's alpha coefficients for the six items were female students = 0.69, male students = 0.59, and prison inmates = 0.80.

High scores on relationships, jobs, alcohol use, and problems with alcohol use were expected to have an inverse relationship with self-control, in that individuals with high scores on these variables had low self-control. Cronbach's coefficient alphas were calculated for the four-item behavioural self-control measure [female students = .054; male students = 0.53; prisoners = 0.25] but these were well below accepted values of 0.7 or greater (Pallant, 2005). As scales with fewer than ten items typically report low Cronbach values (< 0.5), mean inter-item correlations were calculated instead. Optimal values are between 0.2 and 0.4. The mean inter-item correlations were: female students = 0.23, male students = 0.22 and prison inmates = 0.16. On the mean inter-item index the measure was reliable for university students but less than optimal for prison group.

Past criminal behaviour

Self-report of crime

Elliott and Ageton (1980) developed the self-report scale of delinquency (SRD) for their major longitudinal study in North America, the National Youth Survey. A number of criticisms had been directed at the use of self-report instruments and the adequacy of the measures to report incidence and frequency of crime (Huizinga & Elliott, 1986; Moffitt & Silva, 1988; Mosher, Miethe, & Phillips, 2002). In developing their scale, Elliott and Ageton took into consideration these shortcomings and obtained items that were comprehensive and representative. They used offences from the Uniform Crime Reporting (UCR) and listed violations that had arrest rates of more than 1% for young people. Criminal behaviours of heuristic interest with this particular population such as involvement in gangs and sexual offences were included. They also reviewed contemporary self-report measures of delinquency for items not on their list but tapped specific dimensions of criminal behaviour. Any overlapping and trivial items were eliminated and this formed the final 40-item measure. Since its development, the SRD has been used in a number of studies investigating the relationship between crime and age/gender/social class, drug use and predatory crime, and to investigate theories into the causes of criminal behaviour (Bartusch et al., 1997; Burton et al., 1999; Evans et al., 1997; Mosher, Miethe, & Phillips, 2002).

Internal consistency for SRD scales are particularly problematic and Huizinga and Elliott (1986) maintained this form of reliability was inappropriate for self-reported delinquency measures. As criminal activities are not homogenous, their preference was for test-retest estimate of reliability as more suitable. Test-retest estimates for most of the scales were in the range of $r=0.65$ to $r=1.00$ except for minor assault, property damage and status offences. These had moderate to low reliabilities of between $r=0.40$ and $r=0.60$ (Elliott et al., 1983; Huizinga & Elliott, 1986).

Although test-retest reliability of the scale was adequate, mixed support for the validity of SRD was found. The SRD was able to discriminate among young people who were non-delinquents and those who were exploratory or had high rates of involvement in delinquent behaviours (Dunford & Elliott, 1984).

However, correlations between self-report and official arrests or contacts were generally low or insignificant ranging from $r=0.16$ to $r=0.56$. Self-reported official contacts showed higher correlations with SRD ranging in the $r=0.60$ s.

From the SRD, three sets of delinquency scales can be constructed with each scale differing in levels of homogeneity and seriousness. The first, the offence-specific scale is the most discrete and homogenous of the three scales in the type, seriousness, and frequency of offences. The second, the offence-category scales had greater heterogeneity of offence types and variance in level of seriousness. The offence categories were based on Glaser's (1967) typology of offences and broadly classify offences into predatory and non-predatory crimes and whether it was a crime conducted in public or private settings. The offence categories are the most comprehensive and general of the scales. The final scale, the summary scale is the most global in terms of offence type and seriousness with none of the scales being independent of the other. This scale closely resembled the Uniform Crime Reporting (UCR) system in North America thus allowing direct comparability with the SRD data.

Aggregating offence frequency into a composite summary scale has been much criticised as inclusion of serious offences with minor ones conceals major differences between the items, with serious offences less likely to be self-reported than non-serious offences. However, excluding high or low frequency offences raises the question of representativeness of the range of criminal activities. Despite this, aggregated offence data is frequently used (for example: Burton et al., 1999; Evans et al., 1997; Grasmick et al., 1993; Nagin & Paternoster, 1993). Elliott and Ageton (1980) recommended using offence subscales in which discrete, homogenous offences are clustered as well as a summary scale for theoretical investigation. Rather than taking a priori position for this study the crime scale was subjected to post-hoc exploratory factor

analysis to identify the factor structure of the scale as this has not been evident to date.

For this study, the Police Department in Palmerston North was consulted for equivalence and appropriateness of the crime items for New Zealand population. As a result crime items not relevant to New Zealand were omitted from the questionnaire. These included “hitchhiking on the motorway” and “begged for money or things from strangers”. Other changes included removal of all status crimes as it was not appropriate for this study. These included “cheating on school tests”, “skipped class without an excuse”, and “been suspended from school”. This reduced the 40 offences in SRD to 33 index crimes for this study.

The SRD used two response sets for each question; the first set is an open-ended question which asks respondent the frequency of involvement in that behaviour over the past 12 months *“from Christmas a year ago to Christmas past...”*. If the response to the open-ended question is 10 or more, participants then responds to a second question which asks the frequency of offending ranging from “once a month” to several times a day. For this study only the open-ended response was used for analysis. A one-year reporting period was decided by Elliott and Ageton (1980) as having greater theoretical value and in reducing recall errors. The one year reporting period was retained but for this study was changed to *“...the past 12 months, from today to a year ago just past”*.

Internal consistency for the crime scale is reported in Chapter 7, after exploratory factor analyses had been conducted on the scale.

Drug use

Illegal drug use questions adapted from SRD (Elliott & Ageton, 1980) were included as part of the crime scale. Minor changes were made to items after consultation with the Police Department. For example, dance drugs (i.e.,

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ecstasy, GHB) were included in this study as it was currently the drug of choice amongst young people. Drug names were changed to reflect common usage in New Zealand; "hashish" was replaced with "cannabis" and barbiturate drug names "downers", "reds", "yellows", or "blues" were substituted with "rollies" and "pinkies". The final seven illegal drugs in the questionnaire were marijuana, hallucinogens, amphetamines, barbiturates, cocaine, heroin and dance drugs.

Similar to the crime scales in the SRD, drug questions used two response sets for each question; the first asks respondents an open-ended question; "How many times during the 12 months have you used..... [drug name]?" If the response is 10 or more times, participants then selects the frequency from one of six categories which range from once a month to several times a week. As with the crime scale only the open-ended question was used for analysis. The reliability of the drug scale is included in Chapter 7 as part of the factor analysis of the crime scale.

Theory of Planned Behaviour (TPB)

Construction and operationalisation of the various components of TPB followed the format outlined in Ajzen (2002d) and Connor and Sparks (Conner & Sparks, 1995). The construction of measures for the components of TPB was carried out as part of the preliminary study and is reported in Appendix A-1. The measures obtained from the preliminary study and used in the main study are reported in the sections below.

Criterion variable - Intention

Intention to perform the behaviour was used as the proxy for future behaviour with behaviour defined as observable action (Ajzen, 2002d). The decision for the behaviour of interest was that it had to have sufficient variability, broad enough to encompass a wide range of behaviours, the opportunity for carrying out the behaviour, and have sufficient face validity for both groups.

Ajzen (Ajzen, 1988) strongly advocates the use of aggregated behaviours for measurement. Aggregation is the measure of broad behavioural tendency; that is behaviours that are consistent and stable across situations. In addition, Ajzen states they represent broad underlying dispositions which are especially relevant for this study. The advantage of aggregation is that it allows for investigation of “cross-situational” consistency; that is consistency among different actions reflecting the same disposition.

Measures of behaviour and attitude need to be formulated at the same level along the dimensions of action, target, context, and time. These four elements can vary from the specific to the general but need to follow the principle of compatibility. All constructs (intention, attitude, PBC, and subjective norm) are defined exactly by the same element; the greater the compatibility between the indicators the stronger the statistical relationship between them.

In this particular study, action was the element of primary interest and this was stated at a general level; “to commit a crime”. Due to the generality of this statement and the possibility of ambiguity this was explained by “such as, burglary, assault, dishonesty offences”. This explanation included minor offences that could be performed by all participants but excluded major crimes such as homicide and serious violence which are relatively rare occurrences (Police National Headquarters, 2006). The element of time, “in the near future”, was used when the sentence required it to be meaningful. The other elements (target and context) were not regarded necessary for this study and so were not implemented.

Behavioural intention generally contains motivational elements and subjective estimates about the likelihood of performing the behaviour or achieving a goal. Both types of intention were used for this study. The three items for intention were:

- If I had the opportunity I would commit a crime (such as burglary, assault, dishonesty offences). (*subjective estimate*)

- How likely is it that you will commit a crime in the near future? (*subjective estimate*)
- I intend to commit a crime in the near future. (*motivational element*)

The three items were evenly interspersed with subjective norm and PBC items. They were rated on a 7-point Likert scale although the anchors varied depending on the question. These were (1) “Extremely unlikely” to (7) “Extremely likely”, or (1) “Definitely” to (7) “Definitely not”. The third question was reverse-coded and the items summed to give a total intention measure. High scores indicated strong intention *to commit* a crime (score range 3-21). Cronbach’s alpha coefficients were: female students = 0.76, male students = 0.84 and prison inmates = 0.78.

Predictor of intention

Attitude towards the behaviour

Ajzen (2002d) recommended adjective pairs should reflect both instrumental components (e.g. valuable-worthless) and experiential components (e.g. pleasant-unpleasant). In addition, he recommended inclusion of “good-bad” adjective pair as it encapsulated overall evaluation. Of the initial set of twenty bipolar evaluative dimensions investigated (refer Preliminary Study, Appendix A-1) the six adjectives used in the main study were:

- Harmful/beneficial (*instrumental*)
- Good/bad (*overall evaluation*)
- Happy/sad (*experiential*)
- Desirable/undesirable (*experiential*)
- Enjoyable/unenjoyable (*experiential*)
- Safe/dangerous (*instrumental*)

The adjective pairs were rated on a 7-point Likert scale with anchors varying according to the semantic differential. All dimensions except “*Harmful-beneficial*” were reverse-coded so that the six items when summed gave a total

attitude to crime score. High scores were indicative of a positive attitude to crime and low scores negative attitude to crime (score range 6-42). Cronbach's coefficient alphas for the six adjective pairs were: female students = 0.73; male students = 0.82 and prisoners = 0.87.

Subjective norm

Subjective norms generally reflect individuals' subjective judgement of whether significant others would want them to engage in the behaviour or not. This traditionally has been operationalised by a single item; "Most people who are important to me....." (Ajzen, 2002d; Conner & Sparks, 1995). The use of a single item is problematic due to low variability and reliability. Furthermore, important significant others generally will approve of desirable behaviours but disapprove of undesirable ones. To circumvent these problems Ajzen recommended including descriptive norms, for example whether the important other also engaged in that behaviour.

The three items for subjective norm rated on a 7-point Likert rating scale were:

- If I committed a crime most people who are important to me would (1) "Disapprove" to (7) "Approve"
- Most people who are important to me (1) "Don't do crime" to (7) "Do crime"
- With regards to crime how much do you do what people who are important to you think you should? (1) "Not at all" to (7) "Very much"

High scores indicated strong influence by important others to commit crime (range of scores 3-21). Cronbach's alpha coefficients were less than 0.5 for all groups [female = 0.28, male = 0.07, prison = 0.28] and thus mean inter-item correlations were calculated. These were: female students $M = 0.12$, male students $M = 0.20$ and prisoners $M = 0.19$. Except for the male students, the reliability of the measure was less than ideal suggesting the items may be confusing and ambiguous. Due to the exploratory nature of this study it was decided to retain the variables for analysis.

Perceived behavioural control

This construct represents individuals' confidence of control and capability to perform the behaviour. The items used were:

- For me to commit a crime (such as burglary, assault, dishonest offences) would be (1) "Impossible" to (7) "Possible"
- It is mostly up to me whether or not I commit a crime in the near future (1) "Strongly agree" to (7) "Strongly disagree"
- How much control do you feel you have over whether you commit a crime or not? (1) "No control" to (7) "Complete control"

The first two items represented self-efficacy and the third controllability. All were rated on a 7-point Likert scale. The second item was reverse-coded so that high scores indicated strong control over whether to commit a crime or not (score range 3-21). As Cronbach's alpha coefficients were less than 0.5 for the three groups [female = 0.02, male = 0.38, prison = 0.41] mean inter-item correlations were reported. These were: female students = 0.22, male students = 0.10 and prisoners = 0.17. Despite the low reliability the three items were retained for further investigation.

Belief-based measures

For the sake of completeness, belief-based measures were established so that all components of TPB could be investigated. Belief-based measures are direct measures of attitude, subjective norm, and PBC and as such are determinates of these constructs (Ajzen, 2002d). Ajzen cautioned however that belief-based measures were not antecedents or causes of the predictor variables. Beliefs are underlying cognitive and affective components in the model providing an explanatory function to intention and behaviour. There are three types of salient beliefs; behavioural, normative, and control. The construction and operationalisation of belief-based measures are outlined in the Preliminary Study (see Appendix A-1) but the measures used in the main study are discussed below.

Optimal scaling for belief-based measures as unipolar or bipolar is unclear. Ajzen (2002d) suggest a pragmatic solution is that both scales are investigated and the scale which provides the strongest correlation between belief-based measures and determinants of intention be retained. Investigation of unipolar and bipolar scales showed bipolar scaling for behavioural belief measure had the strongest correlation with its criterion variable, attitude [unipolar $r=0.29$; bipolar $r=0.31$]. Unipolar scaling had the strongest correlations for normative influence and subjective norm [unipolar $r=0.28$; bipolar $r=0.02$] and control belief and perceived behavioural control [unipolar $r=0.10$; bipolar $r=-0.09$]. Subsequent analyses will use bipolar scale for behavioural belief and unipolar scales for normative and control beliefs.

Behavioural belief

Ten behavioural beliefs were used in the measure. As is standard practice for behavioural belief measures, each different belief is rated for its belief strength indicating the salience of the behaviour to achieve the goal and its outcome evaluation; the perception that performing the behaviour will lead to the favourable outcome. Belief strength was rated on a 7-point scale with (1) "Extremely unlikely" to (7) "Extremely likely". The outcome evaluation was rated also on a 7-point scale with (1) "Extremely bad" to (7) "Extremely good". The scores for belief strength and outcome evaluation were recoded into bipolar scaling so that "1" became "-3" through to "7" as "+3".

An example of a behavioural belief and its stem were:

Committing a crime would stop me getting bored: (-3) "Extremely unlikely" to (+3) "Extremely likely" (*belief strength*)
 Not getting bored would be: (-3) "Extremely bad" to (+3) "Extremely good" (*outcome evaluation*)

The outcome evaluation of two items were reverse coded ("*Give me a criminal record*", and "*Make it hard for me to get a job*") so that high scores indicated strong belief strength and positive evaluation of the outcome. The products of

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belief strength and outcome evaluation were multiplied and summed to form behavioural outcome (score range -90 to +90). Whilst belief-based measures do not need to be internally consistent (Ajzen, 2002d), Cronbach's alpha coefficients for the full scale were: female students = 0.70, male students = 0.60 and prison inmates = 0.52.

Normative belief

Four of the most frequently mentioned referents for crime were included in the final questionnaire. These were my criminal friends, my partner, my parents, and members of the family. A large number of students (80% females and 87% males) and prison inmates (43%) identified their marital status as single and therefore the item "*my partner*" was omitted and the three remaining referents retained for analysis.

Each referent was rated for its belief strength of the referent's desire for the performance of the behaviour and the motivation to comply with the expectations of the specified referent. The strength of the belief was rated on a 7-point scale, with (1) being "Extremely unlikely" and (7) "Extremely likely", and the motivation to comply was rated on a 7-point scale, with (1) being "Not at all" and (7) "Very much".

An example of a referent belief and its stem were:

My friends who have done a crime would want me to commit a crime:

(1) "Extremely unlikely" to (7) "Extremely likely" (*belief strength*)

Generally speaking, I tend to follow the advice of my friends who have done a crime: (1) "Not at all" to (7) "Very much" (*motivation to comply*)

The products of referent belief and motivation to comply were multiplied and summed to form a composite of normative belief (score range 3 to 147). High scores on normative influence indicated the desirability of these influences towards the behaviour. High scores on motivation to comply showed strong willingness to follow the advice of these normative influences so together the

two components reflected subjective level of normative pressure. Cronbach's alpha coefficients were low for female students [0.48] and prison inmates [0.45] and thus mean inter-item correlations were reported for these two groups. Cronbach's alpha coefficient for male students was 0.87 and mean inter-item correlations were female students = 0.36 and prisoners = 0.28.

Control belief

Eight accessible control beliefs were used. Each belief was rated on the strength of the control belief on a 7-point scale where (1) was "Strongly disagree" to (7) "Strongly agree", and the power of that item to facilitate or inhibit performance of the behaviour. This was rated on a 7-point scale with (1) being "Extremely unlikely" and (7) "Extremely likely".

An example of a control belief and its stem were:

There is little chance of getting caught by the police

(1) "Strongly disagree" to (7) "Strongly agree" (*belief strength*)

As there is little chance of getting caught by the police, my committing a crime would be: (1) "Extremely unlikely" to (7) "Extremely likely" (*belief power*)

The products of belief strength and belief power were multiplied and summed to give a composite measure of control belief (score range 8 to 392). High scores indicated availability of opportunities and resources to facilitate performance of the behaviour and the salience of those opportunities to facilitate performance of the behaviour. Cronbach's coefficient alphas for all the eight control belief items were: female students = 0.70, male students = 0.68 and prison = 0.86.

RESULTS: MEASUREMENT MODELS

OVERVIEW OF DATA ANALYSES

Structural equation modelling (SEM) is a confirmatory technique and suited to theory testing (Ullman, 2001). At the most fundamental level, it is a series of exploratory factor analyses and multivariate statistical techniques, which is essentially an extension of multiple regression (Hankins, French, & Horne, 2000). The advantages of SEM over multivariate analyses for non-experimental research, however, is its ability to examine complex relationships, compare theoretically competing models, and simultaneously explore the adequacy of the measures and the relationship between the constructs making this statistical technique particularly attractive to hypothesis testing (Byrne, 2001; Ullman, 2001).

SEM is composed of two sub-models, the measurement model and the structural model and execution of SEM can be a two-stage approach (Anderson & Gerbing, 1992). In the first stage, the adequacy of the measurement scale is examined for goodness-of-fit. Guided by the theoretical underpinnings of the measurement scale post-hoc analyses can be undertaken to improve the fit of the scale. Once the measures show good fit structural analyses of the causal relationships between the endogenous (or dependent) variables can proceed; representing the second stage of SEM process. In this second stage, relationships between the variables are defined according to theoretical postulates and the adequacy of causal explanations evaluated. Evaluation of the theoretical models, representing the second stage of SEM, is discussed in Chapter 8.

The first stage of the procedure for SEM is reported in this chapter. This chapter will firstly present the univariate and bivariate analyses for each measure,

separately for male and female university students and prison inmates. Once preliminary analyses were completed confirmatory factor analysis of the measures and their goodness-of-fit were reported, completing this chapter.

Analysis of Moment Structures (AMOS) 6.0 (Arbuckle, 2006) statistical programme was used for SEM. Statistical Package for Social Sciences (SPSS) for Windows 13.0 (SPSS, 2004) was used for univariate, bivariate and other descriptive statistical analyses.

Sample size

Recommended sample size for empirical analysis is frequently varied and inconsistent even though evidence exists that smaller than suggested sample size are adequate if a number of factors are considered (MacCallum, Widaman, Zhang, & Hong, 1999). MacCallum, Browne, and Sugawara (1996) provided a framework for calculating the sample size for a close fitting model in which close fit was determined on a power level of 0.80, an alpha level of .05, and an effect size in which the Root Mean Square of Approximation (RMSEA) values were between 0.05 and 0.08. Degrees of freedom required for a close fitting model with a sample size of 105 to 148 would need to be between $df = 92$ and 145. This sample size comprised university students of which 121 were males and 148 females, and 105 prison offenders in this study.

Sample size was an issue for some of the measurement models due to the small number of parameters being investigated. However, submitting the measures to confirmatory factor analysis allowed the sufficiency of the measures to be gauged and the regression loadings to be examined. Non-significant parameters could be identified for later structural path analyses.

Preliminary data screening

All data for the measures were continuous. Before performing the statistical analyses all data were screened for accuracy of data input, for missing data, for normal distribution of the data and presence of outliers, and multicollinearity.

Missing data

Missing values analyses were conducted to explore the extent and type of missing data. Of the sample, missing data was generally low ranging from 0.4% to 6.7%. The highest amount of missing data was for the normative belief question which asked about partner's attitude towards crime. As discussed in Chapter Six, this variable was omitted from further analysis. Overall, the remaining missing data was mostly 2% or less. Traditional approaches for handling missing data such as deleting cases, pairwise or listwise, and mean substitution are problematic (Byrne, 2001; Scheffer, 2002; Tabachnick & Fidell, 2001).

Although by default the AMOS statistical programme substitutes missing data with expected maximization (EM) imputation, for this study it was decided to investigate the type of missingness in the data. The three types are missing completely at random (MCAR) which is the most restrictive assumption, missing at random (MAR) with its more relaxed assumption, and not missing at random (NMAR) which is the most problematic of missing data (Little & Rubin, 1987). Whilst MAR and MCAR can be adequately dealt with using any likelihood-based imputation methods provided the missingness is not more than 10% of the data NMAR cannot be ignored (Byrne, 2001; Scheffer, 2002).

Protocols were established to detect the type of missingness in this study. MCAR was generally atypical and was limited only to situations in which the participant accidentally missed an entire set of questions by overturning a page (Scheffer, personal communication). This happened on two protocols for the university participants. To establish whether the missing data was MAR the convention is to regress the observed variables on the X axis thought to be

predictive of Y (Wothke, 2000). If the relationship between the missing variable is conditional on the Y predictor variable then MAR is verified. Models using regression analyses were performed for all variables with a missing value. Using this method, most of the missing data was shown to be MAR. NMAR whilst atypical was identified on two of the prison questionnaires. This was identified by comments made beside the question but no rating given on the scale (such as "It's not up to her [partner] whether I do crime"). No NMAR was found for the student groups.

Various imputation methods were used for the missing data. For MAR and MCAR if less than 10% of the data was incomplete expected maximization (EM) imputation was performed (Scheffer, 2002; Tabachnick & Fidell, 2001). The advantage of EM imputation over other traditional procedures is that it avoids overfitting the data, reduces bias and loss of variance in the data set (Tabachnick & Fidell, 2001). Whilst multiple imputation methods are recommended for NMAR (Little & Rubin, 1987) if less than 5% is missing EM imputation is acceptable as it does not bias the data unduly (Scheffer, 2002).

For the NMAR in the prison protocols, although less than 5% were missing the imputation method used was a panel of three experts. Guided by the comments made by the participant the panel gave a rating for the item and the mean from the three ratings given as the score.

Assessment of normality and outliers

Using West, Finch, and Curran (1995) rule of thumb the cut-off score for substantial departures from normality were skew = 2 or greater and kurtosis = 7 or greater. Serious violations of normality assumptions especially excessive kurtosis are particularly problematic for SEM analyses. Kurtosis may affect findings in that they are spurious, non-replicable, and inflates Type I error (Byrne, 2001; West et al., 1995). Although for some of the data normality would not be assumed assessment for abnormal data was undertaken and discussed in the relevant sections for each measure.

UNIVARIATE AND BIVARIATE ANALYSES

In this section means, standard deviations, and ranges were computed for each measure. Bivariate correlations using Pearson product-moment analysis for continuous data were conducted to explore the direction and magnitude of the relationship between the measures and possible multicollinearity.

Self-control theory measures

Attitudinal self-control scale

The scale was assessed for kurtosis and skewness and all items were found to be within acceptable range of normality (shown in Table 7.1). No outliers were detected.

Table 7.1. *Skew and kurtosis for students and prisoners*

Scale item	Female (N=148)		Male (N=121)		Prisoners (N=105)	
	Skewness	Kurtosis	Skewness	Kurtosis	Skewness	Kurtosis
Impulsivity	.18 (.20)	.03 (.40)	.22 (.22)	-.17 (.44)	-.21 (.24)	-.86 (.47)
Simple tasks	.10	-.08	.44	.05	.37	-.63
Risk seeking	-.14	-.55	.00	-.34	-.09	-.80
Physical activity	.24	-.04	-.27	-.24	-.46	-.39
Self-centred	1.15	1.45	.65	-.11	.52	-.47
Temper	.40	-.49	.84	.27	.47	-.68

Note: Standard errors are in parentheses

The means and standard deviations for the scale are presented below in Table 7.2. A one-way between-group analysis of variance on the total self-control score showed there was a significant difference in the means between the three groups on levels of self-control at $p < .05$ level [$F(2, 371)=8.35, p=.00$]. The differences between the groups using eta-squared was small (0.04; Cohen, 1988). Post-hoc comparisons using Tukey HSD test showed the mean score for prison inmates ($M=55.44, SD=13.59$) was significantly different from female students ($M=50.27, SD=8.22$) and male students ($M=51.73, SD=8.27$). There was no significant difference between female and male students' total mean score on attitudinal self-control.

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Table 7.2. Means and standard deviations for attitudinal self-control scale for sub-samples

Factor/Items	Female (N=148)		Male (N=121)		Prison (N=105)	
	M	SD	M	SD	M	SD
Impulsivity	8.68	2.17	8.93	2.30	9.53	3.05
Simple task	8.39	2.20	7.90	2.21	8.50	3.15
Risk seeking	9.46	2.51	10.25	2.26	10.02	3.31
Physical activity	9.60	2.40	10.23	2.67	11.04	3.20
Self-centred	6.26	2.06	6.83	2.16	7.97	2.92
Temper	7.89	2.45	7.59	2.82	8.38	3.47
Total self-control	50.27	8.22	51.73	8.27	55.44	13.59

Note: Higher scores indicate lower self-control; subscales score range 4-16; total scale 24-96.

Correlations between self-control subscales for male and female students are displayed in Tables 7.3 and for prison inmates in Table 7.4.

Table 7.3. Correlations of self-control subscales for student sub-samples

Subscales	1	2	3	4	5	6	7
1. Impulsivity	1	.46**	.20*	.32**	.12	.21	.70**
2. Simple task	.39**	1	.03	.17	.14	.23**	.57**
3. Risk-seeking	.36**	.11	1	.23*	.09	.17	.62**
4. Physical activities	.27**	.14	.44**	1	.00	.09	.58**
5. Self-centred	.19*	.18*	.08	.05	1	.40**	.48**
6. Temper	.34**	.28**	.13	.11	.32**	1	.61**
7. Total scale	.67**	.58**	.49**	.55**	.49**	.64**	1

Note: Upper diagonal females (N=148), lower diagonal males (N=121)

* Correlations significant at $p=.05$ level (2-tailed)

**Correlations significant at $p=.01$ level (2-tailed)

Table 7.4. Correlations of self-control subscales for prison inmates (N=105)

Subscales	1	2	3	4	5	6	7
1. Impulsivity	1						
2. Simple task	.52**	1					
3. Risk seeking	.56**	.36**	1				
4. Physical Activity	.32**	.26**	.38**	1			
5. Self-centred	.53**	.58**	.54**	.34**	1		
6. Temper	.36**	.32**	.37**	.20*	.53**	1	
7. Total scale	.76**	.70**	.76**	.58**	.82**	.66**	1

* Correlations significant at $p=.05$ level (2-tailed)

** Correlations significant at $p=.01$ level (2-tailed)

Correlations between subscales were significant but the strength of these relationships was small to moderate across all groups. Moderate to large correlations between subscales and total self-control was found for all groups.

Behavioural self-control measures

Hirschi and Grasmick (1993) postulated that behavioural indicators rather than attitudinal measures were reflective of low self-control. Empirical research for this premise was limited reflecting the paucity of literature available in which to investigate this assumption. Four behavioural indicators of self-control were identified as applicable to both student and prison samples. These were number of relationships, number of jobs since leaving school, amount of alcohol used in the past year, and problems associated with alcohol use. Using West et al. (1995) rule of thumb the data were found to be skewed and kurtotic for relationships for male and female students and alcohol use for prison inmates and female students (see Table 7.5).

Table 7.5. *Skew and kurtosis for untransformed behavioural self-control variables for student sub-samples and prison inmates*

Measure	Female students (N=148)		Male students (N=121)		Prison inmates (N=105)	
	Skew	Kurtosis	Skew	Kurtosis	Skew	Kurtosis
Relationships	2.62 (.20)	9.55 (.40)	2.74 (.22)	13.71 (.44)	1.25 (.24)	2.67 (.47)
Jobs	1.30	2.72	1.55	4.00	.85	.95
Alcohol use	4.17	25.99	1.64	2.16	3.21	12.56
Problems with alcohol	1.68	2.20	1.19	.91	1.09	.30

Note 1: Standard errors in parenthesis

Note 2: Abnormal skew and kurtosis highlighted in bold

Examination of Kolmogorov-Smirnov statistic showed assumptions of normality were violated for all variables. Normalised Mardia's coefficient value ($MahD^2 = 86.03$) confirmed the data to be multivariate kurtotic also. Mahalanobis distance criterion of $X^2 = 16.27$ ($\alpha = .001$ with 3 df) showed 13 cases to be multivariate non-normal. Log transformation of two variables, relationships and alcohol use, reduced the data to within normal distribution for the three groups (see Table 7.6) and Mardia's coefficient reduced considerably to $MahD^2 = 6.55$. Only five

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variables were identified as multivariate outliers but they were not substantially non-normal (ranging from 17.08 to 26.38).

Table 7.6. *Skew and kurtosis for transformed behavioural self-control variables for university student sub-samples and prisoners*

Measure	Female students (N=148)		Male students (N=121)		Prison inmates (N=105)	
	Skew	Kurtosis	Skew	Kurtosis	Skew	Kurtosis
Relationships	.19 (.20)	.02 (.40)	.18 (.22)	-.59 (.44)	1.25 (.24)	2.67 (.47)
Jobs	1.30	2.72	1.55	4.00	.85	.95
Alcohol use	-.29	-.78	1.64	2.16	-.43	-.80
Problems with alcohol	1.68	2.20	1.19	.91	1.09	.30

NOTE: Standard errors in parenthesis

Means and standard deviations for the untransformed behavioural self-control variables are reported in Table 7.7. The median is also reported due to the influence of extreme scores. Apart from alcohol use the mean and median for relationship, jobs and problems with alcohol use were similar for the two male groups (male students and prisoners). Female students had lower mean scores in alcohol use and problems with alcohol than the male participants.

Table 7.7. *Means, medians, and standard deviations for behavioural self-control measure for university student sub-samples and prison inmates*

Measure	Female students (N=148)			Male students (N=121)			Prison inmates (N=105)		
	M(SD)	Mdn	Range	M(SD)	Mdn	Range	M(SD)	Mdn	Range
Relationships	2.88 (2.96)	2	0-18	2.20 (2.45)	2	0-18	2.85 (2.20)	3	0-12
Jobs	3.26 (2.31)	3	0-13	3.09 (2.53)	3	0-15	3.04 (2.30)	3	0-11
Alcohol use	70.39 (117.87)	25	0-990	91.38 (107.97)	45	0-470	263.57 (476.48)	82	0-3035
Problems with alcohol	0.79 (1.24)	0	0-5	1.01 (1.20)	1	0-5	1.42 (1.67)	1	0-6

Correlations for behavioural self-control indicators for the three groups are shown in Tables 7.8. There was a moderate positive relationship between alcohol use and problems with alcohol for all groups (females $r=0.51$; males

$r=0.43$; prison inmates $r=0.48$). Correlations between the other variables, although significant at $p < .05$, were small ($r < 0.3$) or insignificant.

Table 7.8. *Correlations for behavioural self-control measures for university students and prisoners*

Variables	Student sample				Prison inmates (N=105)			
	1	2	3	4	1	2	3	4
1. No. of relationships	1	.22**	.16	.10	1			
2. No. of jobs	.21*	1	.21**	.17*	.16	1		
3. Alcohol use	.26**	.15	1	.51**	.04	.03	1	
4. Problems with alcohol	.16	.12	.43**	1	-.18	-.06	.48**	1

Note: Female students in upper diagonal (N=148), male students in lower diagonal (N=121)

*Significant at $p=.05$ level (2-tailed)

**Significant at $p=.01$ level (2-tailed)

Crime scale

Development of the measure

Although Elliott et al.'s (1983) self-report of delinquency scale has been empirically derived it had not been factor analysed. Prior to subjecting the measure to factor analysis items were deleted from analysis if less than 1.5% of the sample reported committing the crime or using the drug. No data in this range were found for prison inmates. For student samples crime items less than 1.5% were forced sexual relations (0%), snatch wallet (0%), set fire to property (0.4%), illegally used credit cards (0.4%), stole motor vehicle (0.7%), and paid for sexual relations (1.1%). Drug items with less than 1% were barbiturates (0.4%), heroin (0.7%), and cocaine (0.7%). The crime scale was reduced from 33 items to 27 and the drug scale from seven to four; making a total of 31 items for the crime scale.

Using data from the full student population, the revised crime scale was submitted to exploratory factor analysis using principle component analysis (PCA). Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) was .57 and Bartlett's Test of Sphericity value was significant ($p = .000$). Unrotated factor solution identified twelve factors with eigenvalues over one explaining

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70.37% of the total variance. The scree plot showed two large components and three lesser components (refer Appendix F-1). The criteria for factor selection was based on several considerations; inspection of the scree plot, the eigenvalues, and Monte Carlo for Parallel Analysis statistical programme (PCA; Pallant, 2005, p. 183, www.allenandunwin.com/spss.htm, see Appendix F-2). Although PCA and eigenvalues showed twelve to fourteen factors could be rotated this would be impractical. Consistent with the scree test and Hair et al.'s (1998) recommendation that factors accounting for less than 5% of the variance were not useful five factors were extracted for rotation. Variables with loadings 0.5 and above were considered to be of reliable significance and retained. Those that did not load on to any factor were omitted from analysis and the remaining variables subjected to orthogonal and oblique rotation. Comparison of both orthogonal and oblique rotation methods resulted in similar findings.

The fifth factor contained only two factor loadings and was indeterminate. Four and three factors solutions were therefore investigated. The final solution was the four factor solution which account for 68.6% of the total variance; factor one contributed 22% of the variance, factor two 19.4%, factor three 14%, and factor four 13.3% (see Table 7.9).

Table 7.9. *Pattern of factor coefficients for full student sample (N=269)*

Crime variable	Factor 1 Steal good	Factor 2 Violence	Factor 3 Theft	Factor 4 Drug
Steal goods >\$50	.659	.025	.021	.072
Bought, sold, held stolen goods	.960	.023	.002	.058
Steal goods \$5 or less	.984	.026	.005	.399
Steal goods \$5-\$50	.850	.013	.017	.050
Damage/destroy other's property	.006	.619	.088	.032
Threaten/hit others	.096	.881	.025	.002
Force arm tactics	.078	.792	.052	.042
Stole money from parents/family	.061	-.067	.574	.024
Stole money from work	.038	.228	.869	.040
Illegally take motor vehicle	.011	.057	.740	.001
Dance drugs	.055	.055	.314	.867
Amphetamines	.062	.056	.218	.777
Sold hard drugs	.008	.003	.149	.774
Hallucinogens	.019	.019	.070	.862

All variables loaded strongly on to its respective factor. Factor 1 contained four items mainly related to stolen goods, factor 2 contained three items concerning violence, factor 3 three items related to theft, and factor 4 four items mainly related to drug offences. One item "obscene phone calls" loaded strongly on to factor four but was omitted as it appeared to be an anomaly. The final four factor solution for the crime scale consisted of 14 items and used in subsequent investigations for all groups. Internal reliability of the full scale using Cronbach's coefficient alphas were female students = 0.74, male students = 0.60, and prison inmates = 0.78.

Univariate and bivariate data

Skew and kurtosis for the four-factor crime scale for university students and prison inmates are displayed in Table 7.10. As can be observed the data were extremely kurtotic (> 7) and skewed (> 2). Normalised Mardia's coefficient value for the full sample was $MahD^2 = 1200.93$ verified the data to be multivariate kurtotic as well. Multivariate outliers were identified using Mahalanobis distance and using a conservative criterion of $X^2 = 34.53$ ($\alpha = .001$ with 13 df) 33 cases were shown to be multivariate non-normal. Although the data would be expected to be non-normal logarithmic transformation was applied to all variables, with a reduction in $MahD^2 = 313.82$. Despite the reduction in Mardia's coefficient a number of measures remained non-normal (see Table 7.11). Subsequent analyses will investigate both the transformed and untransformed variables for comparison of fit.

The relationship between the crime subscales was examined for the three groups using Pearson product-moment correlation coefficient. These are displayed in Table 7.12. Means, standard deviations, and medians for each group are also reported in Table 7.12. For female students there was a strong positive relationship between stealing goods and theft ($r=0.70$), and a moderate positive relationship between stealing goods and violence ($r=0.33$) and theft and drugs ($r=0.31$). For male students correlations between the crime subscales were generally small or insignificant ($r < 0.3$). Prison inmates showed strong positive relationships between theft and stealing goods ($r=0.66$) and a moderate

positive correlation between violence and stealing goods ($r=0.45$), theft ($r=0.49$) and drugs ($r=0.35$). No significant relationship was found between drugs and theft ($r=0.10$) or drugs and steal goods ($r=0.19$).

Table 7.10. *Skew and kurtosis for untransformed crime scale*

Variable	Female students (N=148)		Male students (N=121)		Prison inmates (N=105)	
	Skew	Kurtosis	Skew	Kurtosis	Skew	Kurtosis
<i>Factor 1: Steal goods</i>						
Steal goods >\$50	8.27 (.20)	71.62 (.40)	7.18 (.22)	57.34 (.44)	3.69 (.24)	12.97 (.47)
Bought, sold, held stolen goods	4.97	29.35	10.97	120.48	3.20	9.10
Steal goods \$5 or less	5.37	32.98	10.65	115.47	6.48	42.64
Steal goods \$5-\$50	6.61	45.60	9.06	89.89	5.08	27.98
<i>Factor 2: Violence</i>						
Damage/destroy other's property	7.99	68.92	3.57	15.44	5.02	25.30
Threaten/hit others	5.27	33.84	9.47	96.93	9.71	97.20
Force arm tactics	12.17	148.00	9.33	93.29	7.19	51.29
<i>Factor 3: Theft</i>						
Stole money from parents/family	5.01	28.83	4.28	23.65	5.45	32.80
Stole money from work	7.53	60.79	3.41	12.83	7.18	57.57
Illegally take motor Vehicle	6.94	56.88	4.35	21.34	6.40	44.36
<i>Factor 4: Drugs</i>						
Sold hard drugs	11.99	145.03	6.78	46.49	3.25	9.78
Hallucinogens	8.90	91.17	8.78	84.50	5.81	36.52
Amphetamines	6.23	42.47	7.05	57.08	2.14	3.05
Dance drugs	6.76	51.47	5.69	34.98	6.09	43.35
<i>Subscales</i>						
Steal goods	5.21	30.25	10.82	118.15	3.86	15.22
Violence	4.13	17.68	8.81	86.45	3.56	11.61
Theft	5.93	40.33	2.64	7.77	5.86	38.66
Drugs	6.54	45.75	6.82	53.13	3.33	13.94

Note: Standard error in parenthesis

Table 7.11. *Skew and kurtosis for transformed crime scale*

Variable	Female students (N=148)		Male students (N=121)		Prison inmates (N=105)	
	Skew	Kurtosis	Skew	Kurtosis	Skew	Kurtosis
<i>Factor 1: Steal goods</i>						
Steal goods >\$50	7.55 (.20)	58.24 (.40)	4.30 (.22)	19.74 (.44)	1.72 (.24)	1.57 (.47)
Bought, sold, held stolen goods	3.85	15.16	5.00	33.15	1.38	.61
Steal goods \$5 or less	2.79	8.01	3.21	14.74	3.06	9.66
Steal goods \$5-\$50	4.68	23.45	4.32	21.57	2.42	4.75
<i>Factor 2: Violence</i>						
Damage/destroy other's property	5.58	33.65	1.65	1.72	2.32	4.87
Threaten/hit others	3.09	9.41	3.10	10.97	2.15	4.95
Force arm tactics	12.17	148.00	6.83	50.56	3.81	16.10
<i>Factor 3: Theft</i>						
Stole money from parents/family	2.74	7.22	2.30	4.51	3.50	11.89
Stole money from work	4.12	19.14	2.34	4.53	3.35	11.16
Illegally take motor vehicle	3.85	15.99	3.15	9.87	2.18	3.97
<i>Factor 4: Drugs</i>						
Sold hard drugs	11.02	126.35	6.37	39.84	1.85	1.85
Hallucinogens	5.10	29.62	5.66	34.79	2.17	3.82
Amphetamines	4.73	22.27	4.44	21.21	1.56	-.27
Dance drugs	4.22	18.91	3.94	15.74	2.38	4.65
<i>Subscale</i>						
Steal goods	3.01	9.63	4.91	33.36	2.09	4.14
Violence	3.01	8.95	3.09	13.54	1.78	2.42
Theft	3.50	15.56	1.96	4.16	2.03	5.22
Drugs	5.22	31.17	4.91	27.41	1.68	2.02

Note: Standard error in parenthesis

Compared to university students, prisoners showed a higher mean score for all offences. Male students had higher mean scores for stealing goods and violence than their female counterparts, whilst female students engaged in slightly higher levels of theft and drug taking than male students.

Table 7.12. *Correlations, means, standard deviations, medians, and range on crime subscales for female and male students and prison inmates*

Subscales	1	2	3	4	M	SD	Mdn	Range
<i>Female students (N=148)</i>								
1. Steal goods	1				1.00	3.29	0	0-24
2. Violence	.33**	1			0.68	2.21	0	0-13
3. Theft	.70**	.20*	1		1.50	5.01	0	0-43
4. Drugs	.12	.18*	.31**	1	1.03	4.89	0	0-40
<i>Male students (N=121)</i>								
1. Steal goods	1				8.78	70.37	0	0-772
2. Violence	.12	1			3.62	14.78	0	0-152
3. Theft	-.03	.23*	1		1.17	2.25	0	0-12
4. Drugs	-.03	-.04	.05	1	0.93	4.24	0	0-38
<i>Prison inmates (N=105)</i>								
1. Steal goods	1				213.20	633.83	3	0-3560
2. Violence	.45**	1			66.18	209.74	1	0-1010
3. Theft	.66**	.49**	1		1792	63.52	0	0-500
4. Drugs	.19	.35**	.10	1	267.53	616.79	1	0-4000

* Significant at $p = .05$ level (2-tailed)

** Significant at $p = .01$ level (2-tailed)

Prevalence rate

Prevalence rate refers to the proportion of individuals in the population who self-report committing one or more of a particular type of offence. For this research sample prevalence rates for offending during the past 12 months are shown in Table 7.13. Nearly 44% of female and 68% of male students self-reported committing at least one criminal act in the past year compared with 81% of prisoners. Theft was the most common offence committed by female students (27.7%), violence for male students (43.8%), and stealing goods for prisoners (59%). However, the prison population had the highest percentage of involvement in offending across all crime categories compared to student participants in the past 12 months.

Table 7.13. *Prevalence rate for crime during the past 12 months*

Crime and drug subscales	Prevalence rate (%)			ANOVA <i>F</i> (2, 371)	<i>p</i> value	<i>d</i>
	Female (<i>N</i> =148)	Male (<i>N</i> =121)	Prisoner (<i>N</i> =105)			
All crime (including drugs)	43.9	67.8	81.0	35.83	.00	.16
Steal goods	21.6	38.8	59.0	20.20	.00	.09
Violence	15.5	43.8	55.2	26.69	.00	.12
Theft	27.7	36.4	41.9	2.90	.06	-
Drug use	12.2	11.6	50.5	38.31	.00	.17

A one-way between-group analysis of variance was conducted to investigate if there were any differences in means between the three groups on crime subscales. As shown in Table 7.13, significant differences between groups were found for all crime except theft. Post-hoc comparisons using Tukey HSD test showed that the groups were all significantly different from each other in their level of crime. For total crime, prisoners had the highest mean prevalence rate and female students had the lowest mean rate [female students ($M=0.77$, $SD=1.06$), male students ($M=1.31$, $SD=1.4$), and prison ($M=2.07$, $SD=1.44$)]. For stealing goods, the mean scores for all groups differed significantly from each other with prisoners having higher mean score than students' mean scores [female students ($M=0.22$, $SD=0.41$), male students ($M=0.39$, $SD=0.49$) and prison inmates ($M=0.59$, $SD=0.49$)]. Male and female students did not differ significantly from each other. For violence subscale, mean score for female students ($M=0.16$, $SD=0.36$) differed significantly from the mean scores for male students ($M=0.50$, $SD=0.50$) and prison inmates ($M=0.55$, $SD=0.50$). Female students had much lower levels of violence than the two male groups but no difference was found in the mean scores for the two male groups. On the drug subscale, mean scores for prison inmates ($M=0.50$, $SD=0.42$) differed significantly from male students ($M=0.12$, $SD=0.32$) and female students ($M=0.12$, $SD=0.33$) but no difference was found between the student groups. As can be seen in Table 7.13, the differences between the groups calculated with eta-squared were moderate to large (Cohen, 1988).

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Incidence rate

The definition of incidence rate is not without debate (Olweus, 1989). For the purpose of this study incidence rate was defined as the average number of criminal offences committed by research participants who reported at least one offence during the past 12 months. Although not surprising as can be seen in Table 7.14, mean incidence of offences was much greater within the prison group than university student population.

The large standard deviations for male students and prisoners would indicate a small number of individuals were committing the majority of offences. Generally university students appeared to be infrequent offenders whilst for some individuals within the prison group criminal offending was a frequent activity. Comparative with other criminal activities theft had a low base rate for prisoners. Drug use had the highest incident rate for female students and prisoners and stealing goods for male students.

Table 7.14. *Incidence rate for crime during the past 12 months*

	Female students (N=148)			
	n	M (SD)	Mdn	Range
Total crime	65	9.58 (14.92)	4	1-67
Steal goods	32	4.63 (5.83)	2	1-24
Violence	23	4.39 (3.94)	3	1-13
Theft	41	5.41 (8.40)	3	1-43
Drugs	18	8.44 (11.86)	3	1-40
	Male students (N=121)			
	n	M (SD)	Mdn	Range
Total crime	82	21.40 (88.92)	6	1-792
Steal goods	47	22.60 (112.25)	3	1-772
Violence	53	8.26 (21.57)	2	1-152
Theft	44	3.23 (2.70)	2	1-12
Drugs	14	8.07 (10.19)	4	1-38
	Prison inmates (N=105)			
	n	M (SD)	Mdn	Range
Total crime	85	697.75 (1212.13)	58	1-5257
Steal goods	62	361.07 (794.15)	13.5	1-3560
Violence	58	119.81 (271.52)	6.5	1-1010
Theft	44	42.77 (93.11)	10	1-500
Drugs	53	530.02 (786.81)	130	1-4000

Theory of planned behaviour measures

Intention and the determinants of intention

Means, standard deviations, and normality assessment for intention and determinants of intention towards crime for the three groups are shown in Table 7.15. Prison inmates had the highest mean score on intention to commit crime and more positive attitude towards crime than the two student groups. Female students had the most negative attitude towards crime. Behavioural intention was skewed and kurtotic for both student groups with most students having low intention to commit crime. The data for the other variables, subjective norm and PBC, were all normally distributed for the three groups.

A one-way between-group analysis of variance for the measures showed there was a significant difference in means between the three groups at $p < .05$ level for intention [$F(2, 371)=30.72, p=.00$], attitude [$F(2,371)=37.80, p=.00$] and subjective norm [$F(2, 371)=5.00, p=.01$]. There was no difference in the means between the groups on PBC [$F(2, 371)=2.50, p=.08$].

For intention, differences between the groups using eta-squared was large (0.14; Cohen, 1988). Post-hoc comparisons using Tukey HSD test showed that the mean score for prison inmates ($M=6.67, SD=4.56$) was significantly different from female students ($M=3.84, SD=2.26$) and male students ($M=3.88, SD=2.37$). The mean scores for intention did not differ between the two student groups.

For attitude, differences between the groups using eta-squared was also large (0.16; Cohen, 1988). Post-hoc comparisons using Tukey HSD test showed the mean score for female students ($M=7.29, SD=2.49$) significantly differed from male students ($M=9.02, SD=4.30$) and prison inmates ($M=13.19, SD=8.52$). Male students' mean score was also significantly different from prison inmates.

For subjective norm, differences between the groups using eta-squared was small (0.02; Cohen, 1988). Post-hoc comparisons using Tukey HSD test showed that mean score for female students ($M=5.78, SD=2.39$) was

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significantly different from male students ($M=6.15$, $SD=2.66$) and prison inmates ($M=6.84$, $SD=3.36$). No significant difference in mean scores for subjective norm was found between the two male groups (students and prisoners). Bivariate analyses for direct measures of intention are presented in Table 7.17.

Table 7.15. *Univariate statistics for intention and determinants of intention for female (N=148) and male (N=121) students and prisoners (N=105)*

Measure	Mean (SD)			Skewness			Kurtosis		
	F	M	P	F	M	P	F	M	P
Intention	3.84 (2.26)	3.88 (2.37)	6.67 (4.56)	4.08 (.20)	3.99 (.22)	1.07 (.24)	20.76 (.40)	17.50 (.44)	0.16 (.47)
Attitude	7.29 (2.49)	9.02 (4.30)	13.19 (8.52)	2.55	1.60	1.05	7.36	2.26	-0.04
Subjective norm	5.78 (2.39)	6.15 (2.66)	6.84 (3.36)	0.25	0.47	1.15	-1.13	-0.38	2.81
Perceived behavioural control	14.76 (2.63)	15.01 (2.48)	15.53 (3.03)	-1.59	-0.23	-0.52	4.85	0.92	0.55

Note 1: F=Female students; M=Male students; P=Prison inmates

Note 2: Standard error in parenthesis for skew and kurtosis

*extreme kurtosis and skewness highlighted in bold

Belief-based measures

Table 7.16 shows the means, standard deviations, and normality assessment for belief-based measures for the three groups. Skewness and kurtosis were within normal range for behavioural belief for all three groups. Normative belief was kurtotic for the university students and prison group, and skewed on control belief for the female student group. Prison inmates had the highest mean scores on all belief-based measures, with female students having the lowest mean scores on the same measures.

Table 7.16. *Univariate statistics for belief-based measures for female (N=148) and male students (N=121) and prison inmates (N=105)*

Belief-based measures	Mean (SD)			Skewness			Kurtosis		
	F	M	P	F	M	P	F	M	P
Behavioural belief	-17.82 (27.07)	-16.83 (24.23)	14.37 (25.39)	.48 (.20)	.64 (.22)	.31 (.24)	1.39 (.40)	.76 (.44)	.33 (.47)
Normative belief	13.69 (6.87)	14.57 (11.61)	21.08 (19.11)	2.54	7.70	2.29	11.42	74.06	6.14
Control belief	39.71 (24.19)	52.49 (31.09)	101.21 (77.40)	2.12	1.54	.99	5.50	3.32	.69

NB: F=Female students; M=Male students; P=Prisoners

*extreme kurtosis and skewness highlighted in bold

Bivariate analysis

Relationships between the various components of TPB were investigated using Pearson product-moment correlation coefficient. The results for all three groups are presented in Table 7.17. For the university sample, most correlations were small or insignificant between intention, determinants of intention, and belief-based measures. Of the determinants of intention only subjective norm had a significant but small relationship with intention [females $r=0.22$; males $r=0.19$]. Relationships between the belief-based measures and its respective construct were also small to negligible, such as behavioural belief and attitude [females $r=0.14$; males $r=0.08$], normative belief and subjective norm [females $r=0.07$; males $r=0.04$], and control belief and PBC [females $r=0.04$; males $r=0.00$].

Table 7.17. Correlations between components of theory of planned behaviour for female students ($N=148$), male students ($N=121$) and prisoners ($N=105$)

University students	BI	ATT	PBC	SN	BB	NB	CB
Behavioural intention (BI)	1	.07	.09	.19*	.17	.14	.14
Attitude (ATT)	.05	1	.02	-.18	.08	.07	.33**
Perceived control (PBC)	.10	-.05	1	-.06	-.03	.13	.00
Subjective norm (SN)	.22**	.02	.14	1	-.13	.04	-.12
Behavioural belief (BB)	.09	.14	-.00	.10	1	-.10	.06
Normative belief (NI)	.08	.38**	.03	.07	.10	1	.17
Control belief (CB)	-.05	.47**	.04	-.03	.25**	.31**	1
Prisoners	BI	ATT	PBC	SN	BB	NB	CB
Behavioural intention (BI)	1						
Attitude (ATT)	.44**	1					
Perceived control (PBC)	.09	-.03	1				
Subjective norm (SN)	.42**	.11	.13	1			
Behavioural belief (BB)	.21*	.23*	-.22*	-.08	1		
Normative belief (NB)	.36**	.39**	.02	.46**	.14	1	
Control belief (CB)	.63**	.46**	.09	.45**	.19	.54**	1

NB: In top table, female students in lower diagonal, male students in lower diagonal

*Correlations are significant at $p = 0.05$ level, two-tailed

**Correlations significant at $p = 0.01$ level, two tailed

For prison inmates, a number of correlations were significant. Behavioural intention had a moderate relationship with attitude [$r=0.44$], subjective norm [$r=0.42$], behavioural belief [$r=0.35$], and normative belief [$r=0.36$], and a strong relationship with control belief [$r=0.63$]. Control belief was not significantly correlated with its respective component PBC [$r=0.09$] but behavioural belief

had a small but significant relationship with its component attitude [$r=0.23$]. Normative belief was moderately correlated with subjective norm [$r=0.46$]. Control belief showed a strong relation to intention [$r=0.63$] and normative belief [$r=0.54$].

Summary of measures

Univariate analysis of self-control and TPB measures confirmed a number of the measures were not normally distributed (e.g. crime scale, behavioural self-control, intention, and normative belief). However, given the demographics of the groups and crime being the behaviour of interest normal distribution of the data would not be expected. Despite limitations of the data the measures were subjected to confirmatory factor analysis (CFA) so that the degree of fit to the data could be investigated. Where appropriate both transformed and untransformed data were investigated. No multicollinearity was detected.

MEASUREMENT MODELS

Due to incomplete measurement of the construct or errors in measurement the underlying relationships between the observed and latent variables are generally not clear (Hankins et al., 2000). Confirmatory factor analyses (CFA) overcome these weaknesses in that it identifies how well the measuring instrument performs in measuring the underlying construct that it was designed to measure. Based on a priori knowledge of the theory or empirical research, each indicator is specified to load on to a particular factor and not on to others, and the relationship between the indicators and factors examined. Of particular interest are the regression weights of the observed variables on each factor and the variances accounted for by both the factor and the errors of measurement (Anderson & Gerbing, 1988). Standardised regression weights are reported in the analysis.

Estimation methods and fit criteria

Full information maximum likelihood (FIML or ML) was used in estimating the measurement models as there is substantive support for ML performing satisfactorily under less than optimum conditions, such as with small sample size and excessive kurtosis (Hoyle & Panter, 1995). Anderson and Gerbing (1988) also recommend using ML when theory testing and development is of particular importance.

Unlike traditional null hypothesis testing in which the aim of analyses is to reject the null hypothesis, the reverse is true in SEM. Although the convention for SEM is accepting a non-significant chi-square or the null hypothesis this statistic is sensitive to large sample size. It produces a dichotomous result as to whether the data is congruent with the model but not the degree of fit. As a result other fit indices have been recommended (Hu & Bentler, 1995). Selection of fit indexes used in the study was based on three factors; sample size, estimation method used, and violations of assumptions such as normality. A summary of the fit indexes and the recommended criteria for goodness-of fit used in this study is shown in Table 7.18.

Table 7.18. *Description and criteria for goodness-of-fit indices*

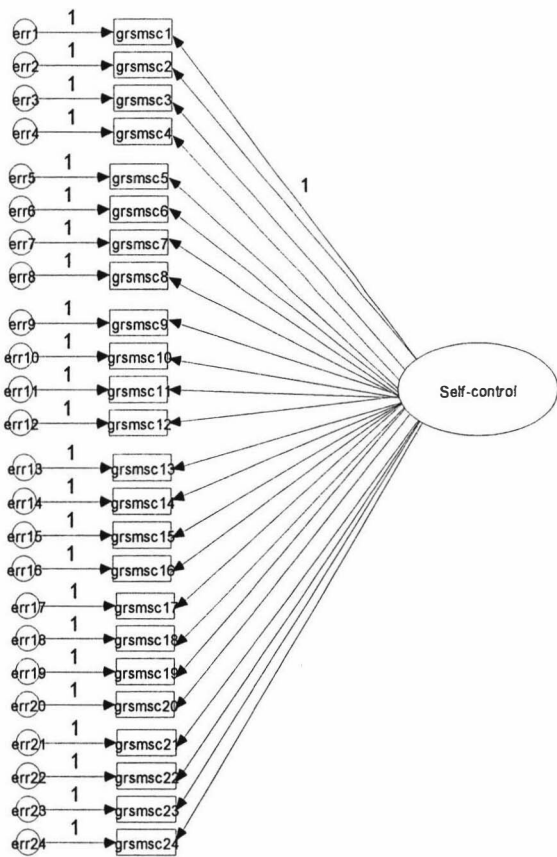
Index	Description and rationale	Recommended criteria for goodness-of-fit
Absolute indexes		
X^2	Principal measure of absolute test of model fit and is the only "statistical test of the lack of fit resulting from over-identifying restriction placed on the model" in CFA (Hoyle & Panter, 1995; p. 166).	Statistically significant levels greater than .05 or .01
Root mean square of approximation (RMSEA)	Corrects for the tendency of the X^2 to reject models with large sample data. Takes into account estimation of approximation in the population, not just sample data (Byrne, 2001). Empirical support for its suitability in confirmatory or competing models strategy (Hair et al., 1998)	Values less than .05 good Values .05 to .08 acceptable Values .08 to .10 mediocre Values greater than .10 poor

Index	Description and rationale	Recommended criteria for goodness-of-fit
Goodness-of-fit index (GFI)	Analogous to R^2 statistics, gives overall degree of fit. Compares the hypothesized model with no model at all but is not adjusted for the degrees of freedom (Hair et al., 1998). Chosen for comparative purposes with other CFA studies that used this index.	Higher values superior, with values greater than .90 acceptable. No consensus on threshold levels (Hair et al., 1998)
Comparative indexes		
Tucker-Lewis index (TLI)	Also known as the Bentler-Bonett nonnormed index (NNFI: (Bentler & Bonnett, 1980; Tucker & Lewis, 1973). Less biased by small sample size, and provides measure of parsimony between estimated and null models (Hair et al., 1998).	Values .90 or greater recommended
Comparative fit index (CFI)	Developed by (Bentler, 1990) and similar to the fit index/relative noncentrality index (FI/RNI) but the values are truncated to vary between 0 and 1. This is the most frequently used, is less biased by small sample size, and recommended as index of choice (Byrne, 2001; Hu & Bentler, 1995).	Values over .90 acceptable but values closer to .95 strongly recommended by Hu & Bentler (1999).

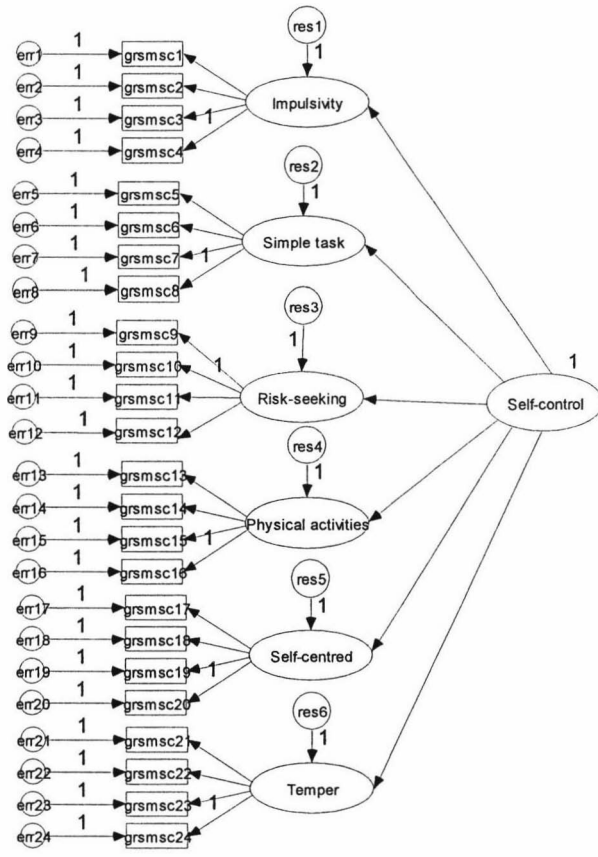
Self-control theory measures

Attitudinal self-control scale

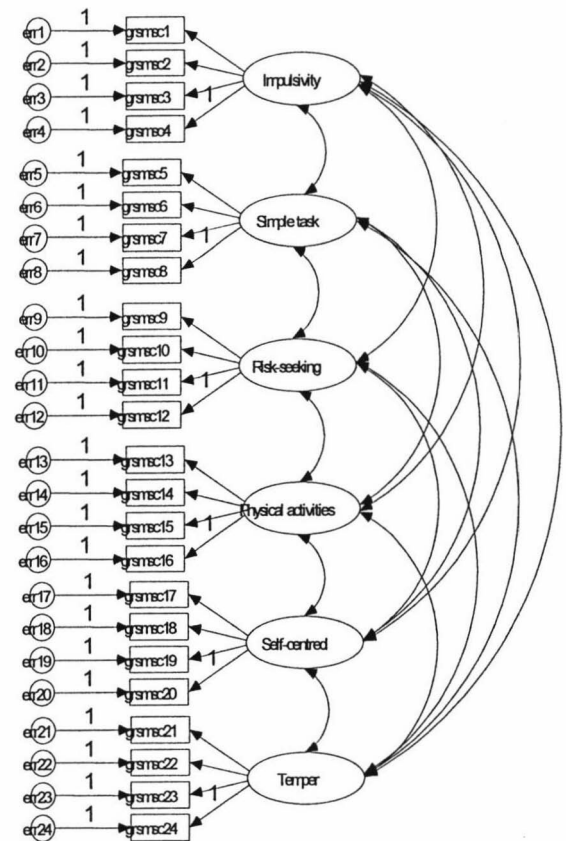
It has been questioned as to whether self-control is unidimensional or multidimensional construct. Therefore a series of CFA measurement models were tested to evaluate the theoretical construct of self-control. As presented in Figure 7.1 the first model represents a unidimensional model in which all 24-items in the scale load onto a single factor, self-control. Items in the measurement instrument represent indicators of the observed or manifest variables. The factor (often referred to as the latent construct) signifies the underlying unobserved variable (Arbuckle & Wothke, 1999; Byrne, 2001). The second model was a second-order factorial structure in which the six dimensions of self-control (impulsivity, simple task, risk-seeking, physical activities, self-centred, and temper) loaded on to a higher order factor, general



Model 1: Single factor, first order



Model 2: Single factor, second-order



Model 3: Six-factor, first order

Figure 7.1. Three hypothesised confirmatory factor measurement models for attitudinal self-control scale

self-control. The final model the multidimensional 6-factor model has six factors. In this model four indicators load only on to its respective factor, such as impulsivity, simple task, risk-seeking, physical activities, self-centred, or temper. All CFA measurement models (shown in Figure 7.1) were performed separately on the three groups.

Model 1: Unidimensional factor

For this unitary factor model there was only one latent factor; self-control (shown by the ellipse in Figure 7.2). This factor was measured by all 24 observed variables (grsmc1-grsmc24 shown by the rectangles). All observed variables have an associated error of measurement (err1 to err24) which were expected to have zero correlations. The hypothesis for this model was that self-control would be explained by one factor only and that the indicators would have non-zero correlations with the factor self-control but zero correlations with each other. In addition the measurement errors were expected not to correlate with each other. The standardised regression weights (factor loadings) for this model for all three groups are shown in Figure 7.2. Apart for two regression weights that were not significant at $p < 0.05$ for female students [grsmc18, $p = 0.13$; grsmc19, $p = 0.17$] and male student [grsmc9, $p = 0.43$; grsmc16 $p = 0.69$] all other regression weights were significant. Goodness-of-fit indices for this hypothesised model are shown in Table 7.19.

Model 2: Hierarchical second-order model

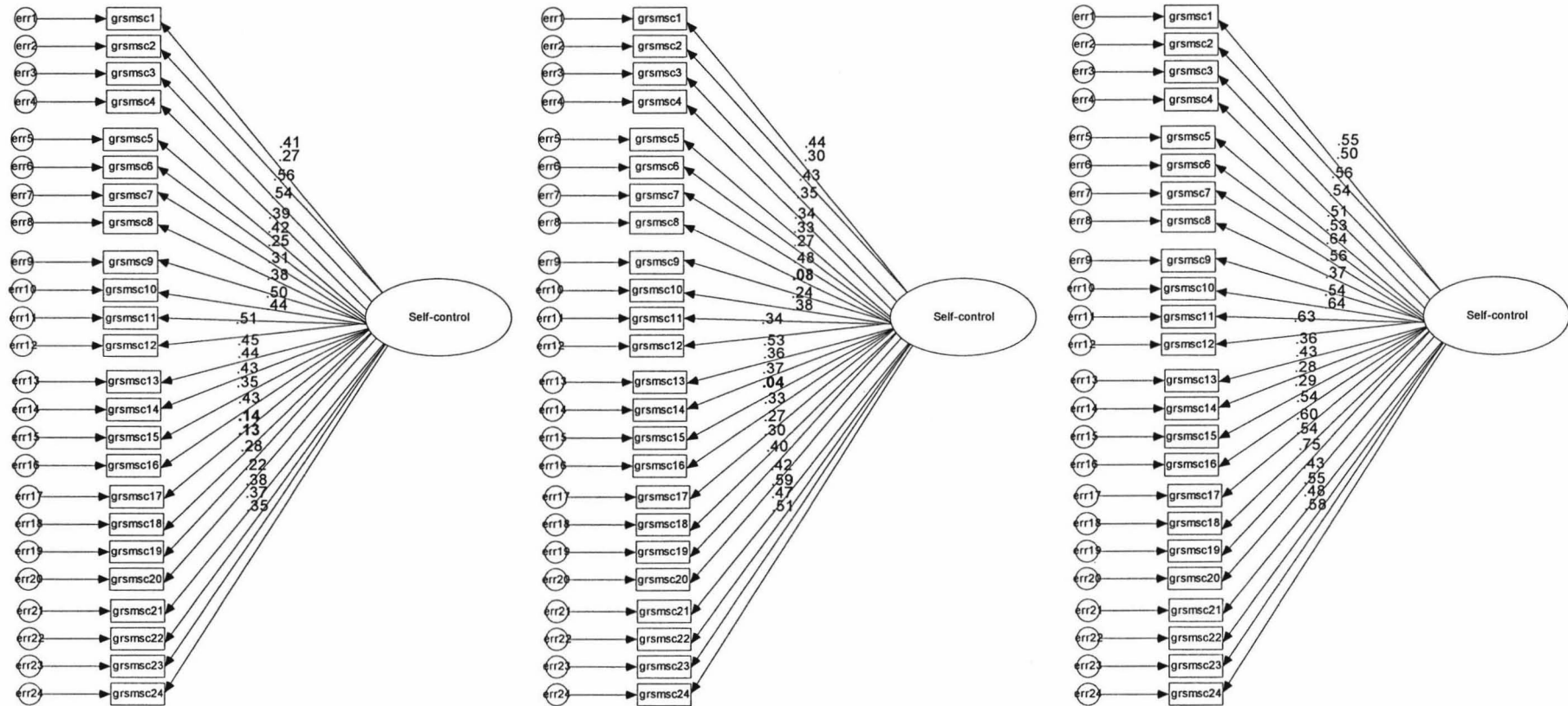
In this second model (refer Figure 7.3) there were seven unobserved variables (in ellipses) consisting of six first-order factors (impulsivity, simple tasks, risk-seeking, physical activities, self-centredness, and temper) regressing on to one second-order factor (general self-control). Each observed indicators (grsmc1-grsmc24) were represented by rectangles and each indicator was expected to have non-zero loadings to the subscale it was designed to measure and zero loadings on all other factors. Associated measurement error terms for the indicators were also uncorrelated. It was expected the six first-order factors

would be fully explained by their regression onto the second-order factor, general self-control. A negative error variance (Heywood case) was found in the model for female students. This indicates possible problems with the data or insufficient sample size (Rigdon, 1997). As recommended by Hair et al. (1998) the offending error variance was fixed to a very small positive value (.005). The results for the three groups are presented in Figure 7.3 with standardised regression weights for all groups statistically significant at $p < .05$ level. Impulsivity explained most of the variance for general self-control for both male (.98) and female (.99) students whilst self-centredness explained the most variance for prisoners (.97). This contrasted with students in which self-centredness made the least contribution to general self-control. Goodness-of-fit indices for the model are shown in Table 7.19.

Model 3: Multidimensional, six factor scale

In this multidimensional scale it was hypothesised that self-control would be explained by six factors; impulsivity, simple tasks, risk-seeking, physical activities, self-centredness, and temper (see Figure 7.4). The six factors were portrayed by ellipses; impulsivity, simple tasks, risk-seeking, physical activities, self-centredness, and temper. Inter-correlations between the six factors were shown by double-headed arrows. All six factors were represented by 24 observed variables (grsmc1 to grsmc24 in the rectangles) with each factor having four observed variables loading on to it.

Results for the multidimensional model for the three groups are shown in Figure 7.4. Standardised regression weights were statistically significant at $p < .05$ for all groups with correlations between the six factors weak to large for female students ($r=0.02$ to 0.55), male students ($r=0.26$ to 0.76) and prisoners ($r=0.26$ to 0.76).



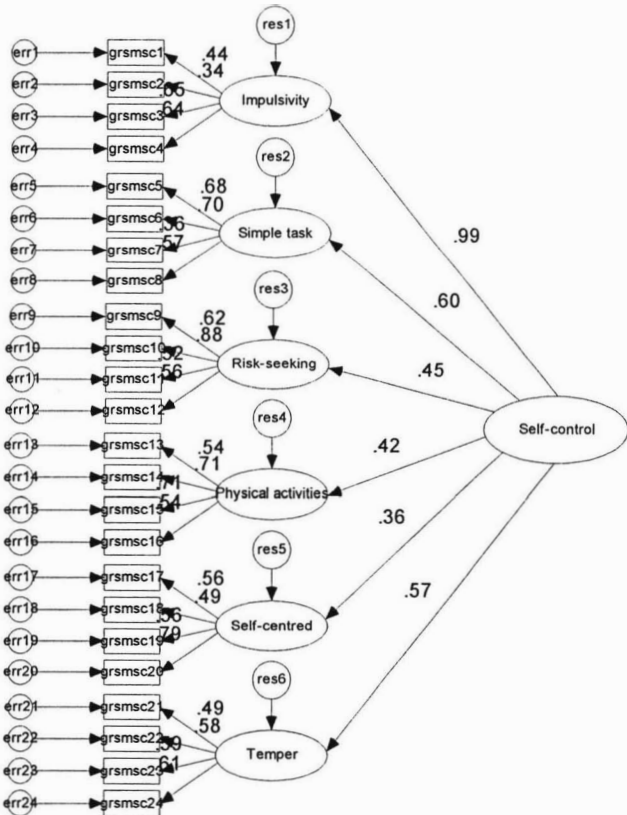
Female students (N=148)

Male students (N=121)

Prison inmates (N=105)

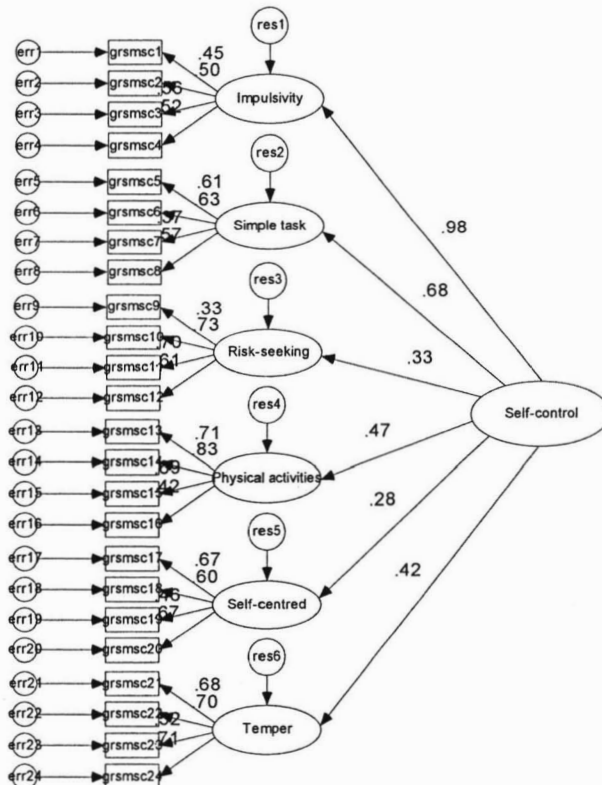
Note: Non-significant estimates highlighted in bold. The model was run separately for each group

Figure 7.2. Model 1: Unidimensional factor model for attitudinal self-control scale for university students and prisoners

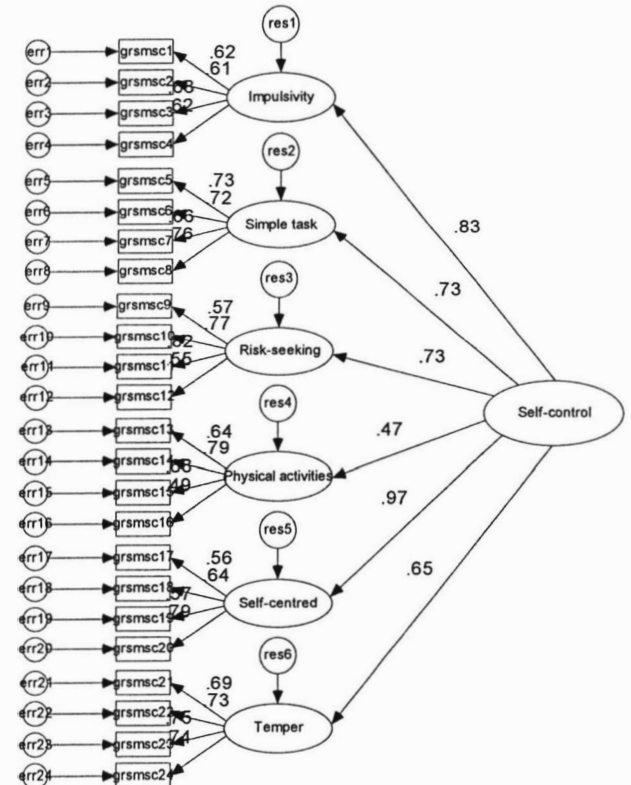


Female students (N=148)

Note: The model was run separately for each group

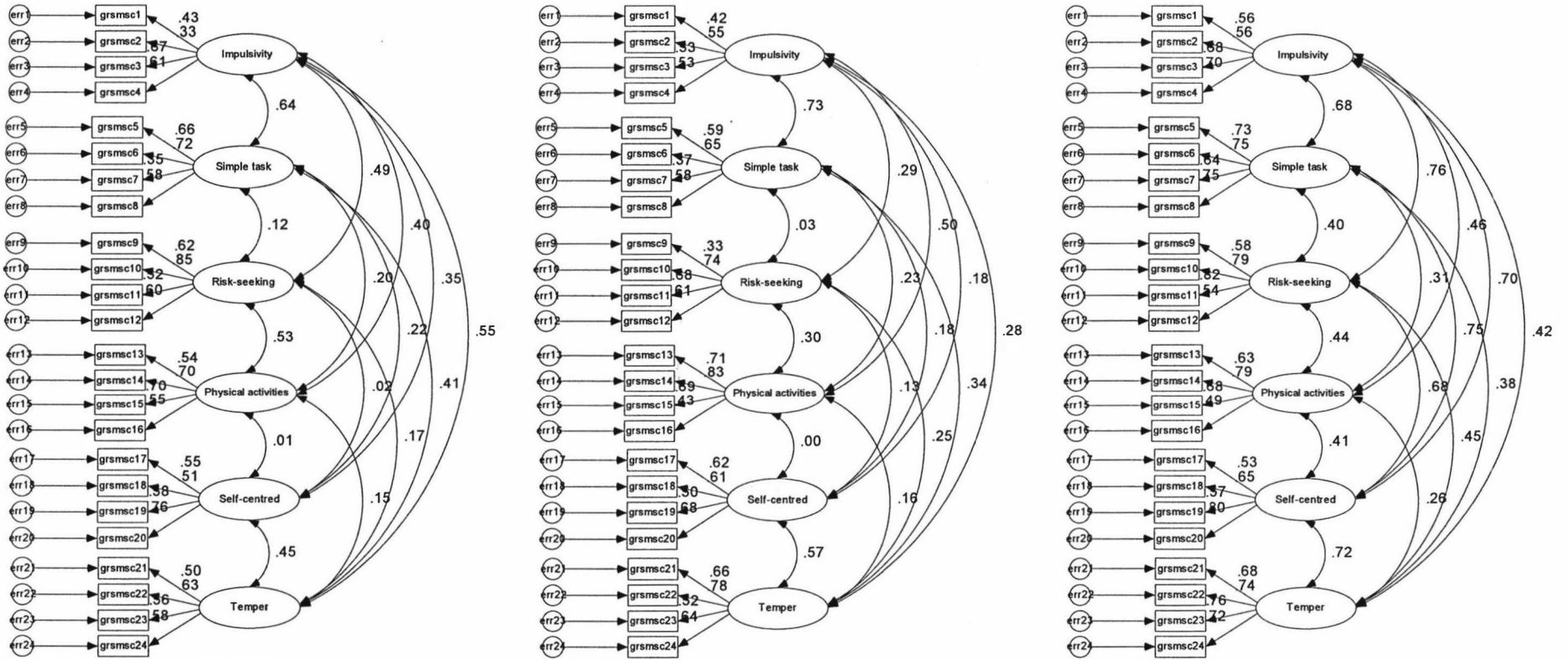


Male students (N=121)



Prison inmates (N=105)

Figure 7.3. Model 2: Hierarchical second-order factor model for attitudinal self-control scale for university students and prisoners



Female students (N=148)

Male students (N=121)

Prison inmates (N=105)

Note: The model was run separately for each group

Figure 7.4. Model 3: Multidimensional six-factor model for attitudinal self-control scale for university students and prisoners

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Goodness-of-fit-indices are shown in Table 7.19. The results of the three CFA models showed self-control was best represented by a multidimensional structure and this was confirmed across the three groups. Although the fit of the model was less than optimal with CFI and GFI values below .90 RMSEA values were within acceptable range (.05 to .08) indicative of adequate fit (Byrne, 2001). Whilst fit indices for the hierarchical second-order structure showed the model to be marginal RMSEA values were again within recommended range. The unidimensional factorial structure for self-control on the other hand was extremely poor fitting and therefore did not support this latent construct as unidimensional.

Table 7.19. Goodness-of-fit indices for hypothesised attitudinal self-control models for university and prison groups

Hypothesised models	X ²	df	p	CFI	TLI	GFI	RMSEA
<i>Female students (N=148)</i>							
Model 1: Unidimensional	626.906	252	.000	.460	.408	.688	.101
Model 2: Hierarchical order	328.685	247	.000	.882	.868	.847	.047
Model 3: Six-factors correlated	300.360	237	.003	.909	.894	.860	.043
<i>Male students (N=121)</i>							
Model 1: Unidimensional	627.812	252	.000	.385	.326	.660	.111
Model 2: Hierarchical order	348.778	246	.000	.832	.811	.818	.059
Model 3: Six-factors correlated	321.334	237	.000	.862	.839	.830	.054
<i>Prison inmates (N=105)</i>							
Model 1: Unidimensional	612.991	252	.000	.613	.577	.655	.117
Model 2: Hierarchical order	389.752	246	.000	.846	.827	.777	.075
Model 3: Six-factors correlated	366.947	237	.000	.861	.838	.788	.073

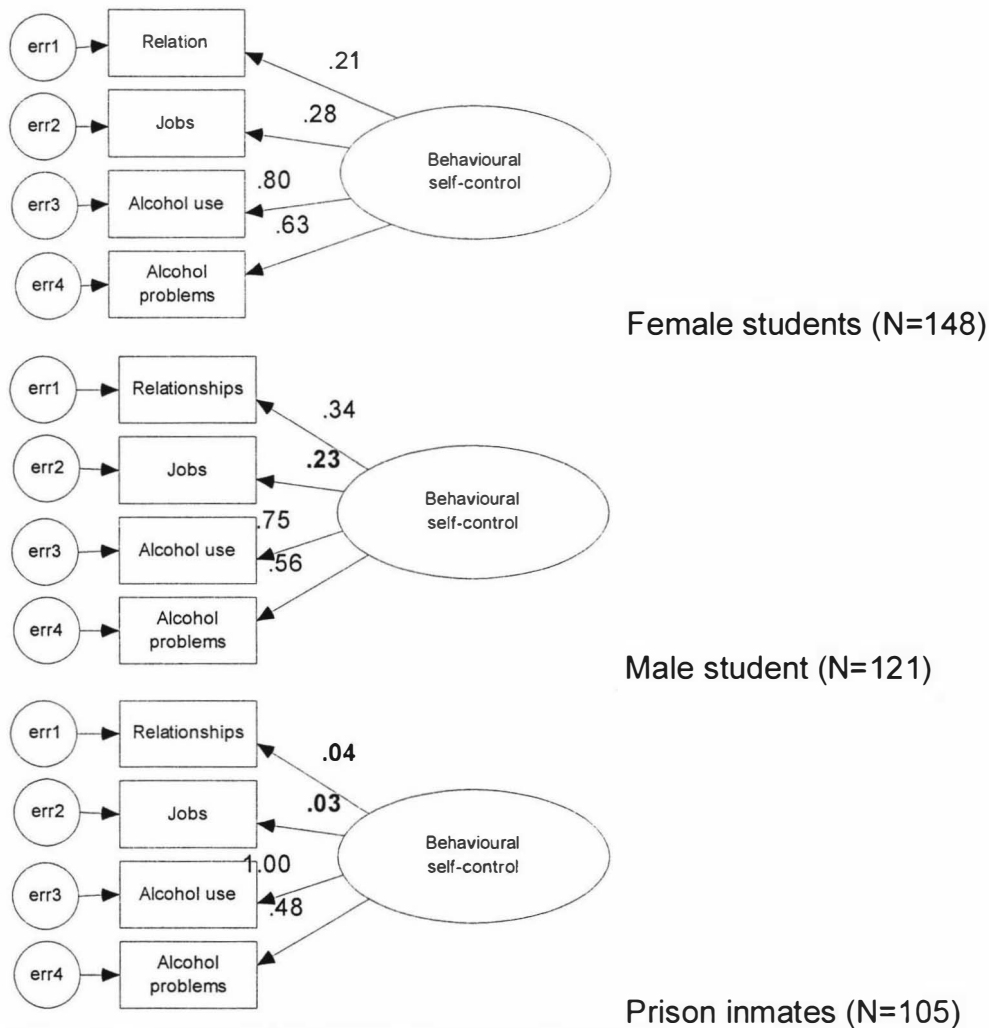
Note: df=degrees of freedom; CFI=Comparative fit index; TLI=Tucker-Lewis index; GFI=Goodness of fit index; RMSEA=Root mean square error of approximation

Behavioural self-control measure

It was hypothesised that the four observed behavioural self-control variables (relationships, jobs, alcohol use, and alcohol problems) would load on to one latent variable; behavioural self-control (see Figure 7.5). In this model untransformed variables presented a better fitting model than transformed data and thus it was decided to use the untransformed data. Standardised

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regression weights for the untransformed data are shown in Figure 7.5 for all three groups with the model run separately for each group.



Note: Non-significant estimates are highlighted in bold.

Figure 7.5. Hypothesised model for behavioural self-control for university students and prison inmates

In the model for female students regression estimates were all significant at $p < .05$. For male students, all except jobs ($p = .08$) were significant. Alcohol use provided the greatest amount of variance to behavioural self-control for university students although alcohol problems made a significant contribution to self-control.

For the prison group, behavioural self-control proved to be problematic in that error variance for alcohol use had to be constrained to a small value. Despite

adjusting the value of this estimate the regression loading for this parameter remained at 1; an unacceptably high value. Regression loadings for relationships and jobs were non-significant ($p = 0.72$ and $p = 0.76$ respectively).

Fit indices for behavioural self-control measurement model for the three groups are shown in Table 7.20. To adjust for severely non-normal data incremental index of fit (IFI) was reported as well as it provides a more stringent test of fit (West, Finch, & Curran, 1995). The goodness-of-fit indices shown in Table 7.20 showed the measure to be acceptable for male students but not for female students with RMSEA above .08. Similar findings were shown for prisoners in that fit indices were poor for this group.

Table 7.20. *Goodness-of-fit indices for behavioural self-control measure*

Hypothesised model	X ²	df	p	CFI	TLI	GFI	IFI	RMSEA
Female students (N=148)	4.665	2	.097	.952	.855	.984	.955	.095
Male students (N=121)	3.104	2	.212	.968	.904	.987	.971	.068
Prison inmates (N=105)	8.528	3	.036	.813	.626	.959	.830	.133

Note: df=degrees of freedom; CFI=Comparative fit index; TLI=Tucker-Lewis index; IFI=Incremental index of fit; GFI=Goodness of fit index; RMSEA=Root mean square error of approximation

Crime scale

As with attitudinal self-control measure three measurement models were constructed for the crime scale (refer to Figure 7.1 for the three hypothesised models). To reiterate the first was a unidimensional model in which all fourteen observed variables loaded on to one latent construct "Crime". The second model was a hierarchical model in which a general construct "Crime" was represented by the four latent factors, (Drugs, Violence, Theft and Steal Goods). Finally, a multidimensional model in which crime was explained by four factors. These four factors were Drugs, Violence, Theft, and Steal Goods. Each factor was manifested by its respective observed variables.

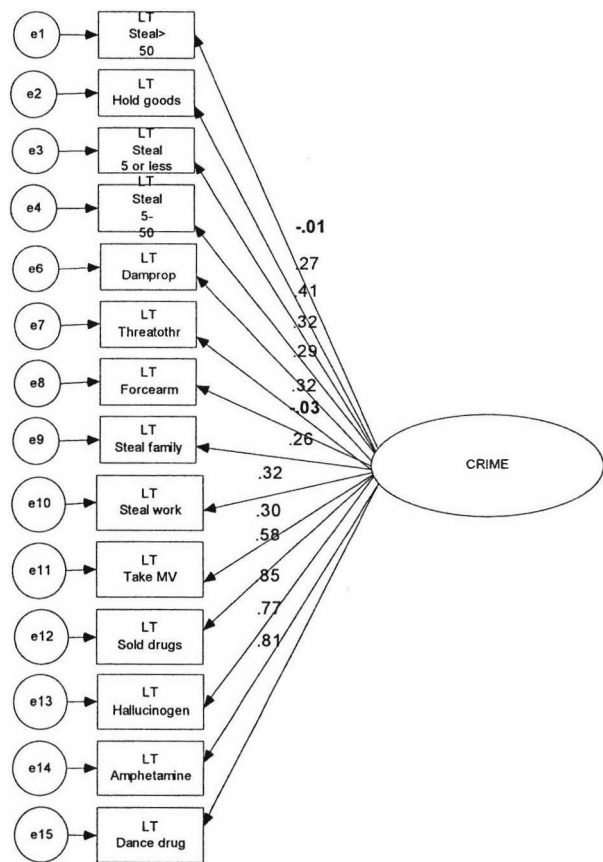
Analyses with both untransformed and logarithmic transformed data were investigated. Goodness-of-fit for the untransformed data was substantially poor and it was decided that the models would be examined using log transformed

data even though it was severely non-normal. To adjust for this incremental index of fit (IFI) was reported in addition to the other indices. Figures 7.6 to 7.8 show the three different measurement models for each group. Each model was run separately for the groups with their respective regression loadings shown in the models.

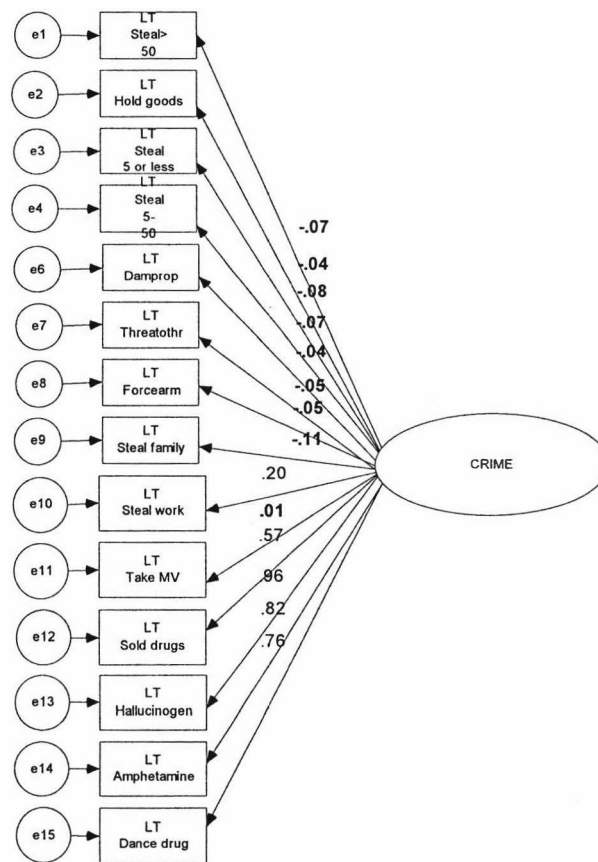
On the unidimensional model (refer Figure 7.6) regression loadings for forced arm and steal >\$50 were not significant at $p < .05$ for female sample. For male students most crime items were not significant at $p < .05$ except for drug items and steal from work. In contrast, regression weights for all crime items were significant at $p < .05$ for prison sample, except for steal from work.

In the second measurement model, the hierarchical structure, negative error variances were found for all three groups. The offending error variances were fixed to a very small positive value (.005) and the results shown in Figure 7.7. Steal goods explained the greatest proportion of the variance for general Crime for all three groups, with theft also contributing a significant proportion. Violence showed a negative regression loading and failed to achieve statistical significance for female students. Similar results were found for drugs for male students. All crime subscales had significant loadings for the prison sample.

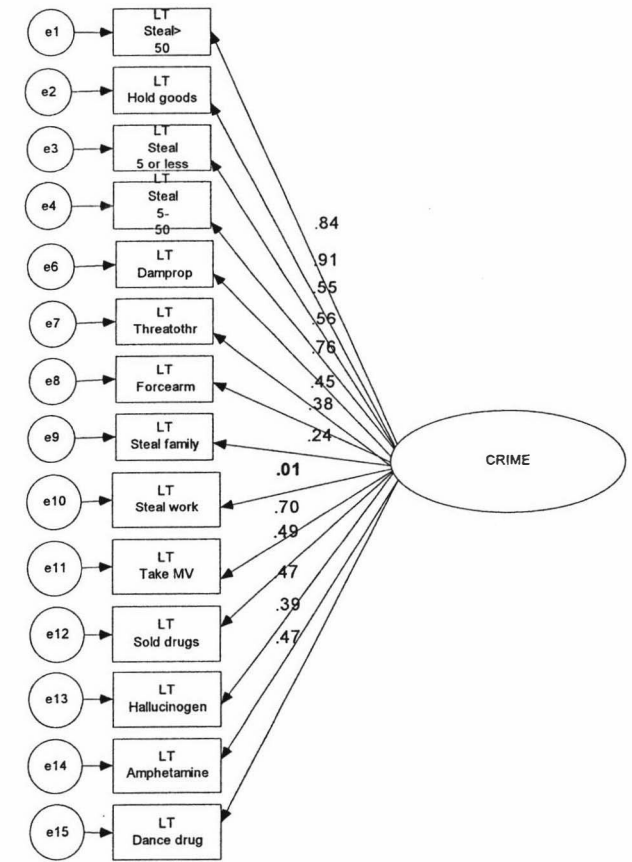
On the final measurement model, the multidimensional scale, a number of negative covariances were found for female students and prison group (see Figure 7.8) indicating problems with the multidimensional model for crime. Covariances between theft, violence and steal goods were extremely high for prisoners (steal goods and violence $r = 0.90$; violence and theft $r = 1.07$; and steal goods and theft $r = 1.11$).



Female students (N=148)



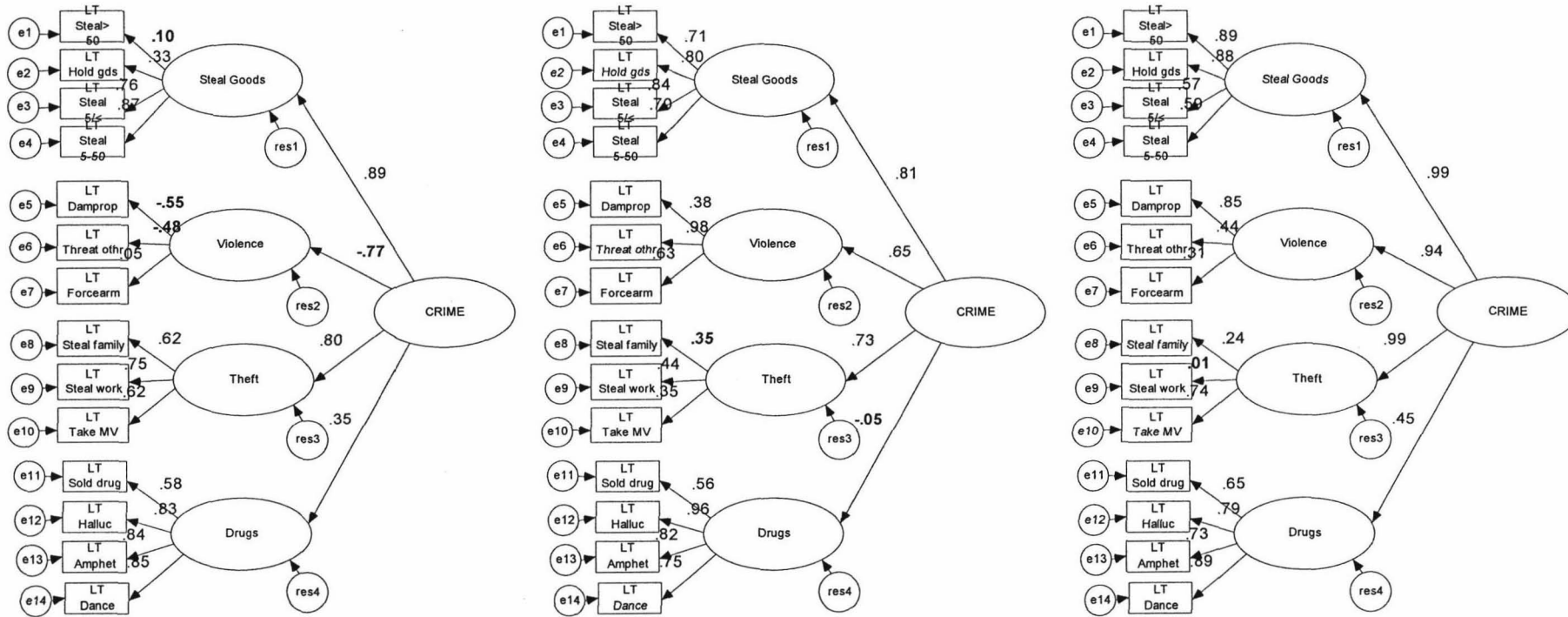
Male students (N=121)



Prison inmates (N=105)

Note: Non-significant estimates are highlighted in bold. The model was run separately for each group

Figure 7.6. Model 1: Unidimensional model for crime scale for university students and prisoners



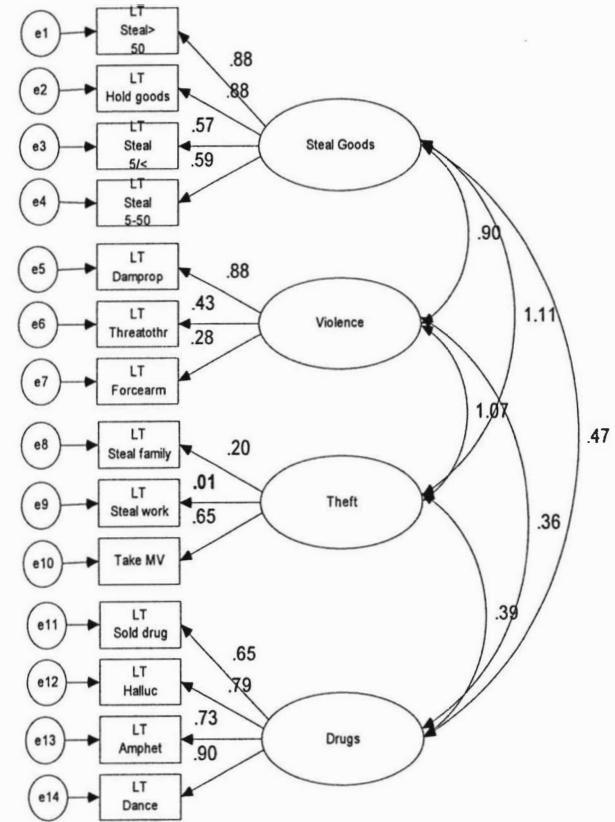
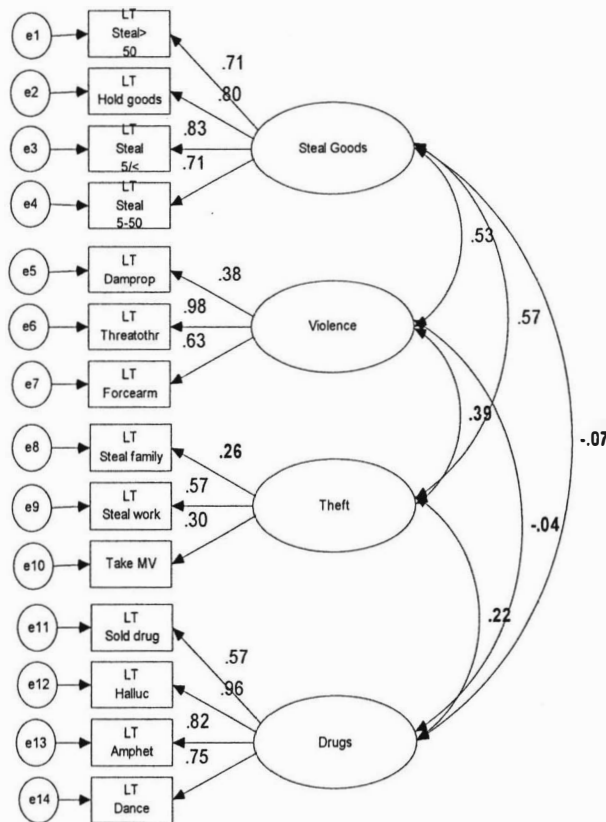
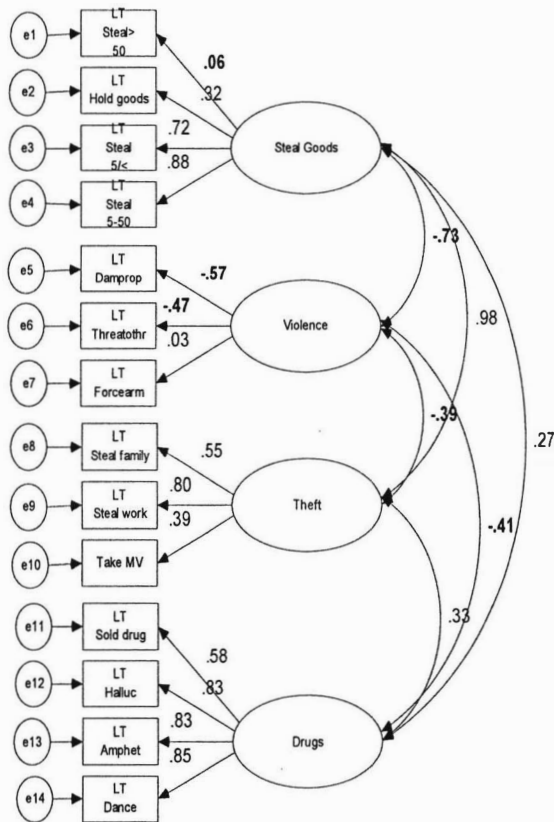
Female students (N=148)

Male students (N=121)

Prison inmates (N=105)

Note: Non-significant estimates are highlighted in bold. The model was run separately for each group

Figure 7.7. Model 2: Hierarchical second-order model for crime scale for university students and prisoners



Female students (N=148)

Male students (N=121)

Prison inmates (N=105)

Note: Non-significant estimates are highlighted in bold. The model was run separately for each group

Figure 7.8. Model 3: Multidimensional model for crime scale for university students and prison inmates

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Table 7.21 shows the goodness-of-fit fit indices for the hypothesised models across the three groups. The unidimensional model was found to be the worst of the three models on all absolute and comparative indexes. However, the fit indices showed the crime scale to be particularly poor on all models for all three groups with CFI, GFI, and IFI values above 0.90 and RMSEA all above 1.

Table 7.21. *Fit indices for the three measurement models for crime for university students and prison inmates*

Hypothesised models	X ²	df	p	CFI	TLI	GFI	IFI	RMSEA
Female students (N=148)								
Model 1: Unidimensional	511.315	77	.000	.437	.335	.638	.447	.196
Model 2: Second order	315.124	75	.000	.689	.622	.766	.695	.148
Model 3: Multidimensional	268.074	71	.000	.745	.673	.789	.751	.137
Male students (N=121)								
Model 1: Unidimensional	484.803	77	.000	.374	.260	.593	.387	.210
Model 2: Second order	166.996	74	.000	.857	.824	.851	.861	.102
Model 3: Multidimensional	164.294	72	.000	.858	.821	.852	.862	.103
Prison inmates (N=105)								
Model 1: Unidimensional	375.072	77	.000	.578	.502	.625	.587	.193
Model 2: Second order	243.010	74	.000	.761	.706	.757	.767	.148
Model 3: Multidimensional	240.100	71	.000	.761	.693	.762	.767	.151

Note: df=degrees of freedom; CFI=Comparative fit index; TLI=Tucker-Lewis index; IFI=Incremental index of fit; GFI=Goodness of fit index; RMSEA=Root mean square error of approximation

Theory of planned behaviour measures

Behavioural intention

The three items for behavioural intention were hypothesised to load on to one latent factor, behavioural intention. With only three indicators the model would be just-identified and a perfect fitting model. Byrne (2001) recommends an approach to resolving the problem is to impose equality constraints on parameters that yield approximately equal estimates. To determine these values the critical ratio difference statistics was calculated. This showed the three parameters for behavioural intention were less than the critical ratio of ± 1.96 [CR= -0.705; -0.801; and -0.119] and thus were not statistically different. The three variances were constrained and the model estimated. Standardised regression weights for the model were all significant at $p < .05$ for the three groups. The standardized coefficients for intention and determinants of intention

are shown in tabulated form in Table 7.22. Goodness-of-fit-indices are shown in Table 7.23.

Determinants of intention

Attitude

The six indicators of attitude were depicted in a first-order measurement model with the six indicators loading on to one latent variable, Attitude. All regression loadings were significant and these can be found in Table 7.22. Goodness-of-fit indices for this measurement model are presented in Table 7.23.

Subjective norm

Similar to the measure for behavioural intention subjective norm had only three observable indicators and the measurement model would therefore be just-identified. The critical ratio of differences for the full student sample showed that there was no significant difference between two error variances ($CR = .231$) and these were constrained to be equal for the three groups. Standardised regression weights for the groups are shown in Table 7.22. The item "Do what important people think you should do?" was not significant at $p < .05$ for all three groups probably reflecting the ambiguity of this question. Goodness-of-fit indices for the measurement model are shown in Table 7.23.

Perceived behavioural control

With only three indicators for this measure the model would also be just-identified. Critical ratio difference statistics for the full student sample showed there was no significant difference between two parameters ($CR = 0.205$) and they were constrained to be equal for the three groups. Two negative error variances were found for female students and these were fixed to a small value of .005. Standardised regression weights for PBC are shown in Table 7.22. The item "To commit a crime would be possible/impossible" was not significant at

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the $p < .05$ level for all groups. For the two male groups all three indicators were non-significant at $p < .05$ level.

Table 7.22. *Standardised regression weights for behavioural intention and determinants of intention measures*

Variables	Regression weights		
	University students		Prison inmates N=105
	Female (N=148)	Male (N=121)	
<i>Intention</i>			
If I had the opportunity	.68	.84	.73
How likely commit crime	.68	.83	.79
I intend to commit crime	.80	.72	.69
<i>Attitude</i>			
Harmful/beneficial	.63	.55	.32
Good/bad	.70	.74	.75
Happy/sad	.53	.87	.78
Desirable/undesirable	.68	.63	.93
Enjoyable/unenjoyable	.54	.75	.91
Safe/dangerous	.58	.47	.68
<i>Subjective norm</i>			
People who are important approve/ disapprove	.52	.63	.56
People who are important don't commit crime	.38	.82	.82
Do what important people think you should do	-.18	-.03	.04
<i>Perceived behaviour control</i>			
To commit a crime would be possible/impossible	.05	-.18	-.66
It is mostly up to me	.50	.50	.45
How much control?	.99	.28	.15

Non-significant regression weights at $p > .05$ level highlighted in bold

Goodness-of-fit indices for behavioural Intention and determinants of Intention are shown in Table 7.23. RMSEA values for Intention and Attitude were considerably outside acceptable levels (0.05 to 0.08). Unacceptable values were found for Subjective Norm and PBC, with CFI values of 1 and RMSEA values of .000. This is suggestive of an over-fitting model. Problems with goodness-of-fit indices in the measurement models may reflect insufficient sample size for the number of parameters being estimated.

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Table 7.23. Goodness-of-fit indices for intention, determinants of intention, and belief-based measures for female students (N=148), male students (N=121, and prison inmates (N=105)

Measures	X ²	df	p	CFI	TLI	GFI	RMSEA
<i>Intention</i>							
Female students	4.359	2	.113	.979	.968	.981	.090
Male students	12.691	2	.002	.929	.894	.937	.211
Prison inmates	16.235	2	.000	.862	.793	.912	.262
<i>Attitude</i>							
Female students	44.530	9	.000	.843	.738	.904	.164
Male students	50.342	9	.000	.854	.757	.902	.196
Prison inmates	39.880	9	.000	.921	.868	.887	.182
<i>Subjective norm</i>							
Female students	.254	1	.614	1.00	1.48	.999	.000
Male students	1.025	1	.311	.999	.998	.994	.015
Prison inmates	1.165	1	.280	.993	.978	.993	.040
<i>Perceived behavioural control</i>							
Female students	4.318	3	.229	.969	.969	.980	.055
Male students	.161	1	.688	1.00	.985	.999	.000
Prison inmates	1.407	1	.236	.955	.866	.991	.063

Note: df=degrees of freedom; CFI=Comparative fit index; TLI=Tucker-Lewis index; GFI=Goodness of fit index; RMSEA=Root mean square error of approximation

Belief-based measures

Behavioural belief

The behavioural belief measurement model was hypothesised as a unidimensional model in which all ten indicators loaded onto one construct "Behavioural Belief". Standardised regression weights for the measurement models for each group are shown in Figure 7.9. For female students and prison inmates all regression loadings were significant at $p < .05$ level except for two observed variables for females and one for prisoners (highlighted in bold). The measure was problematic for male students with regression loadings for the observed variables being not significant. Goodness-of-fit indices for this model are shown in Table 7.24.

Normative belief

In this measurement model it was hypothesised the three indicators of normative belief would load onto one latent factor "Normative Belief".

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Goodness-of-fit indices were unable to be obtained as with only three indicators the model was just-identified. Critical ratio difference values showed the parameters were significantly different from each other ($CR > \pm 1.96$) and therefore the parameters could not be constrained to be equal. The model could not be estimated.

Control belief

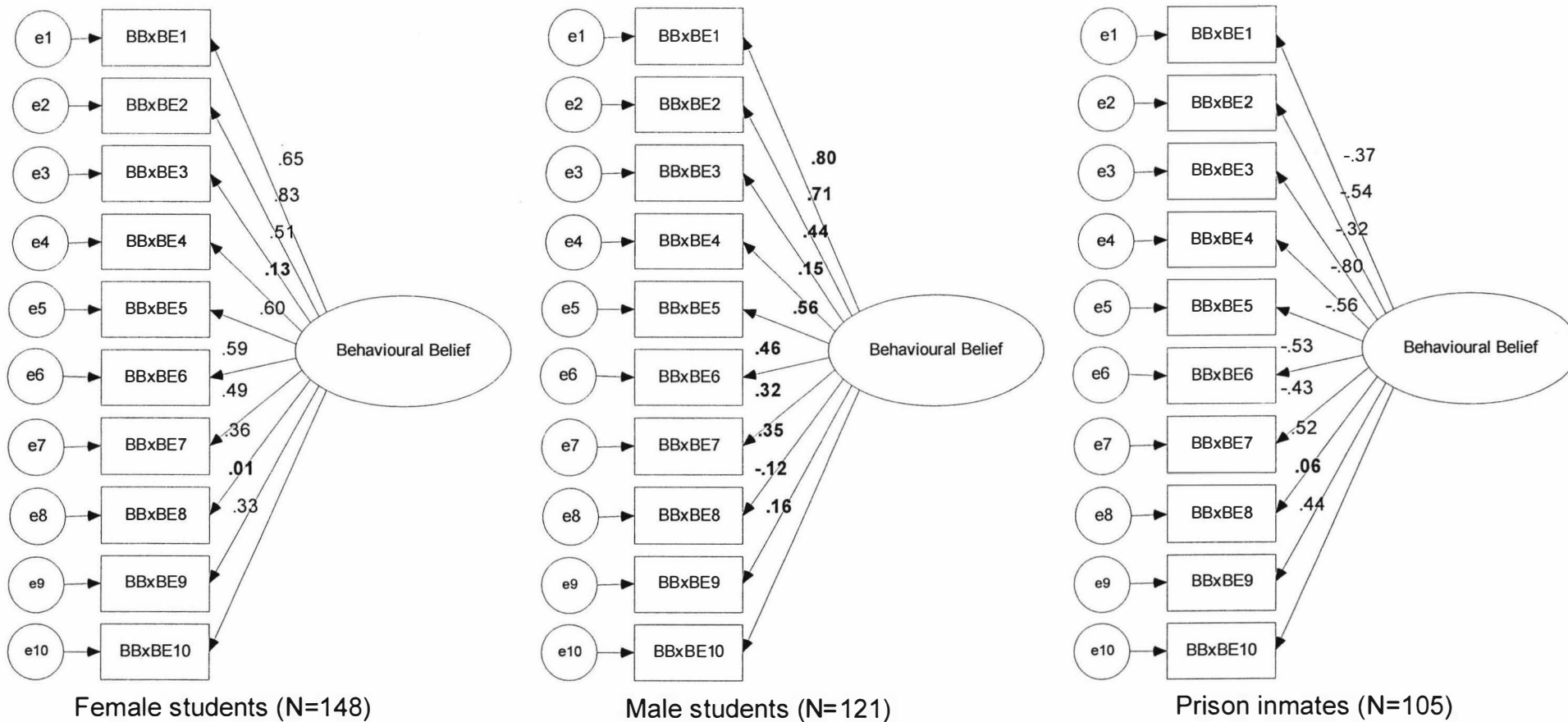
In this measurement model it was hypothesised the eight indicators for control belief would load on to one latent construct "Control Belief". As shown in Figure 7.10 the standardised regression weights were all significant at $p < .05$ for the three groups.

Goodness-of-fit indices for belief-based measures are shown in Table 7.24. As shown, all belief-based measures revealed to be poor fitting for the university students groups with RMSEA above .08. Control belief however showed to be mediocre fit for the prison group with RMSEA below .10.

Table 7.24. *Goodness-of-fit indices for belief-based measures for university students (female N=148; male N=121) and prison inmates (N=105)*

	X ²	df	p	CFI	TLI	GFI	RMSEA
Behavioural belief							
Female students	108.361	35	.000	.760	.691	.875	.119
Male students	53.311	35	.024	.882	.848	.916	.066
Prison inmates	123.545	35	.000	.610	.498	.810	.156
Control belief							
Female students	51.321	20	.000	.855	.797	.920	.103
Male students	59.107	20	.000	.769	.676	.890	.128
Prison inmates	34.571	20	.000	.956	.939	.930	.084

Note: df=degrees of freedom; CFI=Comparative fit index; TLI=Tucker-Lewis index; GFI=Goodness of fit index; RMSEA=Root mean square error of approximation



Note: Non-significant estimates are highlighted in bold

Figure 7.9. Unidimensional model for behavioural belief for university students and prisoners

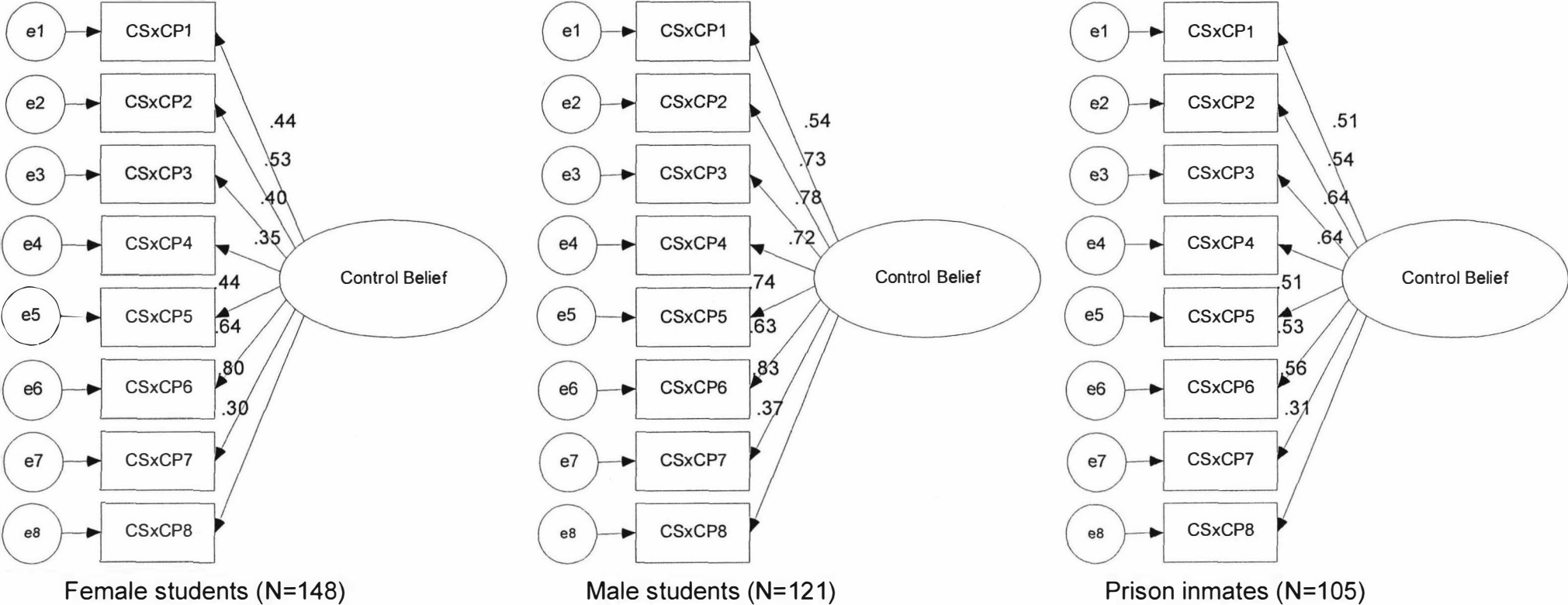


Figure 7.10. Unidimensional model for control belief for university students and prisoners

Summary of measurement models

The six-factor structure of attitudinal self-control measure was shown to be the best fitting model although the hierarchical model was also acceptable. The results for behavioural self-control measures was inconsistent with the model showing good fit for male students but not for female students or prison inmates. Alcohol use and alcohol problems served as the best indicators for behavioural measure of self-control across all groups. Relationships and jobs were particularly problematic in their non-significant regression loadings. Data for the crime scale proved to be poor fit for all models across the three groups. The second order and multidimensional models however were better fitting than the unidimensional structure. Despite the problem of fit, standardised regression weights showed the measures for the respective factors were strong.

Regression loadings for the different components of TPB were generally robust. The exceptions were PBC in which non-significant loadings were found across the two male groups and behavioural belief for male students. Goodness-of-fit indices showed subjective norm for the two male samples to be good fitting. PBC was also good fitting for female students and prison inmates. For the other components (intention, attitude and the belief-based measures) the goodness-of-fit indices were less than adequate despite significant regression loadings. This may reflect insufficient sample size for the number of parameters being estimated in the measurement models.

RESULTS: STRUCTURAL MODELS

OVERVIEW

Structural models were constructed separately for self-control theory of crime and theory of planned behaviour. The single theories were then integrated into an end-to-end structure. It is common practice during the developmental stage that theoretical models be examined separately with disparate groups to investigate the sufficiency of the theory to explain crime with these groups. The single and integrated theories were examined separately therefore with female students, male students, and prison inmates.

Taking into consideration the results of the measurement models in Chapter 7 observed variables that had strong regression loadings were used in the structural models. In addition, alternative and competing models were constructed to determine the "best" model. Goodness-of-fit indices for evaluating the models included those already established for the measurement models. In comparing alternative models measures of parsimony and nested-model comparison were used. Fit indices used to compare alternative models were Expected Cross-Validation Index (ECVI) and Akaike Information Criteria (AIC). ECVI and AIC values are not substantively meaningful and are intended for comparative purposes only. AIC assesses the parsimony of the model in which the number of estimated parameters required to achieve the level of fit in the model is taken into account (Byrne, 2001). ECVI assesses the likelihood that the estimated model will cross-validate across similar sized sample from the same population. Differences in chi-square value between the models were also examined for statistical significance. If the chi-square value between the models is not statistically different, thereby supporting the models to be the same, then the model with smaller ECVI and AIC values reflects a superior model and preferred over its contenders.

In summary, analyses of the structural models for each theory will firstly investigate the fit of the hypothesised model and secondly to develop competing models to determine the best fitting structural model. Each model was examined independently with female and male students and prison samples. Regression weights are reported in standardised regression weights.

SELF-CONTROL THEORY

Similar to the studies by Eifler (2004) and Seipel (2000) the criterion variable for self-control theory was "intention" to commit crime. Although crime or analogous behaviours would be of heuristic interest, for the sake of comparability with other studies this study focused on intention as the criterion variable.

In this hypothesised model, behavioural self-control and attitudinal self-control were predicted to have an influence on intention to commit crime. Behavioural self-control scale was represented by four indicators; number of jobs, number of relationships, amount of alcohol used, and alcohol-related problems. Attitudinal self-control scale was measured by six observed variables; impulsivity, risk-seeking, physical activity, self-control, temper, and simple task; similar to a second-order model. The two self-control scales were correlated with each other.

Female students

In the hypothesised model for female students relationship was omitted from behavioural self-control as the regression weight was not-significant ($p = 0.16$). As shown in Figure 8.1, the structural path for attitudinal self-control was in the expected direction for intention to commit crime, indicating that people with low self-control had strong intention to commit crime. Behavioural self-control measure had an unexpected negative relationship with intention. This suggests female students engaging in behaviours analogous to crime nevertheless had weak intention to commit crime. The structural weights however show that both

self-control measures were not significant and therefore not predictive of intention to commit crime [$p=0.39$ for behavioural self-control and $p=0.11$ for attitudinal self-control]. The correlation between the two self-control measures was not significant [$r=0.40$, $p=0.14$]. Fit indices for the hypothesised model are shown in Table 8.1, which show the model to be good fitting with RSMEA within the accepted criteria for a good-fitting model (0.05 to 0.08).

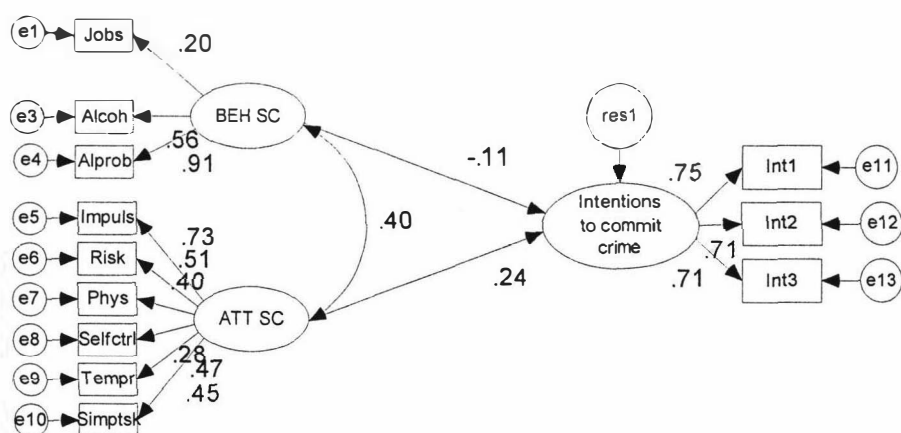


Figure 8.1. Model 1: Structural paths for hypothesised self-control theory for female students (N=148)

The hypothesised model was inspected for possible misfit in the structural paths by inspecting the modification index (MI). No evidence of misspecification was identified. In order to gauge the best model a second model was constructed in which the covariance path between behaviour and attitudinal self-control scales was omitted and the model reestimated (see Figure 8.2). The structural paths for the two self-control measures were again not significant [behaviour self-control $p=0.36$; attitude self-control $p=0.09$]. Compared to the hypothesised model deterioration in the fit was found in the uncorrelated structure. RMSEA value however was still within the acceptable range for a good fitting model (less than .08). Goodness-of-fit indices for the competing model are shown in Table 8.1.

There was a significant difference between the first and second model ($\Delta X^2_{(1)} = 10.95$) indicating these two models are different. Based on the fit indices the hypothesised model was accepted as the better of the two models for self-

control theory. Self-control accounted for 5% of the variance explained for intention for female student population.

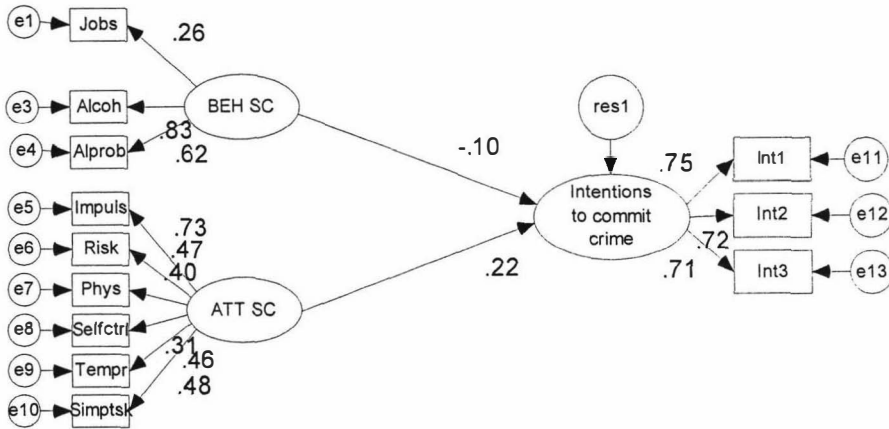


Figure 8.2. Model 2: Comparison model for self-control theory for female students (N=148)

Table 8.1. Summary of fit indices for structural equation models for self-control theory of crime for female students (N=148)

Models	χ^2	df	p	CFI	TLI	GFI	RMSEA	ECVI	AIC
Model 1:Hypothesised model Correlated	78.539	51	.008	.902	.873	.920	.061	.902	132.539
Model 2: Comparison model 1 Uncorrelated	89.490	52	.001	.867	.831	.913	.070	.963	141.490

Male students

Similar models were constructed for male students. In the hypothesised model the two self-control measures were correlated and had a direct influence on intention (see Figure 8.3). Job was omitted from behavioural self-control scale due to its non-significant loading ($p=0.08$). As shown in Figure 8.3 structural weights for the two self-control measures were not significant in predicting intention [behavioural self-control $p=0.69$; attitudinal self-control $p=0.87$]. There was a negative relationship in the structural paths from self-control measures and intention to commit crime. This suggests that for male students low self-control was not related to intention to commit crime. Correlation between the two self-control scales was also not significant ($r=0.23$, $p=0.18$). Table 8.2 shows goodness-of-fit indices were marginal for the hypothesised model with

RMSEA value just above acceptable level of 0.08. No misspecification in the correlated model was identified in the MI.

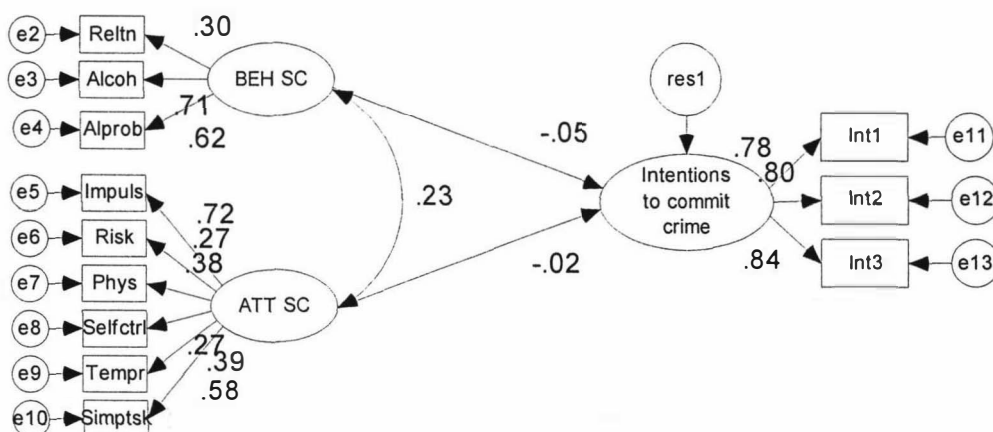


Figure 8.3. Model 1: Structural paths for hypothesised self-control theory for male students (N=121)

A competing model was constructed in which the two self-control measures were uncorrelated (refer Figure 8.4). In this uncorrelated model the two structural paths to intention were again not significant [behavioural self-control $p=0.49$; attitudinal self-control $p=0.82$].

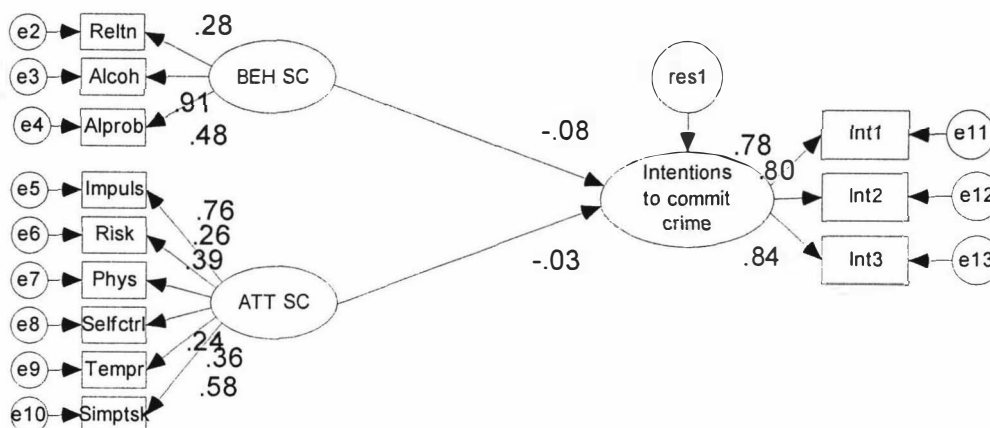


Figure 8.4. Model 2: Comparison model for self-control theory for male students (N=121)

Goodness-of-fit indices are summarised in Table 8.2. This showed the uncorrelated model to have fit indices similar to the hypothesised model. With RMSEA above 0.08 the model was mediocre in fit. No significant difference between the hypothesised and comparison model was shown ($\Delta X^2_{(1)} = 1.83$),

confirming the models to be the same. The slightly lower AIC value supported the uncorrelated model as the more parsimonious of the two models. Together the two self-control measures contributed 0.7% of the variance explained for intention to commit crime for male students.

Table 8.2. Summary of fit indices for self-control theory of crime for male students (N=121)

Models	χ^2	df	p	CFI	TLI	GFI	RMSEA	ECVI	AIC
Model 1: Hypothesised model Correlated	90.741	51	.001	.855	.812	.889	.081	1.206	144.741
Model 2: Uncorrelated comparison model	92.575	52	.000	.851	.811	.889	.081	1.205	144.575

Prison inmates

The hypothesised model for prison inmates was the same as that for the two student groups (as shown in Figure 8.5). Relationship and job were non-significant ($p=0.72$ and $p=0.76$ respectively) and were omitted from behavioural self-control. The parameter weights for the structural paths are shown in Figure 8.5 with both paths having a positive relationship with intention. This indicates that low self-control was positively related to intention to commit crime. Attitudinal self-control was a significant predictor of intention [$p < 0.05$ level, highlighted in bold] but not behavioural self-control [$p=0.57$]. The correlation between the self-control variables was not significant ($r=0.31$, $p=0.80$)

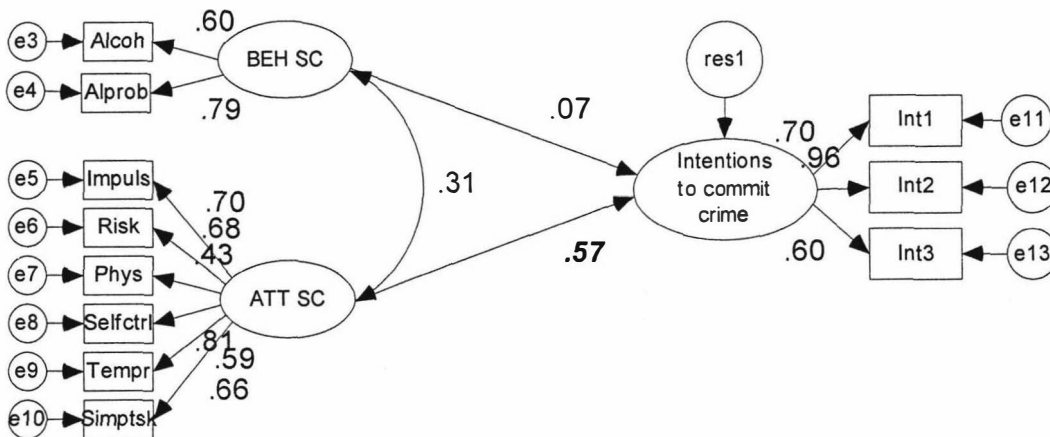


Figure 8.5. Model 1: Structural paths for hypothesised self-control theory for prisoners (N=105)

Consistent with the two student groups, a competing uncorrelated model was constructed and this is shown in Figure 8.6. The structural weights for the uncorrelated model showed attitudinal self-control had a significant effect on intention [$p < 0.05$; highlighted] but not behavioural self-control [$p=0.42$].

Fit indices for the hypothesised and competing models are summarised in Table 8.3. This shows both models to be good fitting with RSMEA less than 0.08. There was a significant difference between the first and second model ($\Delta X^2_{(1)} = 5.88$) suggesting the two models are not the same. Based on the lower RMSEA value and higher CFI and GFI values the correlated model was deemed to be better fitting of the two. The two self-control variables contributed 35.2% of the variance explained for intention to commit crime for prison inmates.

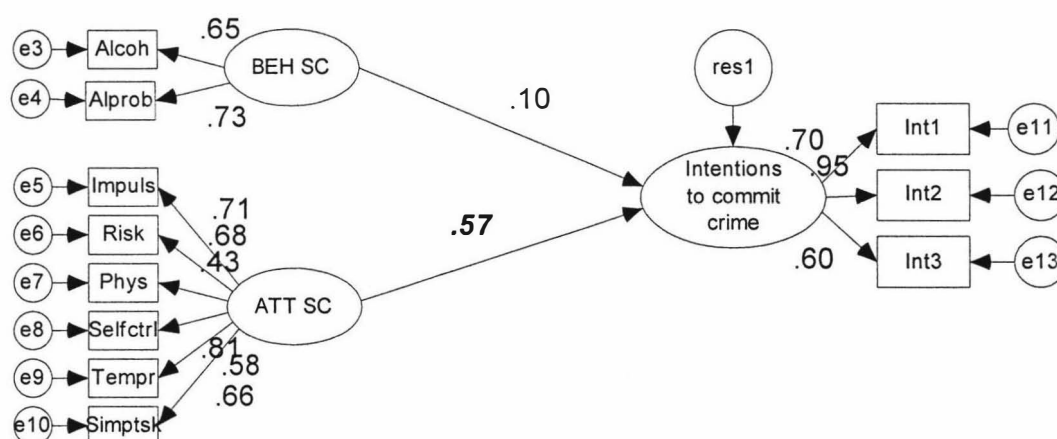


Figure 8.6. Model 2: Comparison model for self-control theory for prisoners (N=105)

Table 8.3. Summary of fit indices for self-control theory of crime for prisoners (N=105)

Models	X^2	df	p	CFI	TLI	GFI	RMSEA	ECVI	AIC
Model 1: Hypothesised Correlated model	56.766	41	.052	.955	.940	.913	.061	1.027	106.766
Model 2: Comparison Uncorrelated	62.643	42	.021	.942	.924	.904	.069	1.064	110.643

Summary

Of the two self-control measures, attitudinal self-control had a stronger influence on intention to commit crime than the behavioural measure and this was found across all groups. However, self-control was significant in predicting intention only for prison inmates and not for university students. As such, self-control provided a significant proportion of the variance explained for intention for prison inmates (35.2%) but negligible in the way of explanation for university students. It may be that self-control theory may only be sufficient in predicting intention to commit crime in a group that has sufficient variability on the self-control trait and level of crime or antisocial behaviour. Based on RMSEA values the structural model for self-control theory of crime was good fitting for female students and prisoners but mediocre for male students.

THEORY OF PLANNED BEHAVIOUR (TPB)

Structural models for TPB were developed to investigate the causal relationship between the determinants of intention and intention to commit crime. The motivational elements (i.e. attitude to crime and subjective norm but not PBC) were hypothesised to be direct determinants of intention. The three belief-based measures (i.e. behavioural, normative, and control) were predicted to have a direct relationship with their respective components and indirectly predictors of intention. The same goodness-of-fit indices were used in evaluating model fit for self-control theory.

In the hypothesised TPB model the criterion variable intention to commit crime was represented by three indicators. Three uncorrelated latent variables (attitude, subjective norm, and PBC) and three correlated belief-based measures (behavioural belief, normative belief, and control belief) were hypothesised to provide a causal explanation for intention to commit crime.

Female students

The hypothesised TPB model for female students is shown in Figure 8.7. For the sake of clarity error variances and covariances were excluded from the diagram. Two observed variables were omitted from behavioural belief and one from both subjective norm and PBC due to non-significant regression loadings of these indicators. A negative error variance was identified for intention. Negative error variance or Heywood cases can be caused by high loadings on the factor, insufficient sample size, or insufficient number of measures per factor (Rigdon, 1997). Hair et al. (1998) recommend a pragmatic solution to this is to constrain the error variance to a small value of .005 and this was carried out.

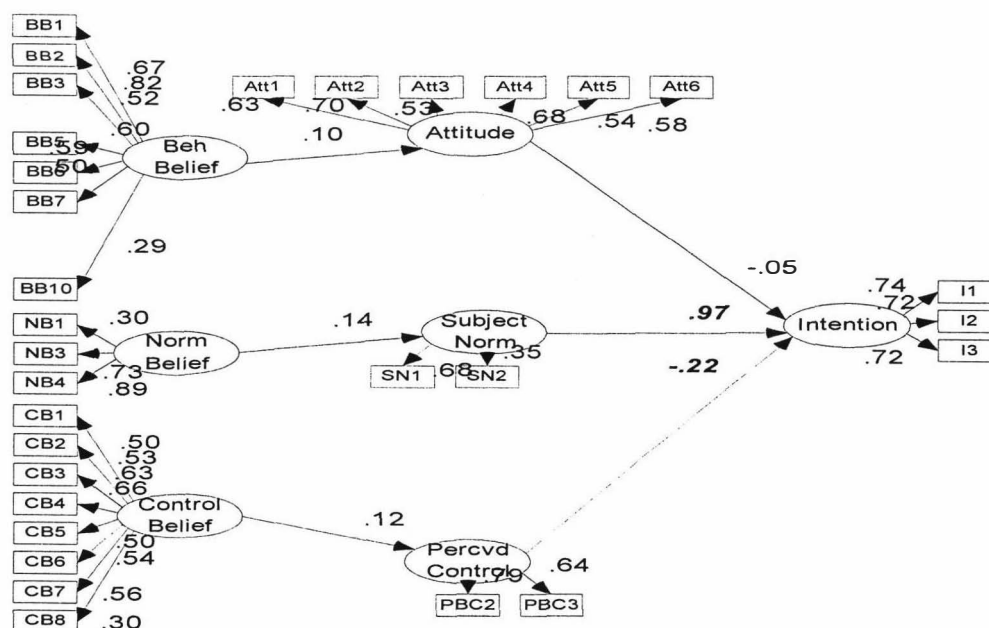


Figure 8.7. Model 1: Hypothesised structural paths for theory of planned behaviour for female students (N=148)

As can be seen in the hypothesised model, structural paths from subjective norm and PBC were significant at $p < 0.05$ (highlighted). The relationship between subjective norm and intention was in a positive direction indicating that important others had a positive influence on whether a person intended to commit crime or not. PBC, on the other hand, had a negative relationship with intention indicating that whilst individuals perceived they had strong control over whether to commit crime or not, the intention to do so was low. Attitude had no

significant effect on intention to commit crime [$p=0.52$]. All structural paths for the belief-based measures were non-significant [behavioural belief $p=0.33$; normative belief $p=0.16$; and control belief $p=0.33$]. Correlations between the belief-based measures were small and not significant except between behavioural belief and normative belief [$r=0.36$, $p=0.02$]. Goodness-of-fit indices are shown in Table 8.4. RMSEA value was inspected and the less than 0.08 value supported the model as good fitting.

Post-hoc analysis was undertaken to locate any misfit in the hypothesised model. Modification indices (MI) indicated evidence of misfit in the model showing that control belief could determine attitude. High scores on control belief are associated with confidence about having requisite resources and opportunities to perform the behaviour of interest. Low scores are related to perception of barriers that would hinder successful achievement of the behaviour. It would be substantively plausible therefore that people who felt confident in their skills to facilitate the behaviour of interest would have more positive evaluation of the behaviour than a person who did not. Thus a path from control belief to attitude was drawn (see Figure 8.8).

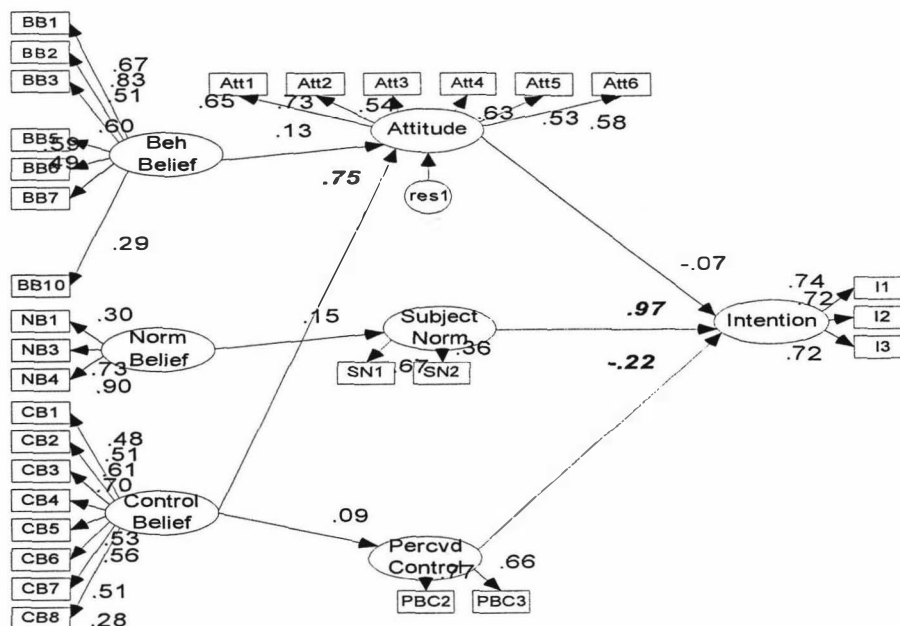


Figure 8.8. Model 2: Comparison model for theory of planned behaviour for female students (N=148)

The respecified model was re-estimated showing the relationship between control belief to attitude was positive and the structural path significant at $p < 0.05$ level. If control belief is high then attitude toward crime would concomitantly be high. Subjective norm and PBC remained significant as determinants of intention. Goodness-of-fit indices for this model are shown in Table 8.4. Fit indices showed the post-hoc model yielding an improvement in fit indices and RMSEA value of 0.062.

No further misspecifications were revealed on MI indices and no further post-hoc investigations were undertaken. The difference between the hypothesised and comparison model was statistically significant ($\Delta X^2_{(1)} = 62.23$), indicating the two models were dissimilar. The lower X^2 value, improvement in CFI and GFI values, and the lower RMSEA values supported the post-hoc model as representing the better fit for the data (Byrne, 2001). The determinants and indirect determinants of intention contributed 98.7% of the variance explained for intention to commit crime for female students.

Table 8.4. *Fit indices for theory of planned behaviour for female students (N=148)*

Models	X^2	<i>df</i>	<i>p</i>	CFI	TLI	GFI	RMSEA	ECVI	AIC
Model 1: Hypothesised model	727.380	426	.000	.754	.732	.771	.069	5.901	867.380
Model 2: Comparison model 1	665.150	425	.000	.804	.786	.785	.062	5.490	807.150

Male students

The hypothesised model for male students was the same as that constructed for female students. In this model non-significant regression loadings were omitted. Thus, behavioural belief in its entirety was omitted from the model as well as non-significant indicators for PBC and subjective norm (see Figure 8.9). It was hypothesised that attitude and subjective norm but not PBC would have a direct influence on intention to commit crime. Normative belief would have a direct influence on subjective norm but an indirect influence on intention. Control belief would have a direct effect on PBC but an indirect effect on

intention. A negative error variance was identified for intention and the offending parameter constrained to a small value of .005.

As shown in Figure 8.9, the results show that of the direct determinants of intention only PBC had a significant but negative relationship with the criterion variable, intention to commit crime, at $p < .05$ [attitude $p=0.42$ and subjective norm $p=0.70$]. Contrary to prediction, the two belief-based measures did not have any significant effect on their respective dependent variables [normative belief $p=0.43$ and control belief $p=0.33$]. Correlation between the two belief-based measures was not significant [$r=0.07$, $p=0.51$].

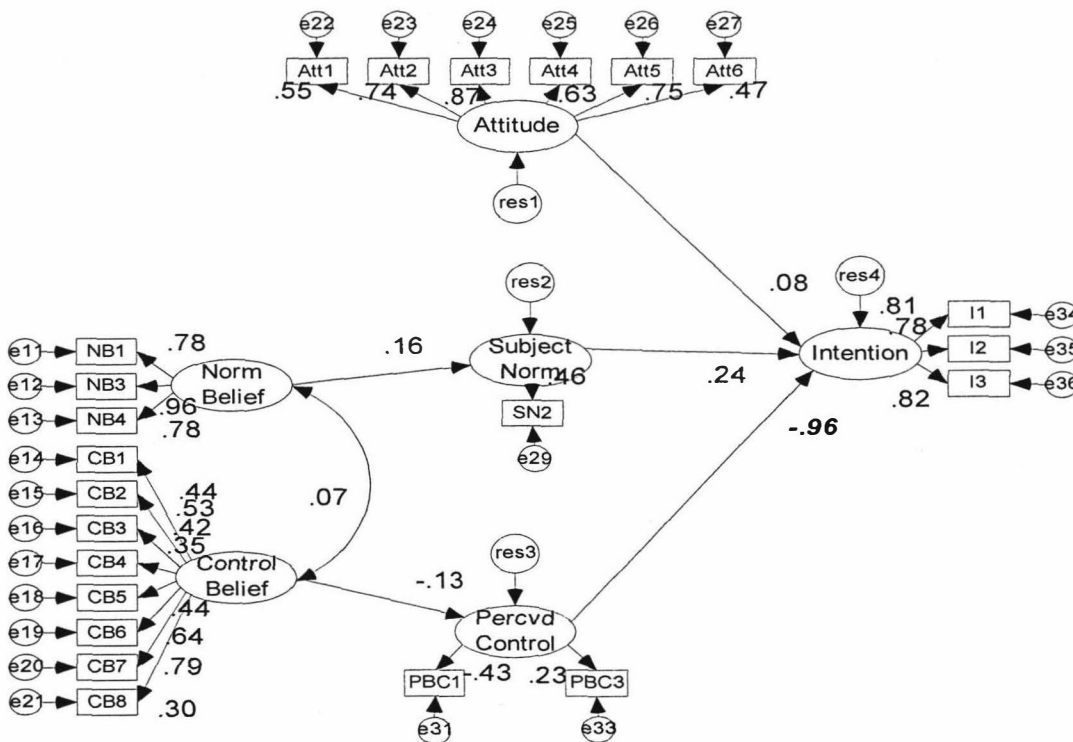


Figure 8.9. Model 1: Structural weights for hypothesised theory of planned behaviour for male students (N=121)

Fit indices for the model in Table 8.5 showed the model to be good fitting with RMSEA below .08. Post-hoc analysis was conducted to investigate possible alternative model for comparison. MI indices were inspected for evidence of misfit. As discovered for female students, control belief was shown to influence attitude. The model was respecified with a path from control belief to attitude and the model reestimated. As shown in Figure 8.10 the structural path from

control belief and attitude was positive and significant at $p < 0.05$. The structural path from PBC to intention was also significant at $p < 0.05$. Goodness-of-fit indices in Table 8.5 show an improvement in fit for the post-hoc model. This model was also good fitting with RMSEA value of 0.073. No further misspecifications in the model were identified.

The difference between the first and second model was statistically significant ($\Delta X^2_{(1)} = 16.54$) indicating the models were different. Inspection of fit indices showed the post-hoc model as representing the better fit of the two models, having lower X^2 and RMSEA values and higher CFI and GFI values. The variables accounted for 99.2% of the variance associated with intention to commit crime for male students.

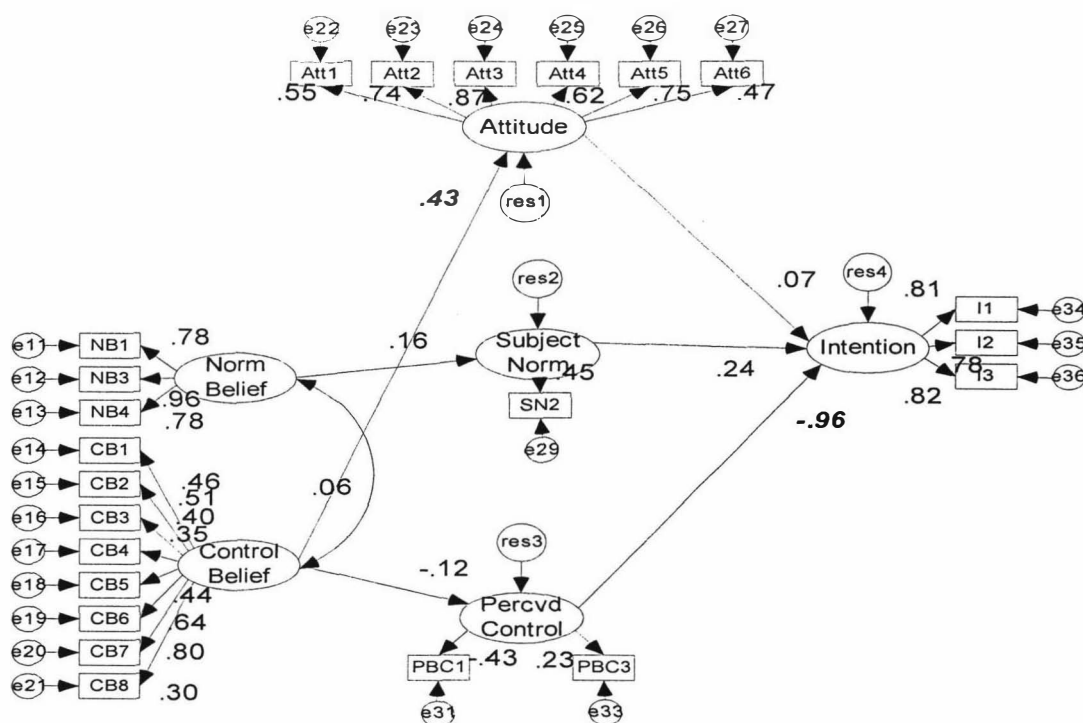


Figure 8.10. Model 2: Comparison model for theory of planned behaviour for male students (N=121)

Table 8.5. Fit indices for theory of planned behaviour for male student (N=121)

Models	X^2	df	p	CFI	TLI	GFI	RMSEA	ECVI	AIC
Model 1:Hypothesised	384.408	225	.000	.823	.801	.797	.077	4.053	486.408
Model 2:Post-hoc	367.871	224	.000	.841	.820	.805	.073	3.932	471.871

Prison inmates

As with the university student population, it was hypothesised that belief-based measures would have a direct influence on their related components (attitude, subjective norm, and PBC) and an indirect relationship with intention.

Furthermore, it was hypothesised that the determinants of intention (attitude and subjective norm but not PBC) would have a direct path to intention (see Figure 8.11). Non-significant regression weights were omitted from the model.

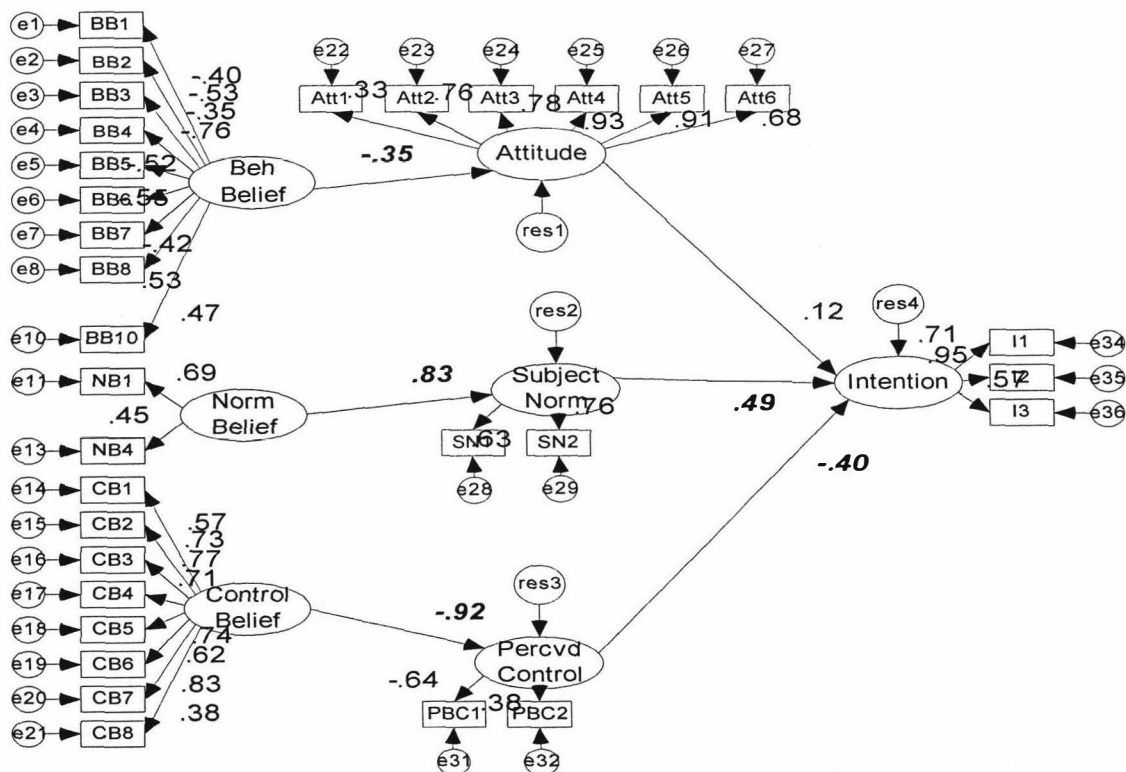


Figure 8.11. Model 1: Structural weights for hypothesised theory of planned behaviour for prisoners (N=105)

The result in Figure 8.11 showed the paths from subjective norm and PBC to intention were significant at $p < .05$. Subjective norm was positively related to intention and PBC negatively associated with intention. The path from attitude to intention was not significant [$p = 0.12$]. The paths from belief-based measures to their respective dependent variables were all significant at $p < .05$.

Behavioural belief and control belief had a negative association with their respective components. This was not expected as it would have been anticipated that belief-based measures would have a positive influence on their

dependent variables. However, normative belief had a positive influence on subjective norm. Correlations between the belief-based measures were all significant with the magnitude of the relationships moderate to strong [behavioural and normative $r=-0.52$, $p=0.01$; control and normative $r=0.83$, $p=0.07$; and behaviour and control $r=-0.43$, $p=0.02$]. Goodness-of-fit indices related to this model are shown in Table 8.6. As can be seen the fit index show the model to be mediocre as reflected in RMSEA value of 0.086. Although a number of paths were significant in the model the less than adequate fit may reflect insufficient sample size for the complexity of the model.

Post-hoc analysis was undertaken to investigate possible misfit in the model and the possibility of an alternative model. MI revealed control belief had a direct influence on attitude and a path from control belief to attitude was specified. Figure 8.12 showed this new path was significant at $p<0.05$ with a positive association with attitude. Behavioural belief no longer had an effect on attitude [$p=0.34$].

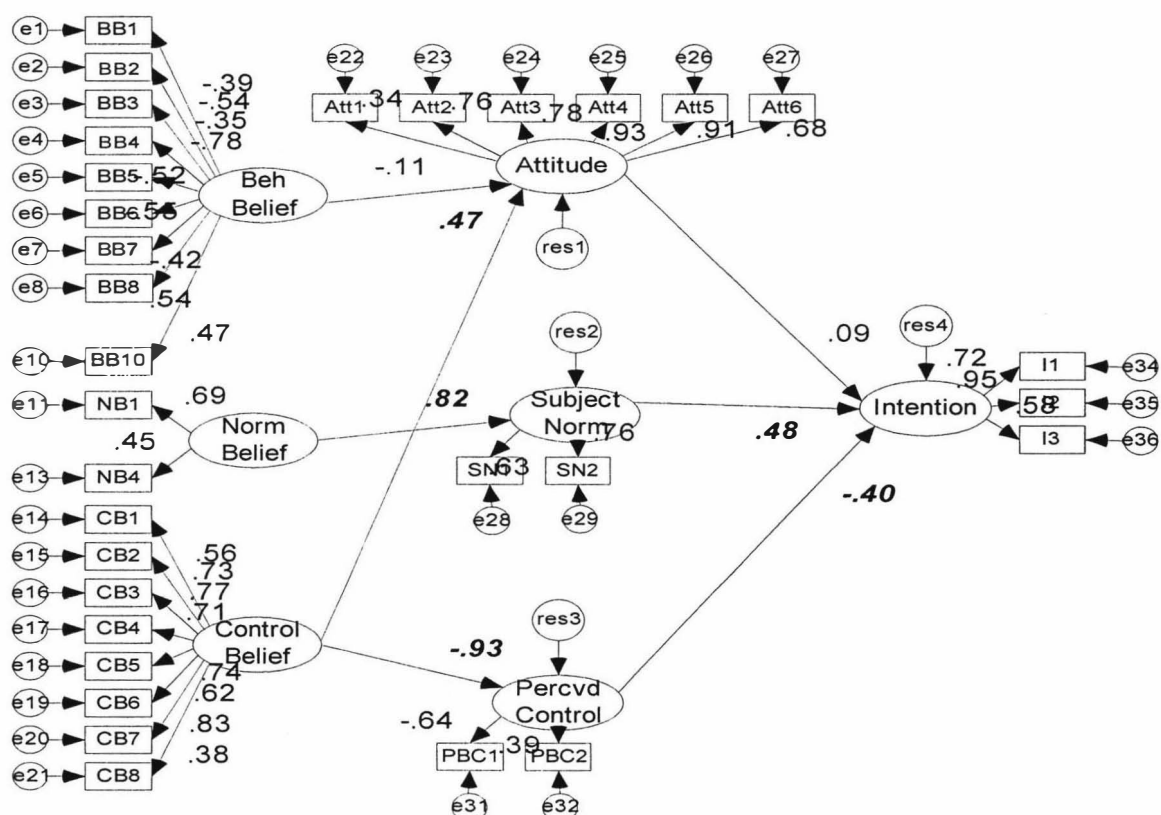


Figure 8.12. Model 2: Comparison model for theory of planned behaviour for prisoners (N=105)

Fit indices for this post-hoc model are shown in Table 8.6. Considerable improvement in fit was found although RMSEA value remained above the accepted criteria (0.05 to 0.08). No further misfit was identified on the MI. Comparison of the two models showed they were significantly different from each other ($\Delta X^2_{(59)} = 132.89$). Of the two models the post-hoc model was shown to be the better fit for the data, based on fit indices. The amount of variance explained by the determinants of TPB for intention to commit crime was 70.9% for prison inmates.

Table 8.6. *Fit indices for theory of planned behaviour for prisoners (N=105)*

Models	X^2	df	p	CFI	TLI	GFI	RMSEA	ECVI	AIC
Model 1: Hypothesised	806.656	455	.000	.771	.751	.697	.086	9.160	952.656
Model 2: Post-hoc	673.771	396	.000	.806	.787	.712	.082	7.805	811.771

Summary

It was hypothesised that intention would be predicted by its motivational components and indirectly by the belief-based measures. This was partially supported despite the disparate nature of the groups. Subjective norm and PBC were shown to be determinants of intention for female students and prisoners. Only PBC determined intention for male students. Attitude had no effect on intention and this finding was consistent across the three groups. Whilst the belief-based measures were expected to provide an explanation for the antecedents of intention, the findings were inconsistent. Control belief was shown to be associated with attitude rather than its own dependent variable, PBC. Normative belief was strongly associated with subjective norm but only for female students and prisoners. Overall, the components of theory of planned behaviour provided substantial explanatory power for intention to commit crime. The models were shown to have adequate fit for university students but mediocre for prisoners. However, presence of Heywood cases in the models across the three groups indicates underlying problems in the data or in the sample. Thus caution is required in the interpretation of the findings. The high level of variance explained for intention in the university sample would also raise questions about the generalisability of the results.

INTEGRATION OF THEORIES

Self control and theory of planned behaviour

The two theories were integrated using an end-to-end strategy. In this structure, it was predicted that self-control as represented by behavioural and attitudinal self-control measures would have a direct influence on attitude, subjective norm and PBC, and an indirect influence on intention to commit crime. Attitude and subjective norm but not PBC were hypothesised to be direct determinants of intention. In addition, past crime was included into the integrated model to investigate whether this would have a direct influence on the motivational elements of intention and a direct effect on intention to commit crime as well. The integrated model was replicated with the three groups independently.

Female students

The hypothesised model for female students is shown in Figure 8.13, with the attendant regression and structural weights.

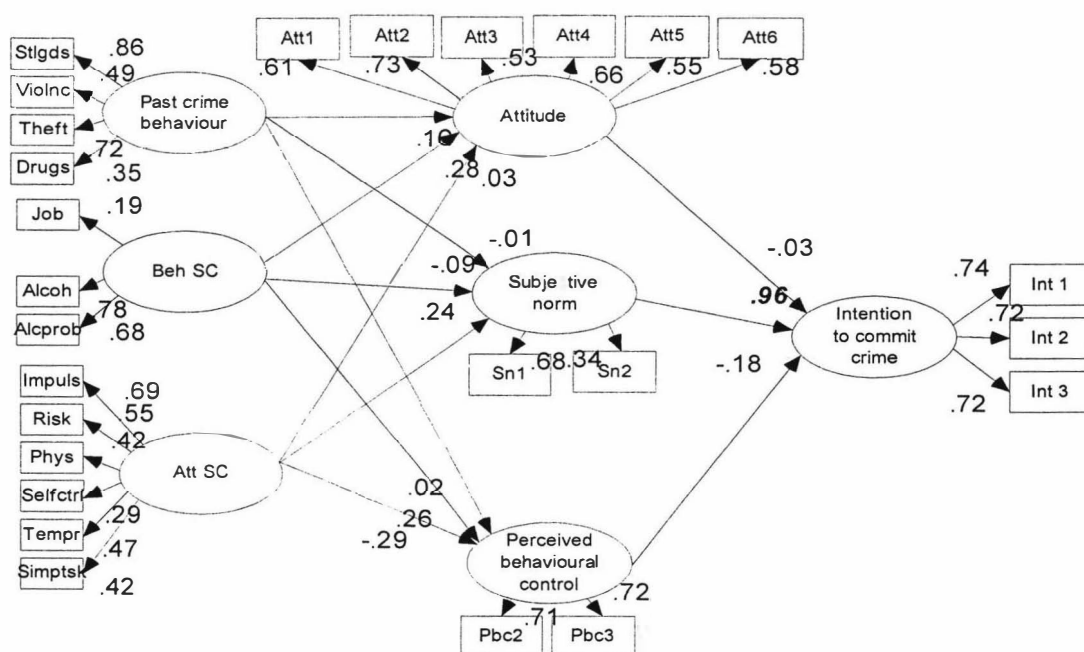


Figure 8.13. Model 1: Structural weights for integrated theories for female students (N=148)

Due to a negative error variance for intention the parameter was constrained to a small value .005. Of the three motivational elements for intention only subjective norm had a positive and strong relationship with intention to commit crime ($p < 0.05$). The influence of PBC was just out of the range of statistical significance ($p = 0.07$). No significant relationships were shown between self-control and past crime with the antecedents of intention. Correlations between the indirect measures of intention (self-control and past crime) were all significant. The magnitude of the associations were moderate to large [behaviour self-control and past crime $r = 0.68$, $p = 0.00$; behaviour self-control and attitude self-control $r = 0.34$, $p = 0.02$; attitude self-control and past crime $r = 0.33$, $p = 0.03$]. Fit indices in Table 8.7 revealed the hypothesised model to be acceptable with RMSEA value less than 0.08.

Review of MI found no evidence of misfit in the model. A second integrated model was constructed in which paths for the two self-control measures and past crime were redrawn so that the variables would have a direct effect on intention to commit crime (see Figure 8.14).

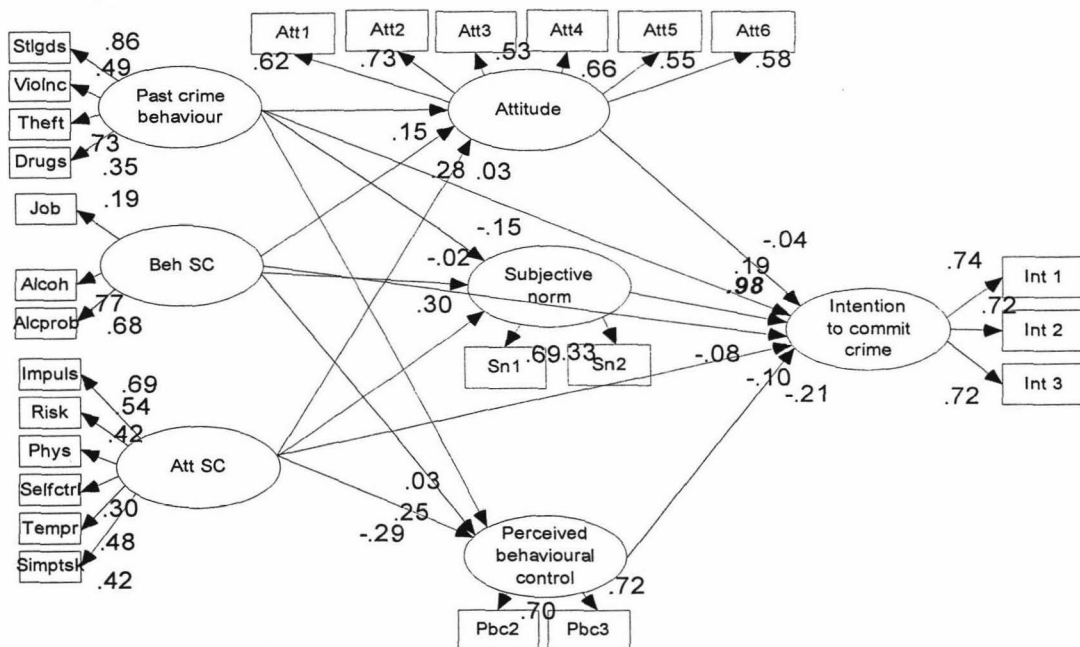


Figure 8.14. Model 2: Comparison model for integrated theories for female students (N=148)

As can be seen the causal paths for behavioural self-control, attitudinal self-control, and past crime were not significant ($p = 0.69$, $p = 0.47$, and $p = 0.29$,

respectively). Subjective norm was significantly and positively associated with intention. PBC had a negative but close to significant relationship with intention ($p=0.055$). Inspection of MI found no evidence of misfit in the model. No significant difference between the first and second model was found ($\Delta X^2_{(3)} = 1.71$). Based on the lower ECVI value and the slightly better fit indices the hypothesised model was deemed the more parsimonious of the two nested models. The variance explained by the determinants for intention to commit crime in the integrated model was 98.7% for female students.

Table 8.7. *Fit indices for integrated theories for female students (N=148)*

Models	χ^2	df	p	CFI	TLI	GFI	RMSEA	ECVI	AIC
Model 1:Hypothesised	428.669	285	.000	.837	.814	.822	.059	3.814	560.669
Model 2:Comparison1	426.957	282	.000	.835	.810	.822	.059	3.843	564.957

Male students

As with the female students, the same hypothesised integrated model was constructed for male students. A negative variance was identified for intention and the parameter constrained to a small value of .005. Non-significant parameter loadings were omitted from the model. As can be seen in Figure 8.15 of the three direct determinants of intention only PBC revealed a negative and significant relationship to the criterion variable, intention ($p < 0.05$). This suggests that whilst people strongly believed they had control over whether to commit crime or not, the intention to do so was low. Goodness-of-fit indices in Table 8.8 show the model to be good fitting with RMSEA value below 0.08.

However, as observed in the model a number of standardised coefficients were above 1, indicative of the possibility of multicollinearity in the data (Jöreskog, 1999). Correlations for past crime and behavioural self-control was $r=0.94$, past crime with attitude $r=0.61$, and attitude and behavioural self-control $r=0.37$. The high correlations between past crime and behavioural self-control support the presence of multicollinearity and this self-control measure was omitted from the model. The model was respecified and as can be seen in the second model all structural paths fell below 1 (shown in Figure 8.16).

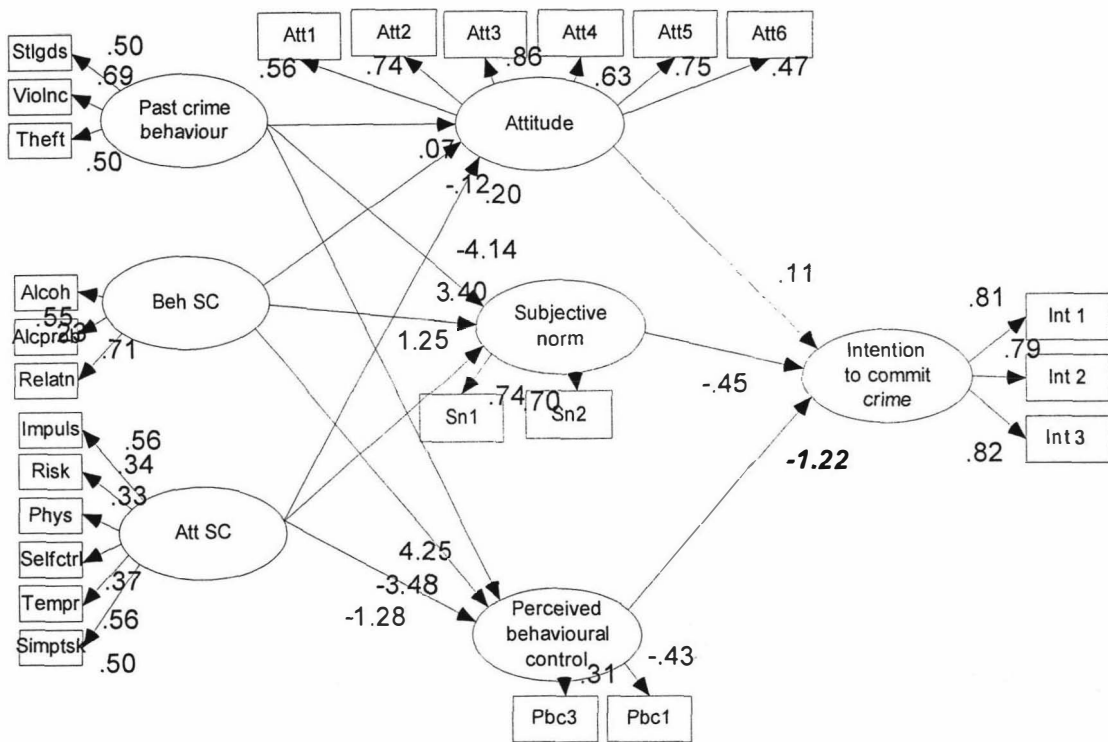


Figure 8.15. Model 1: Structural paths and regression weights for hypothesised integrated model for male students (N=121)

In the second model, the correlation between self-control and past crime was significant [$r=0.52$, $p=0.01$] but the magnitude of the relationship was moderate. As shown in Figure 8.16, PBC had an inverse but significant relationship with intention at $p<0.05$ level. Of the other direct determinants of intention, attitude and subjective norm were not significant [$p=0.21$ and $p=0.42$, respectively]. The structural paths for past crime and self-control measures were also non-significant. An improvement in the respecified model was found with fit indices supporting the model to be good fitting (see Table 8.8). Inspection of MI showed no evidence of misfit in the structural paths for model 2. A second comparison model was drawn in which past crime and self-control had a direct path to intention as shown in Figure 8.17. Neither past crime nor self-control had a direct influence on intention, attitude, subjective norm, or PBC, with all structural paths not significant. Of the three direct determinants of intention, only PBC was a significant determinant of intention [with attitude $p=0.23$ and subjective norm $p=0.38$].

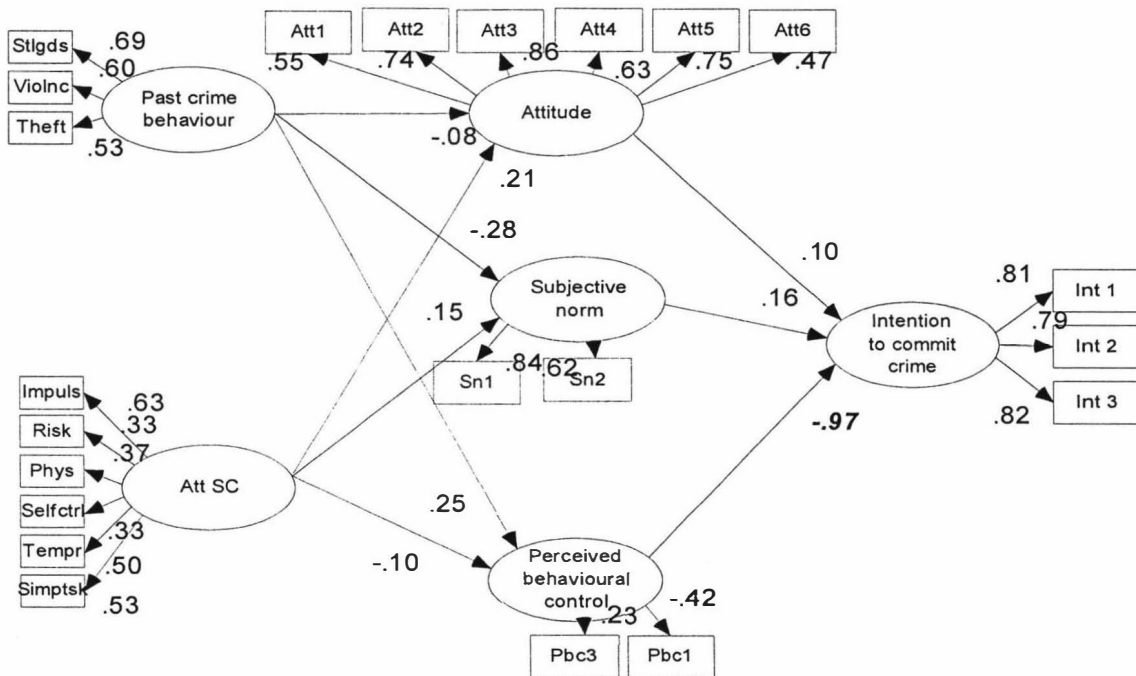


Figure 8.16. Model 2: Comparison model 1 for integrated theories for male students (N=121)

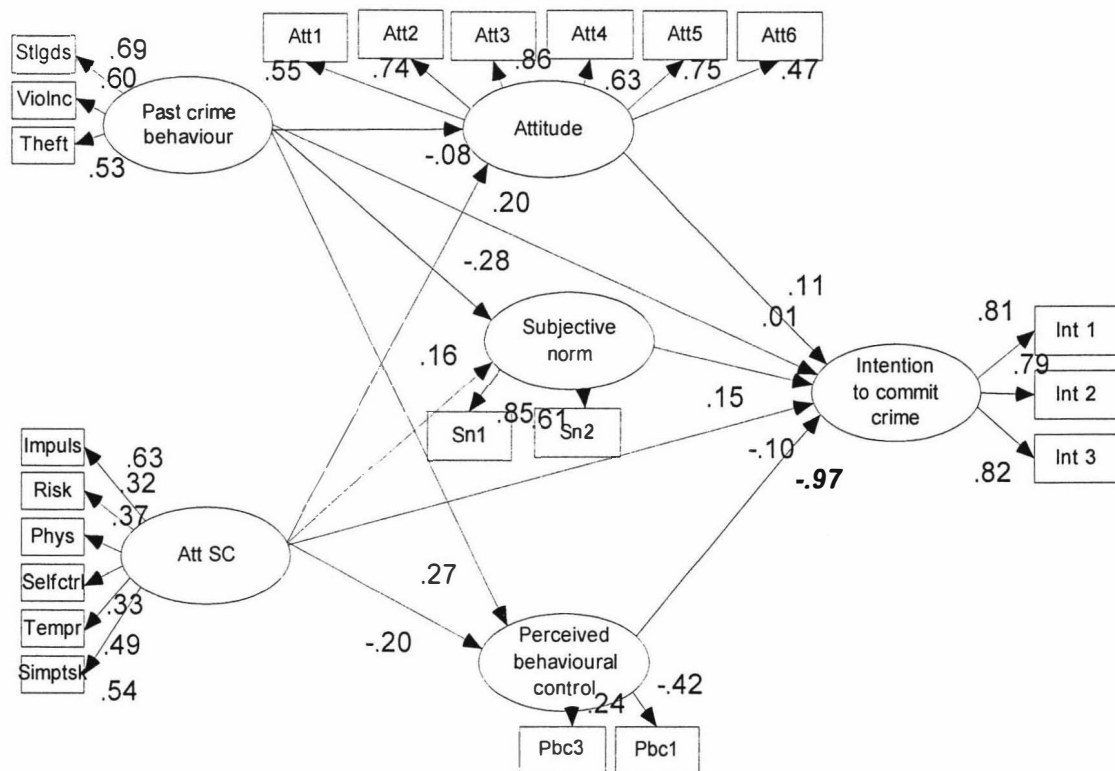


Figure 8.17. Model 3: Comparison model 2 for integrated theories for male students (N=121)

As shown in Table 8.8, there was little change in fit indices between the second and third model. Fit indices for this final model also showed the model to be good fitting with RMSEA value at .049. There was no significant difference between the second and third model ($\Delta X^2_{(2)} = 0.15$). Based on the lower ECVI and AIC values the second model was deemed to be the better and more parsimonious of the two nested comparison models. The variance explained by the determinants of intention to commit crime was 99.2% for male students.

Table 8.8. *Fit indices for integrated theories for male students (N=121)*

Models	X^2	df	p	CFI	TLI	GFI	RMSEA	ECVI	AIC
Model 1:Hypothesised	350.788	261	.000	.874	.855	.827	.054	3.990	478.788
Model 2:Comparison model 1	255.565	200	.005	.910	.896	.848	.048	3.013	361.565
Model 3: Comparison model 2	255.413	198	.004	.907	.892	.848	.049	3.045	365.413

Prison inmates

Similar to the integrated model for student samples the hypothesised model for prison inmates is shown in Figure 8.18. Due to a negative error variance for PBC the parameter was constrained to a small value of .005. The results revealed that of the determinants of intention, only subjective norm had a significant effect at $p < 0.05$ level, whilst PBC [$p=0.22$] and attitude [$p=0.07$] were non-significant. A number of structural paths were also significant at $p < 0.05$ for the indirect determinants of intention. Past crime had a positive and significant influence on both subjective norm and PBC; behavioural self-control had a positive and significant relationship with PBC; and attitudinal self-control a positive and significant effect on attitude.

Correlations between past crime and behavioural self-control were not significant [$r=0.21$, $p=0.09$] but significant between the two self-control scales [$r=0.26$, $p=0.03$] and attitude self-control and past crime [$r=0.66$, $p=0.00$].

Goodness of fit indices in Table 8.9 showed the hypothesised model to be good fitting with RMSEA value less than .08. Inspection of MI revealed no evidence of misfit in the structural paths.

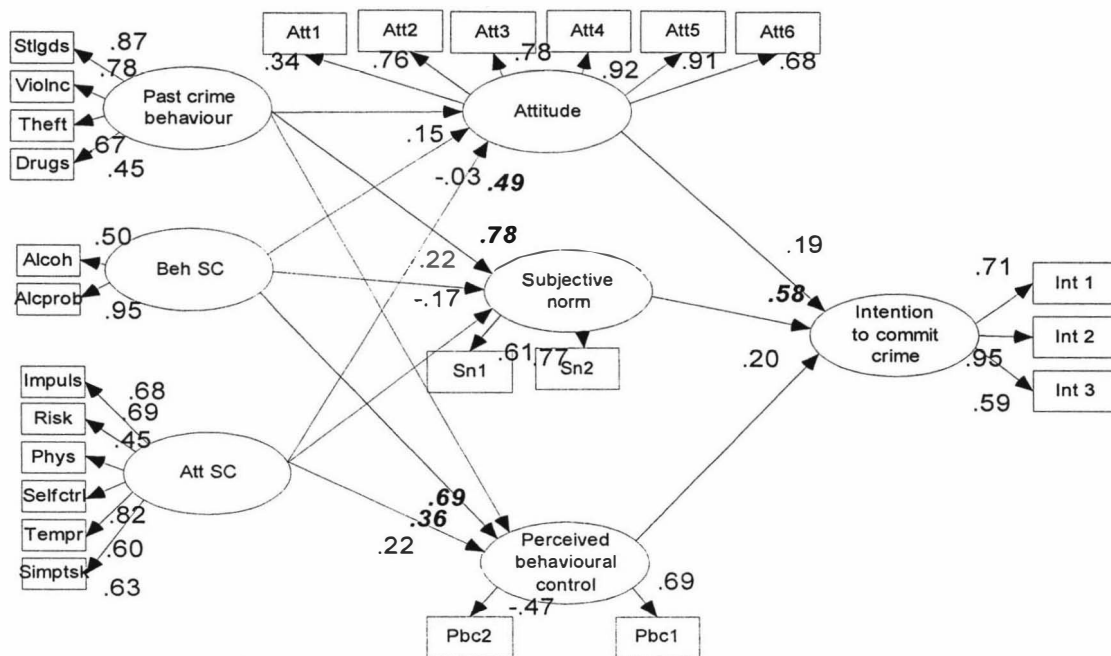


Figure 8.18. Model 1: Structural paths for hypothesised integrated theories for prison inmates (N=105)

A second model was constructed in which the two self-control measures and past crime had a direct path to intention to commit crime. As shown in Figure 8.19, the respecified structural paths were all non-significant [attitudinal self-control $p = 0.87$, behavioural self-control $p = 0.96$, and past crime $p = 0.95$]. Goodness-of-fit indices for the comparison model displayed in Table 8.9 showed the model improved slightly in fit. RMSEA value of less than .08 supported the model to be good fitting. A significant difference between the first and second model ($\Delta X^2_{(3)} = 13.15$) was found indicating the two models were different from each other. Based on lower RMSEA and X^2 values and goodness-of-fit indices, the comparison model was determined to be the better fitting of the two models. The variance explained for intention was 81.4% for prison inmates.

Table 8.9. Fit indices for integrated theories for prisoners (N=121)

Models	X^2	df	p	CFI	TLI	GFI	RMSEA	ECVI	AIC
Model 1:Hypothesised	426.421	261	.000	.866	.846	.776	.078	5.331	554.421
Model 2:Comparison	413.268	258	.000	.875	.854	.785	.076	5.262	547.268

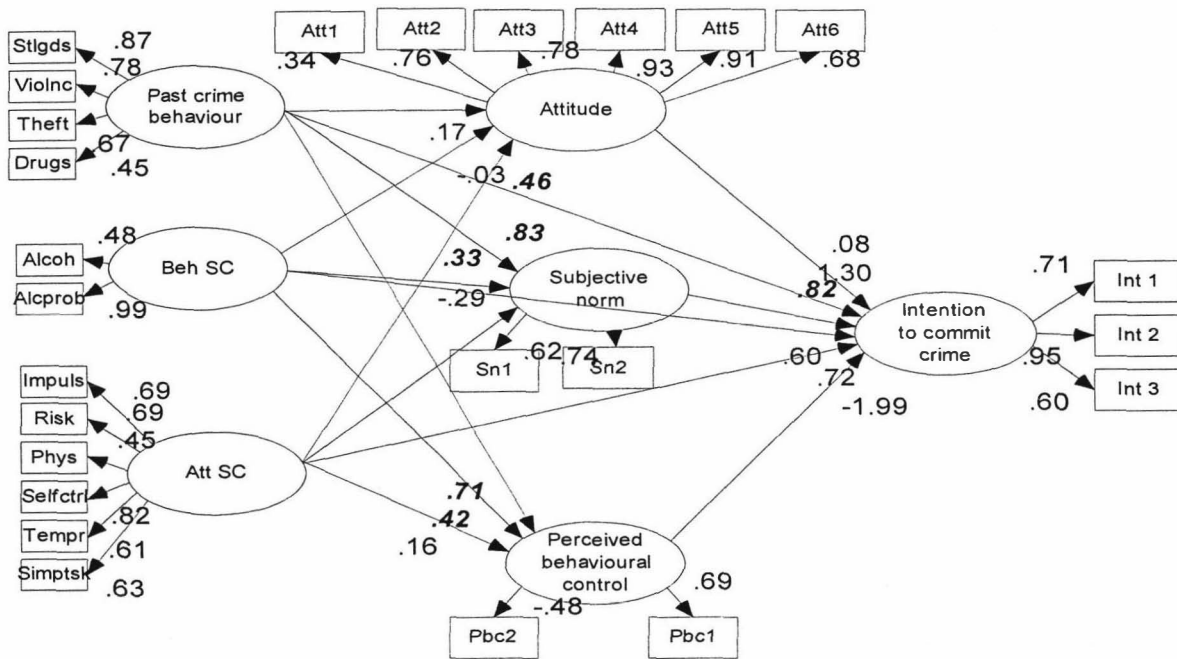


Figure 8.19. Model 2: Comparison model for integrated theories for prisoners (N=105)

Summary

No increase in explanatory power was provided by the integrated model for the student population over and above that explained by TPB. For prison inmates the variance accounted for by the determinants of intention in the integrated model was 81.4%; an increase of 10.5% on the variance explained by TPB and 46.2% by self-control theory. PBC was the sole determinant of intention to commit crime for male students and subjective norm for female students and prison inmates. Past crime and self-control had no influence on attitude, subjective norm, or PBC for the two student samples. For prison inmates, past crime was predictive of subjective norm and PBC. Furthermore, the self-control measures were determinants of attitude and PBC but past crime and self-control had no direct effect on intention. The presence of Heywood cases for all three groups indicates anomalies in the integrated model. The results therefore need to be interpreted with caution.

Chapter Nine

DISCUSSION

This chapter will firstly discuss the findings for the individual theories, self-control theory and theory of planned behaviour, before the integrated theory and the role of past behaviour. Implications for self-control theory are then considered. This will be followed by limitations in the study and directions for future research. Finally, conclusions from the research will be drawn.

SELF-CONTROL THEORY

The adequacy of self-control theory to explain crime was examined. It was predicted that not only would self-control be sufficient to explain crime but that the findings would be generalisable across discrepant groups, students and prisoners, thus adding support for this theory. A number of hypotheses were raised regarding the generalisability and measurement of self-control and are discussed below.

There would be a positive relationship between low self-control and intention to commit crime across all groups.

Strong support for the relationship between self-control and intention to commit crime was found for prison inmates. Those with low self-control were inversely related to intention to commit crime. Self-control has been found to contribute not much more than 20% of the variance explained for crime (Andrews & Bonta, 2006; Pratt & Cullen, 2000) but for this group the explanatory power of self-control was 35%, higher than that generally found in the literature (e.g. Longshore, 1998). However, for university students the explanation provided by self-control in explaining intentions to commit crime was small to negligible (5% for female students and less than 1% for male students).

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The findings from this study differ from previous research. Regardless of the sample used, whether male or female, an offender sample or community group, self-control has shown consistent and meaningful effect on crime or analogous behaviours (Pratt & Cullen, 2000). There are possible explanations for the lack of finding in this study with student samples. Firstly, studies investigating self-control theory have generally used crime or analogous behaviours as the criterion variable. These include imprudent behaviours (e.g. Arneklev et al., 1993), academic dishonesty (e.g. Vowell & Chen, 2004) and law violations (e.g. Burton et al., 1998). In this study, intention was the proxy for crime. Whilst the relationship between intention and behaviour has been shown to be high (Ajzen, 1991) intention to do crime may not be pertinent for students as it would be for an offending population. Unlike the offender group, the prevalence and incidence of offending was low for students. Not only were they low but the deviancy was infrequent and when committed may be more likely to be impulsive. Intention implies forethought and purpose and the fact that deviancy is not a habitual activity for students the intention to do crime would not be salient as it would for criminal offenders.

Secondly, crime captures a broad range of behaviours that include offences with low base rates within the general population (Police National Headquarters, 2006). In a population in which the prevalence of crime is low, crime may be associated with more serious offences such as robbery and violence. Despite reminders that crime included less serious offences such as dishonesty and minor assaults, students may not associate crime with such broad behavioural tendencies. Whilst the purpose of the criterion variable was to capture a behaviour of interest with variability and cross-situational stability, crime may have been too broad and ambiguous a construct for students. Negative connotations associated with crime may prevent students from acknowledging that some activities, even of low seriousness, were crime.

The perceptions of crime may differ for students and an offending population. Most students commit offences that are generally of low seriousness such as stealing money from parents and shoplifting less than \$50 from shops or not

perceived as harmful to others, such as drug taking. When acts are deemed to be not very serious or detrimental to others students may not perceive the behaviours as crime. On the other hand for prisoners, the meaning of crime would have greater potency and saliency either because of their own personal offending history or in associating with others of similar kind. Furthermore the offences committed by offenders are likely to be serious and possibly injurious to others. It may therefore explain why self-control theory was unable to predict intention to do crime for the student population but did so for criminal offenders.

Finally, the lack of result with the student population appears to support Gottfredson and Hirschi's (1993) assertion that stratified sampling should be employed in testing their theory. Within a prison or antisocial sample sufficient incidence and variability of self-control would be found to detect its effect on crime or analogous behaviours. In a population in which low self-control and incidence of crime were small the relationship between self-control and crime may not be easily detected.

Students would have higher levels of self-control than prison inmates.

As predicted, students had higher levels of self-control than prison inmates. Male and female students did not differ in their level of self-control. The findings are not surprising given that students would be antithesis of a person defined by Gottfredson and Hirschi (1990) as having low self-control. Students by the very nature of their tertiary studies are invested in long-term aspirations and goals, are cerebral as opposed to physical, and are not tempted by the immediacy of short-term pleasure at the expense of future gains. Despite this there was sufficient variability on this trait within the student population.

Although the two self-control measures would be moderately correlated, behavioural measures of self-control would have greater predictive power than the attitudinal scale.

To avoid the problem of tautology non-crime measures of self-control were used. As such self-control was operationalised by a behavioural and an attitudinal measure. In this study, behavioural measures provided little in the way of explanatory power to intention to commit crime. No appreciable difference was found on this measure between the groups on number of relationships, jobs, and problems associated with alcohol. Consumption of alcohol on its own appeared to be a better indicator of self-control than the other behaviours. Overall, behavioural measures did not differentiate levels of self-control within or between student and prison samples except alcohol use and this was shown to be substantially higher for the prison group than the student population.

Although the two self-control measures were moderately correlated, the attitudinal self-control scale provided the stronger explanation for intention than behavioural measures. Few studies however have utilised behavioural indicators of self-control. Of those that have considerable variations in the behavioural indicators made comparability across studies difficult (Tittle et al., 2003b). Generally behavioural indicators were idiosyncratic to the study and had low inter-item reliability (Evans et al, 1997, Tittle et al., 2003b). Whilst Hirschi and Gottfredson (1993) reported evidence of low self-control could be observed in a number of behavioural manifestations, Tittle and colleagues (2003b) were unable to establish much relationship between them. They noted considerable problems in finding reliable indicators analogous to crime which may reflect the complexity of the various dimensions of self-control.

The findings from this study lend further support to Tittle et al.'s findings in that difficulties in developing reliable behavioural indicators of self-control were experienced and they fared worse than attitudinal scales. Hirschi and Gottfredson's claim that attitudinal-type scales have resulted in modest relationships with crime was not supported in this study. The robustness of the attitudinal measure over behavioural indicators may suggest emphasis on behavioural indicators in testing self-control theory is unwarranted and unnecessary. The attitudinal scale was developed independently of crime and the considerable number of studies, and now this one, supports Grasmick et al.

(1993) self-control scale as the most viable currently available in testing self-control theory.

Self-control is unidimensional as opposed to a multidimensional construct

The dimensionality of self-control construct has been contentious (Longshore et al., 1996; Wood et al., 1993). This study found no support across disparate groups for the unidimensionality of self-control, lending support against the aggregation of self-control into a unitary factor (De Lisi, 2003; Marcus, 2003; Williams et al., 2007). Of the three theoretical models, the multidimensionality of self-control was found to be the better fitting model although the second-order structure was sufficiently robust. Both models would be supported depending on the purpose of the investigation.

Although investigations of the multidimensionality of self-control are limited the invariance of the attitudinal measure was also found across gender (Piquero & Rosay, 1998), community samples (Arnekleve et al., 1999) and male prison and student groups (Williams et al., 2007). As such the groups were found to differ on the dimensions of self-control. Adjudicated prison inmates were highest on self-centredness (Mitchell & MacKenzie, 2006). Risk-taking and impulsivity had the strongest factor weights on dimensions of self-control for non-offending samples (Arneklev et al., 1993; LaGrange & Silverman, 1999; Wood et al., 1993). In this study similar findings were shown. Self-centredness had the highest loading on general self-control for prisoners and impulsivity for male and female students.

Differences on the dimensions of self-control however may not necessarily reflect fundamental difference in traits between offending and non-offending sample. Whilst Mitchell and MacKenzie (2006) and Williams et al. (2007) found self-centredness to be high in incarcerated prisoners, DeLisi et al. (2003) study of male parolees found self-centredness had the lowest factor loading on general self-control. Instead impulsivity and temper had the highest loadings,

not too dissimilar to that of non-offending samples. It may be that egocentricity is a function of imprisonment rather than offenders per se. Such characteristics may help a person survive in an unsympathetic environment such as a prison, hence the higher rating on this dimension. This hypothesis was given some support by Mitchell and MacKenzie's (2006) study which found self-centredness increased with imprisonment.

Whether particular dimensions of self-control are strongly associated with crime over others however is uncertain. Few studies have explicitly examined the specific components of self-control to predict crime. Of these most found risk-seeking and impulsivity to have the most predictive power for crime/analogous behaviours (Arkneklev et al., 1993; Longshore et al., 1996; Romero et al., 2003; Winfree et al., 2006; Wood et al., 1993). DeLisi et al. (2003) however found temper to be predictive of crime for adjudicated offenders. Further studies would need to be carried out to investigate whether different components of self-control are associated with deviancy and whether these differences can be shown between offenders and non-offenders.

In summary, the utility and generalisability of self-control theory to a New Zealand population was mixed. The theory was capable of predicting intention to commit crime in a prison population but not with students. Compared to previous research (Pratt & Cullen, 2000; Tittle et al., 2003a), the proportion of variance explained by the two self-control variables was considerable for the prison group. Self-control theory of crime however was unable to provide any explanation for intention to do crime in a student population. This may be due to how crime is defined and perceived by this group or that self-control theory may lack generalisability in explaining and predicting crime across disparate populations. Being able to predict crime within a prison population is not particularly useful as it would be in distinguishing individuals with propensity to crime within a general population.

Notwithstanding the above, the purpose of this study was to investigate whether other variables apart from self-control could increase the explanatory power of self-control theory. These other variables are discussed below.

THEORY OF PLANNED BEHAVIOUR (TPB)

The purpose of investigating theory of planned behaviour was firstly to examine the sufficiency of the theory to explain intention to commit crime within prison and student populations. Second, whether TPB can be integrated into self-control theory as few studies have investigated this possibility. The hypotheses for TPB are discussed below.

Belief-based measures would have an indirect effect on intention and a direct effect on the motivational elements of intention.

Belief-based measures are the explanatory components of TPB (Ajzen & Fishbein, 1980). As such they provide an insight into a person's idiosyncratic attitude towards the behaviour of interest. Empirical validation of beliefs underpinning TPB has been the least examined of the components of TPB (Armitage & Christian, 2003). In this study, the belief-based determinants for attitude, subjective norm and perceived behavioural belief (PBC) were weak for all three groups. This is consistent with previous research investigating immoral and illegal behaviours (e.g. Armitage et al., 1999; Vallerand et al., 1992). For example, Vallerand et al. (1992) found no relationship between behavioural belief and its determinant attitude or between normative belief and subjective norm. Instead normative belief was the sole determinant of attitude.

In this study, the findings replicate the few studies that have investigated belief-based determinants. Not only was there a lack of effect in the belief measures but control belief was the determinant of attitude rather than its respective component, PBC. This finding was unexpected and the reason for this can only be speculated. Attitude reflects global evaluation of the behaviour of interest as to whether it is good or bad, negative or positive. Control beliefs on the other

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hand are factors that inhibit or facilitate the behaviour. Inspection of the items within the control measure showed that crime was seen as a way to resolve problems such as feeling stressed or not having money or food, that crime opportunities were plentiful and easy, and that the chance of being detected was low. These beliefs may have greater significance in influencing whether crime appears attractive and desirable and in turn attitude towards the behaviour in question. Correlations between the two components were found to be moderate lending support for an association between them. However, this finding was for crime in general and the findings would need to be replicated as to whether the same relationship would be found for different populations and for specific crime behaviours.

The lack of effect for the belief components however is problematic for TPB (Armitage et al., 1999). Vallerand et al. (1992) in fact questioned its validity in the model. Rather than the belief constructs being in question, it may be that multiplicative combination of the expectancy-value model of beliefs are problematic. Trafimow and Finlay (2002) found the multiplicative rule and the logic of double negatives for belief and evaluations problematic. They found lower correlations when items were negatively framed and the multiplicative formulation underestimated the size of the effect for the theory.

It would however be premature to discard belief-based measures from TPB. Belief-based components constitute the explanatory element of the theory and considerable merit can be gained in investigating the underlying structure of attitude towards the target behaviour. Substantive information about a person's beliefs can potentially be useful in designing intervention programmes to modify and change attitude and subsequent behaviour (Ajzen, 2002c; Armitage et al., 1999; Orbell et al., 2001; van der Pligt & de Vries, 1998). For example, Orbell et al. (2001) investigated specific outcome beliefs concerning ecstasy use. They found outcome beliefs about ecstasy use could distinguish those who held positive attitudes and those who had negative attitudes about using the drug. Those who were positive about ecstasy use were more likely to endorse positive outcomes of drug use, such as having a wider network of friends. No

statistical difference however was found in the groups for negative consequences of drug use, such as mood swings, depression and dependency but those who held positive attitude about ecstasy believed the risk of being arrested was lower than those with negative attitudes. The idiosyncratic beliefs were cited by the researchers as having potential in effecting change in attitudes towards drug use amongst young people.

Further empirical research needs to confirm the role of beliefs in TPB and this would be particularly relevant when the behaviour is socially undesirable and has considerable negative consequences for the person and wider community. As Ajzen (1991) commented the utility of the expectancy value model may be in question but further empirical validation of belief measures need to be carried out.

Attitude and subjective norm but not perceived behavioural control (PBC) would be predictive of intention.

The motivational components of TPB have been widely investigated across a broad range of behaviours (Armitage & Conner, 2001). As crime was deemed to be under the volitional control of the individual, it was hypothesised PBC would have little effect on intention. A number of unexpected findings were obtained in this study.

Firstly, subjective norm and PBC were shown to be strong predictors of intention to commit crime for female students and prison inmates whilst PBC was only influential for male students. It had been predicted PBC would not have any influence on intention as subjective norm and attitude were deemed sufficient to explain behaviour. As Ajzen (1991) asserts when volitional control over the behaviour increases then the influence of PBC should decrease. This assumption was not supported by this study. The relationship between PBC and intention was negative indicating that whilst personal control was deemed to be high, the intention to commit crime was low. This supports Eagly and Chaiken's

(1993) assertion that PBC should be negatively related when socially unacceptable behaviours are investigated.

It has been unclear whether PBC is linked to external control factors or internal factors such as self-efficacy (Armitage & Conner, 2001). In this study, PBC appeared to reflect internalised control factors rather than external control factors. It would be inconceivable that students having little experience of committing a crime would consider potential obstacles and opportunities or whether they had the necessary resources to carry out crime. Yet participants in the three groups assessed themselves as having strong PBC over the behaviour. PBC in this sense may reflect not only self-efficacy but internal values which act as a self-regulatory mechanism as to whether to participate in behaviour deemed socially unacceptable or not. For this reason, PBC may exert considerable influence over intention when the behaviour of interest is detrimental to the person's future aspirations and relationship with others.

Secondly, in addition to PBC subjective norm was the second determinant of intention to commit crime for female students and prison inmates. In studies which assess the role of social pressure to participate in socially acceptable behaviours, subjective norm has generally been weak (Armitage & Conner, 2001). When socially undesirable behaviours however have been investigated social pressure had a significant influence over the behaviour of interest (e.g. gambling, Moore & Ohtsuka, 1999; drug use, McMillan & Conner, 2003). Considerable evidence for the influence of delinquent peers and the modifying effect of social control factors (such as family, school and peer relations) on delinquency have been shown (e.g. Akers, 1985; Andrews & Bonta, 2006; Hirschi, 1969; Moffitt, 1993; Nakhaie et al., 2000 to name a few).

In this study, support for the influence of subjective norm was found. It had a positive and significant influence for prison inmates and female students but not for male students. It is uncertain why this variable had no influence for male students but did for female students. It may be that for males PBC is sufficient to explain intention when both attitude and intention towards the behaviour are

weak. Whilst gender differences have generally not been explored with TPB, females are more likely to take into consideration the opinions and values of people who are important to them and this may be especially so when socially undesirable behaviours are involved.

A further hypothesis was that there would be normative pressures to not do crime for students but that they would be supportive of crime for prison inmates. This hypothesis was supported for students but unexpectedly also for prison inmates. Intuitively it had been expected that prison inmates would have significant others supportive of crime and this in turn would influence strong intentions to do crime. The findings instead showed prison participants had important others whose expectations were *not* to do crime and the prisoners themselves had low intentions to commit crime.

Explanations for the unexpected findings in the prison group are posited. Firstly, the study was with inmates who had been in the prison for one year or less. In this period of adjustment to their incarceration prison inmates may have had time to think about the loss of their loved ones such as family, friends, and parents and of the consequences of their crime. Secondly, prisoners in this study appeared to be less antisocial than the general prison population. They were older, more educated and the lower prison sentence suggests less serious offences. Finally, processed of the criminal justice system and imprisonment may have had a salutary effect. Realisation of the consequences of offending may have produced the desired deterrent effect on further offending. It would be debatable whether similar findings would be found for an offending population that had not experienced incarceration but this would need to be investigated.

Finally, it was hypothesised attitude would be predictive of intention to do crime but this was not supported across the three groups. The lack of effect for attitude was surprising. Studies with socially undesirable behaviours using TPB have found attitude to be a strong determinant of intention for cheating and unethical behaviour (Beck & Ajzen, 1991; Vallerand et al., 1992), drug use (Armitage et al., 1999; MacMillan & Connor, 2003; Orbell et al., 2001), gambling

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(Moore & Ohtsuka, 1999), and compliance with speed limit (Elliott et al., 2003). As a predictor of crime antisocial cognitions and attitudes have generally been one of most influential factor in criminal conduct (Andrews & Bonta, 2006; Gendreau, Little & Goggin, 1996).

Significant differences were shown between student and prison groups in their attitude towards crime. Prisoners held more positive attitude about crime but despite this the mean scores for all groups were in the low range of scores. This indicates attitude towards crime was more negative than positive for prison and university students. The more negative attitude toward crime for prisoners could be explained by the effects of imprisonment. Failure of attitude to predict intention however may not necessarily imply that attitude has no influence on intention to commit crime. It is possible that when the behaviour of interest is socially undesirable it will be associated with negative attitude. If attitude towards the behaviour in question is negative then the intention to perform the behaviour would be expected to be low. In such instances other factors may exert a stronger influence in explaining intention even if attitude is weak. As shown in this study, these factors were subjective norm and PBC.

Overall, the motivational components of TPB contributed an extremely high level of variance in explaining intention across the three groups; 98.7% for female students, 99.2% for male students, and 70.9% for prison inmates. Whilst the variances accounted for in TPB for students were high, the finding for prison inmates was comparable to that generally found for illegal or unethical behaviours (e.g. 77-88% for drug use [Armitage et al., 1999; Orbell et al., 2001], 62-69% for dishonest conduct amongst university students [Beck & Ajzen, 1991] and 64% drinking and driving [Marcil et al., 2001]). The amount of variance explained in Seipel's (2000) study on drink and driving was lower at 35%. Caution, however, need to be taken in interpreting the results of this study as problems were evident in the structural models for the student populations. The results would need to be replicated with larger sample size and cross-validated with other groups to determine the validity of the result of this study.

In summary, the utility of TPB was supported in investigating intention to do crime across disparate groups. Despite the conflicting evidence on the utility of subjective norm and perceived behavioural control as an antecedent of behavioural intention (e.g. Armitage et al., 1999; Chang, 1998) the two variables were significant predictors of behavioural intention in this study. Unlike previous studies, this study was one in which attitude towards the behaviour was negative and had weak effect on intention. For behaviours such as crime in which there are substantial societal sanctions, attitude may then have weak influence and significant others and internal personal control variables have greater primacy in predicting intention. Further studies need to be carried out to investigate whether these findings can be generalised across other groups, such as community samples and non-incarcerated offenders. Compared with self-control theory, the motivational elements of TPB provided significant explanations for intention to commit crime and were generalisable across disparate groups.

INTEGRATION OF THEORIES

Self-control and TPB

The single theories of self-control and TPB were combined into an integrative explanation of crime. Both self-control theory and TPB conceptualise human behaviour as underpinned by rational decision making whether in calculating the cost and benefit the consequences of the behaviour (Gottfredson & Hirschi, 1990) or in evaluation of the behaviour (Ajzen, 1991; Eagly & Chaiken, 1993). The former is concerned with stable characteristics of the person and the latter situational-specific aspects of the behaviour. It was hypothesised that stable person-oriented explanations such as self-control and situation-related elements of TPB would increase the explanatory power of its constituent theories. The hypotheses and findings for the integrative theory are discussed below.

The integrated theory would increase the explanatory power over and above the single theories. As such, self-control would be fully mediated by attitude, subjective norm, and perceived behavioural control and has no direct influence on intention.

The results of the integrated theory were found to differ for university students and prison inmates. For students the motivational elements, subjective norm for female students and PBC for male students, were sufficient in explaining intention to do crime. Self-control had neither direct influence on the situational components nor direct effect on intention to do crime for students. Eifler (2004) also had similar findings in that self-control had no influence on attitude to condom use.

Support for self-control theory has been shown among university students for behaviours such as academic misconduct and antisocial behaviour (e.g. Romero et al. 2003; Smith, 2004; Vowell & Chen, 2004). Operationalisation of the behaviour however has generally been relevant and specific to the university population. Unlike cheating in exams the desire and opportunity to carry out crime would be expected to be minimal among this group. Students in this study would perceive crime as having long-term negative consequences and minimal short-term benefits. It is uncertain whether under such conditions stable characteristics such as self-control would be inessential as an explanatory variable. As such, the socialising influence of important others and PBC appeared to have greater impact over behaviour than time-stable factors.

The considerable amount of variance however encountered in TPB for student samples would indicate little possibility for increased explanation with the addition of self-control. Given the complexity of the theory it may be that sample size was insufficient to detect the effect of additional variables. Nevertheless self-control theory did not account much for intention to do crime with students and additional variables should not be expected to increase its explanatory value.

The findings for prison inmates were in contrast to those found with university students. As hypothesised, self-control was positively related to attitude, subjective norm, and PBC for the prison sample. Low self-control predicted positive attitude towards crime, tendency to gravitate towards people with similar viewpoint, and increased confidence in one's ability to perform the behaviour of interest. Few studies have included personality factors with TPB. Those that did find personality variables had an indirect effect on behaviour and increased the predictive value of TPB (Courneya et al., 1999; Rhodes et al., 2002; 2004; Seipel, 2000). Rhodes et al. (2004) maintain TPB on its own is inadequate in explaining behaviour due to the temporal transience of intentions that can change from day to day as well as across circumstances. Personality factors on the other hand offer greater temporal stability. When temporal stability is high greater consistency is shown in determining behaviour (Cooke & Sheeran, 2004). In this study, the stability of low self-controlled persons provided meaningful effect on positive attitude to crime and motivation to seek and associate with others of similar disposition. In addition, involvement with others of similar tendencies would provide opportunities for further offending.

Self-control factors had no direct effect on intention across the three groups, supporting this hypothesis. Subjective norm was the sole determinant of intention for prison inmates and female students, and PBC for male students. The positive relationship between subjective norm and intention showed that the expectations of significant others were important as to whether one intended to do crime or not. For male students the inverse relationship between PBC and intention showed confidence in one's ability not to do crime.

Thus for those with low self-control the decision to do crime is a rational and goal-driven judgment. The decision-making process is not dependent just on self-control but is mediated by the motivational elements of TPB; namely subjective norm and PBC. In a prison population in which there are sufficient numbers of low self-controlled individuals and occurrence of antisocial or criminal activity the inclusion of TPB variables significantly increased the variance explained over and above self-control. This is a significant contribution

and supports the utility of TPB as mediating factors in the relationship between self-control and intention.

Past criminal behaviour

Past criminal behaviour was included into the integrated model to investigate the role of past behaviour on the motivational elements and intention to do crime; independent of self-control.

Past crime would have a direct effect on attitude, PBC, and subjective norm and a direct influence on intention.

Past behaviour is predictive of future behaviour (Conner & Armitage, 1998; Nagin & Paternoster, 1991). Whilst knowing that past behaviour predicts future behaviour is not particularly informative, what is unclear is the explanation for this phenomenon. One explanation has focused on habituation of the behaviour so that repetition of the behaviour becomes automatic and habitual (e.g. Ouellette & Wood, 1998). Other explanations involve existing variations in delinquent disposition within the general population and as such are stable characteristics across individuals; for example low self-control propensity (Nagin & Paternoster, 1991). Finally, it may be that past experiences in some way fundamentally alter the individual or their lifestyle in such manner that commission of the behaviour in the future is more likely, such as reduction in inhibitions (Nagin & Paternoster, 1991). Ajzen (1988) believed that past behaviour would not have a direct influence on intention or behaviour but be mediated by PBC in increasing a person's sense of control.

For students, past behaviour had neither an influence on the motivational elements of intention nor a direct relationship with behavioural intention; thus the hypothesis was not supported for this group. Given the majority of students have no direct experience of criminal violations or into offending generally, past behaviour would not be expected to have an influence on future behaviour.

Prior experience of criminal behaviour, however, did have an effect on behavioural intention for the prison population in this study but this was mediated by PBC and subjective norm; partially supporting Ajzen's (1988) claim that past behaviour would be mediated by PBC. The influence of past behaviour for prison inmates was independent of self-control. That past behaviour did not have a direct effect on future behaviour would discount Ouellette and Wood's (1998) habituation hypothesis when illegal and antisocial behaviours are concerned. Instead, in this study, experience of crime in the past appeared to increase one's confidence to carry out the behaviour in question and assurance about one's skill and controllability over the situation. Furthermore, past violations led to associating with others involved in offending and this in all likelihood would lead to further criminal behaviour. This model is congruent with Akers (1985) social learning theory and consistent with Nagin and Paternoster's (1991, p. 183) hypothesis that prior delinquency has a "genuine behavioural impact" on the individual and that then leads to accurate prediction of future illegal activity. Cooke and Sheeran (2004) found that direct experience of a behaviour showed stronger relationship in attitude-behaviour relationship and greater consistency and stability in intention and behaviour association.

In summary, past behaviour and self-control were mediated by the elements of TBC. Only PBC had a direct causal path to intention for male students and subjective norm for female students and prisoners in providing a causal explanation in the integrated theory. The integrated model increased the explanatory power for crime for prison inmates but not for students. However, caution needs to be exercised in regards to the results of this study. Caveats in relation to the structural models for TPB are reiterated with the integrated models, as problems with Heywood cases were also encountered in the integrated models.

IMPLICATIONS FOR SELF-CONTROL THEORY OF CRIME

Although Gottfredson and Hirschi (1990) claim that self-control by itself is sufficient to predict crime, a major criticism of the theory has been that

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substantial amount of variance are left unaccounted for in explaining crime or analogous behaviours. This study has demonstrated that increased explanatory value of the theory can be achieved by including situational-specific factors with self-control disposition.

The findings however were inconsistent between the university students and prison inmates. Self-control theory was ineffectual in predicting intentions to do crime with university students but not for the prison population. Block and Gjerde (1986) highlight the need to differentiate between a person who has insufficient self-control or "under-controlled" from one with antisocial disposition. They maintain that expressions of low self-control are evident in prosocial as well as in problematic or antisocial behaviours. Having low self-control per se is not a sufficient condition in which to explain propensity for antisocial or analogous behaviour. For example, Block and Gjerde found that different patterns of behaviour distinguished those who were undercontrolled and those who were antisocial. Those who were antisocial were defined by a lack of empathy and poor interpersonal relationships. Those who were undercontrolled were able to maintain good interpersonal relationships with their peers and were not necessarily occupied in problematic behaviours. It seemed that for inadequately controlled individuals, the motivation to perform antisocial or problematic behaviours were different from those who were inadequately controlled but socially connected to normative others.

As it currently stands self-control theory is unable to distinguish between low self-restrained individuals who engage in crime/deviancy from those who do not. In this study it would be expected there would be evidence of low self-controlled individuals within the student sample. The lack of finding of self-control theory in predicting criminal intentions may be that students with low self-control characterise what Block and Gjerde (1986) refer to as undercontrolled rather than antisocial individuals. The students in this study appeared to be connected to normative influences against doing crime and to heed their expectations.

Particular dimensions within self-control however may differentiate those who are undercontrolled from those with antisocial disposition. For example, self-centredness and temper would reflect the classicists' view of the nature of man, in being primarily self-serving, disinclined to consider the interests of others, and more likely to use physical confrontations and violence to achieve their goals. Such tendencies are reflected in other antisocial personality traits such as Hare's (1993) psychopathy. Whilst impulsivity and risk-seeking are also implicated as risk-factors of a person with antisocial disposition, on their own these traits could be manifested in both prosocial and antisocial acts. For example, involvement in accidents may be indicative of a person who is impulsive and possibly a risk-taker but it does not necessarily imply the person is criminally-minded. Some activities are socially acceptable yet require a level of risk-taking and impulsivity, such as bungy-jumping or car-racing. As such Gottfredson and Hirschi's (1990) unitary construct, self-control, does not differentiate someone who is antisocial and one who is undercontrolled. Both are represented by the same disposition of low self-control. By disaggregating self-control construct it may be that self-centredness together with impulsivity and risk-taking are better predictors of crime and other antisocial behaviour than a person who is just impulsive and a risk-taker. Although these observations are speculative the conceptualisation of self-control remains ambiguous with a lack of clarity in defining the construct.

Gottfredson and Hirschi (1990) further claim that early child-rearing practices are responsible for the development of self-control and once developed self-control remains stable across time and place. Whilst some studies question the stability of self-control (e.g. Burt et al., 2006; Mitchell & MacKenzie, 2006) factors that account for the stability of self-control have generally been neglected. Although Gottfredson and Hirschi have resisted the existence of motivational variables in explaining propensity to do crime, in this study self-control on its own was not predictive of behavioural intention. Instead self-control was mediated by subjective norm and PBC; that is the estimation of self-efficacy and confidence in oneself to perform the behaviour and associating with others of similar inclinations and they were determinants of behavioural

intention to do crime for students and prisoners. Nagin and Paternoster (1993) believed enduring differences in propensity to do crime was due to past experience bringing about intrinsic changes within the individual and in their lifestyle. Low self-control may therefore be the origin for criminal behaviour but its temporal stability across situation and time is contingent on and maintained by association with others supportive of a criminal lifestyle and increased confidence in performing the behaviour.

As Gottfredson and Hirschi (1990) would maintain the influence of early normative socialisation may account for the significant relationship between subjective norm and intentions to do crime shown in this study. Although Gottfredson and Hirschi (1990) does not state what role normative influences have on the individual after the early years, the mediating role of subjective norm would suggest normative influence continue to exert considerable influence after the early years. However the restraining influence of normative bonds may not be as consistent across time and place as Gottfredson and Hirschi would assume. For example when Beck and Ajzen (1991) investigated academic misconduct with students, subjective norm was not predictive of dishonest actions. It may be that with behaviours such as cheating in exams or less serious violations as shoplifting consideration of others' expectations may be less influential when there is considerable short-term benefit, opportunities are available, and there is little chance of detection. When the behaviour of interest involves serious violations and there are no apparent benefits for the person the pressure of normative expectations may be strong.

Finally, the findings of this study suggest there is some advantage to viewing opportunity not only as situational but internally-driven in the determination of action. Gottfredson and Hirschi (1990) viewed opportunity as independent of self-control and that despite its ubiquity crime or analogous acts would be constrained by the availability of opportunities whether the behaviour was volitional or not. In fact, Tittle et al. (2003a) regard the ubiquity of opportunity to be so broad as to be inconsequential. Such was the status of opportunity that it was believed to have little importance and to contribute minimally to the

variation in behaviour. As such, opportunity received little attention in much of the literature (for an exception see Smith, 2004). However Eifler's (2004) study showed that individuals with inadequate self-control increased opportunities for deviancy by perceiving and facilitating situations for misdemeanours. This study lends support to Eifler's study in that those with low self-control were more likely to associate with others of similar propensity, furthering opportunities for crime or other antisocial behaviour to occur.

In summary, whilst the parsimony and simplicity of self-control theory is above criticism, the limitations of using only stable-specific variable in predicting behaviour were demonstrated in this study. The inadequacy of explaining behaviour with trait disposition alone has been emphasised in the psychological literature. Situational-specific variables need to be considered if a comprehensive understanding of crime is to be advanced and progress made in criminological theorising. Psychological research with its field of study in understanding human behaviour has much to contribute to Gottfredson and Hirschi's personality-derived theory of crime. Appeals for criminologists to take advantage of inter-disciplinary-disciplinary integration in criminological theorising is not new (Horney, 2006; Osgood, 1998) but have been largely been ignored. As Walsh and Ellis (1999) found progress in criminological theorising has been constrained by ideological dogma rather than sound empirical evidence. As this study has shown, integrating psychological theory of behavioural prediction with self-control theory considerably increased the explanatory value of the theory.

There is considerable merit in taking a cross-disciplinary approach to criminological theorising. As the aims of theorising are to reduce problems of crime and to guide interventions, this study drew attention to potential areas that could be fruitful. These are beliefs that underpin PBC such as underestimation of the cost of crime and over-estimation of the benefits achieved through crime and attachments to positive socialising influences.

LIMITATIONS AND FUTURE DIRECTION

Measures

The adequacy of the measures to test self-control theory and theory of planned behaviour were problematic. In SEM analysis CFA of measures is paramount in that measures must be reliable and robust, and this was not the case for a number of measures used in the study. Whilst Grasmick et al.'s (1993) self-control measure has been well established and the robustness of the scale supported in this study (Williams et al., 2007), in general a number of measures were not sufficiently robust in investigating the theories. This was evident with problems developing the models for the theories. Limited work has been devoted to developing reliable and robust measures in testing self-control theory, such as a crime scale and behavioural self-control. Furthermore, the determinants of intention for TPB were also problematic. Despite the extensive application of TPB with a wide range of behaviours few have used TPB to investigate deviant behaviours. Question used to measure the construct of PBC and the influence subjective norm may not be appropriate for use with the behaviour of interest, e.g. "How likely is it that you will commit a crime in the near future" with students. Having less than four items per factor is especially problematic as it limits the operationalisation and reliability of the construct in question. Consistent with the literature, belief-based measures provided little in the way of explanation for their respective components with variability in their reliability across the three groups. Measures with greater reliability and variability in investigating deviant behaviours need to be developed if progress is to be made in investigating theories of crime. Despite these difficulties, the limited research in crime across three disparate groups show the theories have considerable merit for further investigation.

In addition to measurement issues, the study was retrospective in nature and did not assess whether intention invariably led to behaviour. While research supports a strong association between intention-behaviour (Ajzen, 1991) it was found that when assessment of intention and implementing the behaviour was

distal, there was a decline in the predictive strength of the relationship. Whilst Gottfredson and Hirschi (1990) oppose longitudinal study, the conditions that hindered or facilitated the relationship between intention and behaviour would be of particular interest if reducing the problem of crime is the purpose of research. Future studies therefore need to investigate whether self-control and/or TPB can predict behaviour as well as intention.

Sample size

In addition to the issue of measurement, SEM is a large sample statistical analysis programme. Whilst it is unclear and contentious the required sample for a study, the sample in this study may have been less than sufficient for the complexity of the models being tested. Inference about the findings and the representativeness of the population may be hampered by the size of the sample in this study. Steps were undertaken to improve the power of this study by only including items in measures that had strong loadings and hence reliability of the measure. Replication of the study with an increased sample size would be strongly recommended for future research.

Despite this, having three groups to test the theories provided cross-validation of the findings. The commonalities as well as differences in findings for the disparate groups provide some reassurance and support for the results of this study. For example, self-control theory failed to predict intention to do crime for the two student groups but was predictive of intention with a prison sample. Additionally, the use of stratified sampling in which sufficient numbers of participants low on self-control with high incidence of antisocial behaviour was supported.

CONCLUSIONS

This study provided support for the integration of self-control theory of crime with TPB. Increased explanatory value in self-control theory was achieved with the inclusion of variables that explicated the decision-making process in

CHAPTER 9

predicting intentions to criminal behaviour. Cross-validation of self-control theory across three disparate groups showed self-control however was not generalisable across all populations. Self-control was applicable only to the prison population but not with student samples.

Advancement in criminological theorising may only be achieved with an interdisciplinary approach especially because of the complexity and ubiquity of crime. This study has shown such an enterprise could be fruitful.

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APPENDIX A-1

Constructing TPB measures: Preliminary Study

CONSTRUCTING TPB MEASURES: PRELIMINARY STUDY

PURPOSE OF PRELIMINARY STUDY

According to Ajzen (2002d) measures for the components of TPB need to be appropriate and specific to the target population of interest. Therefore, it is recommended that in developing the items for the TPB constructs, a preliminary investigation be undertaken with a small pool of subjects from the group of interest. The advantage of developing a measure to which the target group contribute is that the items in the questionnaire would be relevant, realistic, in a language familiar to that population, have content validity, increase the reliability of reporting, and may arouse greater interest in the study. Typically, filling out self-report questionnaires require a high level of cooperation and scholastic ability. Developing a measure in this manner can reduce difficulties inherent in undertaking research with a prison population; a group with a record of low academic achievement, are relatively suspicious of authority figures and researchers, and are more egocentric.

RESEARCH PARTICIPANTS

Twenty participants were sufficient for this preliminary phase (Ajzen, personal communication, 15 February 2002). Similar numbers of participants were used in Armitage, Conner, Loach, and Willetts' (1999) study .

University students

Participants were an independent sample (i.e. did not participate in the main study) of 20 undergraduate students studying third-level papers in the School of Psychology, Palmerston North. They were chosen as they would be similar in demographics as the university student group in the main study. No

demographic information for this group was obtained as it was entirely anonymous and voluntary.

Prison inmates

An independent sample of twenty-seven inmates from Manawatu Prison participated in the preliminary stage of this study. Security rating in the prison ranged from minimum to high medium. Prison inmates were serving sentences ranging from 6 months to 14 years.

PROCEDURE

University students

Consent was obtained from paper co-ordinators for third-level psychology papers to recruit participants from their classes. The two courses were third-level community psychology and clinical psychology papers. Students in these classes were advised of the study and an Information Sheet (Appendix A-3) given to those interested. Participation was taken as tacit consent as no personal details were obtained. Students completed the questionnaire (Appendix A-2) either on their own or in a semi-structured interview. Most were completed within 15-20 minutes.

Prison inmates

Although similar procedures as that for the students were undertaken with the prison inmates, the purpose of this phase of the study differed for the prison group. The preliminary and main phases of the study had been carried out with the university students before being conducted in the prison. It was important, therefore, that the TPB measures developed for the university students could be replicated with the prison group. This would enable comparability of the measures to be carried out between prison and university students and that the items were relevant and had face validity for prisoners.

Permission was obtained from the Prison Manager at Manawatu Prison and a unit identified in which participants could be approached for the study. Inmates in this unit were in a non-working unit and so were available. The study was explained to the prisoners and they were given an Information Sheet (Appendix A-4). Those who volunteered for the study were seen either as a group or individually. Those in groups completed the questionnaire (see Appendix A-2) either on their own or with some assistance. Individuals seen on their own were administered the same questionnaire in a semi-structured interview. Most questionnaires were completed within half an hour.

DEVELOPMENT OF TPB MEASURES

All data analyses were performed using Statistical Package for Social Sciences (SPSS) for Windows 13.0 (SPSS, 2004).

Attitude scale

Descriptive

The most commonly employed method of obtaining participants' attitude toward the behaviour is using semantic differential (Ajzen, 2002d). The initial set of twenty bipolar evaluative dimensions were selected from a list of semantic differentials published in Osgood, Suci, and Tannenbaum (1957). Ajzen recommended adjective pairs should reflect both an instrumental component (e.g. valuable-worthless) and an experiential component (e.g. pleasant-unpleasant). In addition to evaluative pairs of both types, Ajzen recommended inclusion of "good-bad" adjective pair as it encapsulated overall evaluation.

Cronbach's alpha coefficient for the 20 adjective-pairs was 0.91 and 0.92 respectively for the university students and for the prison inmates. Means, standard deviations, and item-total correlations for the 20 items are presented in Table A.1.

APPENDIX A-1

Table A.1. *Descriptives and reliability analysis for the 20 adjective-pairs*

Adjective-pairs	University students (N=20)			Prison inmates (N=27)		
	Mean	SD	Item-total correlation	Mean	SD	Item-total correlation
1 Pleasant/unpleasant*	2.05	1.96	.82	5.48	1.63	.63
2 Harmful/beneficial	1.80	1.15	.75	3.67	2.30	.49
3 Good/bad*	2.05	1.73	.88	5.44	1.78	.79
4 Worthless/valuable	1.90	1.12	.74	3.52	2.16	.75
5 Desirable/undesirable*	2.10	2.02	.83	5.11	2.12	.68
6 Enjoyable/unenjoyable*	2.35	1.95	.83	4.30	2.04	.78
7 Strong/weak*	3.10	1.74	.46	4.41	1.80	.74
8 Awful/nice	1.60	.82	.70	2.37	1.60	.76
9 Happy/sad*	2.55	1.67	.92	4.56	1.95	.77
10 Tense/relaxed	1.90	1.02	.56	2.93	2.17	.62
11 Unsuccessful/successful	3.32	1.38	.27	3.81	2.22	.80
12 Interesting/boring*	3.15	1.27	.61	4.22	2.03	.44
13 Calming/exciting	3.30	.98	.13	4.93	1.75	.33
14 Safe/dangerous*	2.25	1.92	.88	6.44	1.19	.27
15 Sick/healthy	2.10	1.07	.74	3.33	1.78	.73
16 Active/passive*	4.74	1.37	.03	3.26	2.01	.07
17 Hot/cold*	3.45	1.73	.33	2.96	1.70	.21
18 Positive/negative*	2.30	1.87	.88	5.22	1.91	.67
19 Meaningful/unmeaningful*	3.75	2.00	.01	4.48	2.24	.53
20 Social/unsociable*	1.90	1.17	.32	4.78	2.03	.65

NB: Items marked with an asterisk were reverse-coded

Figures highlighted in bold are adjective-pairs used in the attitude measure for the main study.

Thirteen adjective-pairs were reverse-coded so that high scores reflected positive attitudes about the behaviour. As can be seen, prison inmates' mean scores showed they had consistently more positive attitudes about crime than university students. Adjective-pairs were chosen if they showed high internal consistency, were plausible and of heuristic interest to the target group (Ajzen, 2002d). They should also include both instrumental and experiential types. As can be seen in Table A.1 the six adjective-pairs with high inter-item correlation for the students were not necessarily the same for the prison group. Despite this, it was deemed that the six items had sufficient face validity to be replicated in the prison study.

Bivariate analysis

Correlations between the six adjective-pairs for the university students and prison inmates are displayed in Table A.2. All correlations were significant at $p=0.01$, with the magnitude of the relationships moderate to strong for prison samples and low to moderate for university students.

Table A.2. *Correlations of adjective-pairs for student (N=20) and prison subsamples (N=27)*

Adjective-pairs	1	2	3	4	5	6
1. harmful/beneficial	1	.50**	.36**	.39**	.44**	.35**
2. good/bad	.39**	1	.57**	.45**	.42**	.45**
3. desirable/undesirable	.23*	.52**	1	.50**	.64**	.31**
4. enjoyable/unenjoyable	.32**	.69**	.71**	1	.44**	.47**
5. happy/sad	.23*	.66**	.72**	.83**	1	.36**
6. safe/dangerous	.26**	.75**	.42**	.67**	.63**	1

Note: Upper diagonal university students, lower diagonal prison inmates

**Significant at $p=.01$ (2-tailed)

Belief-based measures

Eliciting salient or readily accessible beliefs for attitude, subjective norm, and perceived behavioural control were achieved by the use of standardised prompts as set out by Ajzen (2002d). The responses are used to identify participant's idiosyncratic beliefs and to construct a list of modal or most commonly held beliefs in the research population. Modal responses and/or those of heuristic value were then selected for the construction of belief-based questionnaire used in the main study. The three beliefs were behavioural belief which underlie attitude, normative belief that underlie subjective norm, and control belief that are indirect indicators for perceived behavioural control.

Behavioural belief

The three questions used to elicit behavioural beliefs were (refer Appendix 2):

- “What do you believe are the advantages of committing a crime?”
- “What do you believe are the disadvantages of committing a crime?”
- “Is there anything else you associate with committing a crime?”

Twelve beliefs about advantages and eleven disadvantages of committing crime were generated by university students. Eleven advantages and ten disadvantages were identified by prison inmates. The list of beliefs for both groups is listed in Table A.3.

The modal or the most frequent responses are typically used, reflecting idiosyncratic beliefs of the research population. Although this procedure was carried out with university students first, beliefs were included if they were considered to be salient for prison inmates also even if it was not the modal response for students. An example of this was “Getting a high” which was not a compelling outcome for crime for university students. However, the researcher’s experience with the prison population considered this particular belief was salient for prisoners and included in the questionnaire for the main study. This was subsequently borne out with the prison group as they cited this as a compelling advantage for doing crime. Although disparities were shown in commonly held beliefs about crime between the two groups, sufficient commonalities were identified providing some support for the use of this measure with prison inmates.

One particular disparity between the groups was “money” which was a strong motivation for crime for prison inmates but not considered by university students. Because of this, the item did not get included in the measure for the main study. Ajzen and Fishbein (1980) recommend at least between five and nine salient beliefs be used. For this study ten behavioural belief items were included in the main study for behavioural belief measure.

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Table A.3. *Behavioural beliefs for students (N=20) and prisoners (N=27)*

Behavioural beliefs	No. of responses	
	University students	Prison inmates
<i>Advantages</i>		
Gotten away with it – success	5	4
Get a “high”	3	10
Not have to pay money for things	4	5
Control/power over others	6	3
Revenge	2	2
Doing something when bored/not have a job	6	2
Respect from peers	8	7
Risk-taking	1	1
Release of tension/frustration/anger	6	4
Get attention	2	1
Get something you need (financial) for little effort	15	0
Beating the system	1	0
Money	0	20
<i>Disadvantages</i>		
Alienation from family/friends/society	5	15
Family suffers	2	10
Feelings of guilt	5	3
Feeling for the victim of hurt/harm from crime	7	6
Go to jail/have a conviction	14	25
Low self-esteem/depressed	3	6
Get caught in crime cycle	2	1
Known as a criminal/antisocial	4	6
Social stigma	5	8
No long term acquisition of skills for job, education, parenting, etc	5	0
Socially insecure	1	0
Get injured/hurt	0	4

N.B. Behavioural beliefs used in main study for behavioural belief measure are highlighted in bold

Bivariate analysis

Correlations between the behavioural belief items are shown in Table A.4. For both groups the magnitude of the relationships was small to moderate, although statistically significant. “Feeling for the victim” and “finding it hard to get a job” was negatively correlated with positive attributes of crime, such as “releasing frustration”, “getting what one wants”, and “gaining respect from crime”.

APPENDIX A-1

Table A.4. *Correlations for behavioural beliefs for student (N=20) and prisoners (N=27)*

Behavioural beliefs	1	2	3	4	5
1. Stop getting bored	1	.43**	.47**	-.03	.44**
2. Gain respect	.43**	1	.25**	-.09	.39**
3. Get things I want	.47**	.25**	1	.11	.38**
4. Do risky thing	-.03	-.09	.11	1	-.01
5. Release frustration	.44**	.39**	.38**	-.01	1
6. Get a "high"	.46**	.31**	.44**	.09	.54**
7. Little effort	.34**	.27*	.57**	.08	.41**
8. Criminal record	-.01	-.24**	.07	.36**	-.04
9. Feel for the victim	-.17	-.33**	-.12	.05	-.22*
10. Hard to get a job	-.18**	-.24**	-.09	.23**	-.10
	6	7	8	9	10
1. Stop getting bored	.45**	.34**	-.01	-.17**	-.18**
2. Gain respect	.31**	.27**	-.24**	-.33**	-.24**
3. Get things I want	.44**	.57**	.07	-.12	-.09
4. Do risky thing	.09	.08	.36**	.05	.23**
5. Release frustration	.54**	.41**	-.04	-.22**	-.10
6. Get a "high"	1	.53**	.04	-.14*	-.05
7. Little effort	.53**	1	.08	-.17**	-.07
8. Criminal record	.04	.08	1	.19**	.32**
9. Feel for the victim	-.14*	-.17**	.19**	1	.38**
10. Hard to get a job	-.05	-.07	.32**	.38**	1

Note: Upper diagonal university students, lower diagonal prison inmates

*Significant at $p=.05$ (2-tailed)

**Significant at $p=.01$ (2-tailed)

Normative belief

Following similar procedures for behavioural belief, participants were given standard prompts about significant persons who would approve or not approve of their engaging in the behaviour of interest. These questions were (refer Appendix A-2):

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- “Are there individuals or groups who would *approve* of you committing a crime?”
- Are there individuals or groups who would *disapprove* of you committing a crime?
- Are there any other individuals or groups who come to mind when you think about committing a crime?

Normative referents identified by student and prison groups are shown in Table A.5. The items selected for the main study were chosen for their relevance and for encapsulating the most significant influences to the individual. The four normative referents were constructed into the normative belief measure used in the main study. These were: friends who had done crime, partner, parents, and other family members.

Table A.5. *Normative belief for students (N=20) and prisoners (N=27)*

Normative referents	No. of responses	
	University students	Prison inmates
<i>Those who approve</i>		
Gangs/cults	9	12
Other criminals	8	9
Bad friends/family	5	9
Receivers of stolen goods	1	6
Extremist groups	2	0
White-collar criminals	2	0
People who think others have more than them	1	0
For moral reasons, e.g. Mark Middleton	1	0
Self	0	4
<i>Those who disapprove</i>		
Family, including parents, children, grandchildren, grandparents, aunts, uncles, partner, ancestors	19	26
Victim/victim's family	6	5
Police	11	16
Friends/colleagues	11	6
Church	7	3
Community watch/society	1	8
Courts/judges	3	3
Employer	2	1
Doctors/medical people who care for the victims	1	0
Insurance companies	1	0

N.B. Items used in the normative belief measure for the main study are highlighted in bold

APPENDIX A-1

Bivariate analysis

Correlations between the four normative referents are shown in Table A.6. As shown a number of correlations are statistically significant although the magnitude of the association was small to moderate level.

Table A.6. *Correlations for normative referents for student (N=20) and prison (N=27) groups*

Normative referents	1	2	3	4
1. Friends who do crime	1	.20**	.19**	.11
2. Partner	.40**	1	.06	.19**
3. Parents	.05	.20*	1	.64**
4. Other family members	.22*	.38**	.51**	1

Note: Upper diagonal university students, lower diagonal prison inmates

*Significant at $p=.05$ (2-tailed)

**Significant at $p=.01$ (2-tailed)

Control belief

Standard prompts to elicit accessible beliefs that would impede or facilitate performance of the behaviour were (refer Appendix A-2):

- "What factors or circumstances would enable you to commit a crime?"
- "What factors or circumstances would make it difficult or impossible for you to commit a crime?"
- "Are there other issues that come to mind when you think about committing a crime?"

The responses from student and prison groups are shown in Table A.7. Eight modal responses were generated from the questionnaire and used in the main study for control belief measure.

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Table A.7. Control beliefs for students (N=20) and prisoners (N=27)

Control beliefs	No. of responses	
	University students	Prison inmates
<i>Factors that make it easy</i>		
Socio-economic status	2	0
Not having a job	1	1
Desperation, such as having no money, food	11	27
Easy opportunity, eg open safe, doors unlocked	6	5
Self-defence, provocation	6	3
Lack of a guilty conscience	1	0
Revenge	6	1
Anger	2	2
Not caring about others	2	0
Feeling stressed, way to deal with problem	2	1
Stealing back own property	1	0
Someone gave cheap drugs	1	0
Chances getting caught is low	3	2
Slack police force, low priority	2	0
Encouragement from others criminally minded	3	3
Need for power/control	1	1
To be accepted and fit into group	1	2
Family that condoned/encouraged it	1	0
Have no skills for job but good criminal skills	0	4
Using alcohol and drugs/drug habit	0	5
<i>Factors that make it difficult/impossible</i>		
Guilty conscience	9	2
Value/ethics/religious beliefs – own and family	12	13
Empathy for victim, not want to hurt others	6	2
Self-respect	4	1
Effective police force/laws/security	9	8
Lack of opportunity – e.g. dog in the house	3	4
Lack of motivation – don't need drugs, money	2	2
Disappointment in not being able to control urge/disappointment from family	1	2
Don't need anything	1	0
Family suffers	2	0
Fear of getting caught/imprisonment	6	7
Shame	1	1
If have a job	0	1
Lack of experience	0	1
Having goals	0	3
Unreliable co-offenders	0	1
Good support from family/relationships	0	1

N.B. Items used for control belief measure in main study are highlighted in bold

APPENDIX A-1

Bivariate analysis

Correlations between the control beliefs are presented in Table A.8. A number of correlations were statistically significant but the magnitude of the relationships was small.

Table A.8. *Correlations for control beliefs for student and prison groups*

Control beliefs	1	2	3	4	5	6	7	8
1. No chance getting caught	1	.03	.11	.09	.01	.18**	.17**	-.11
2. Desperate situation	.02	1	.15*	.10	.27**	.07	.30**	.08
3. Lots of opportunities	.13	.22*	1	.11	.23**	.06	.23**	.11
4. People encourage me	.22*	.30**	.24*	1	.20**	.13*	.20**	-.05
5. Provoked	.39*	.29**	.21*	.31**	1	.13*	.17**	-.00
6. Power and control	.19	.29**	.18	.35**	.38**	1	.13*	-.09
7. Problems and stress	.29**	.43**	.31**	.41**	.25*	.38**	1	.22**
8. Feel guilty	-.11	-.04	.19	-.24*	.05	-.20*	-.05	1

Note: Upper diagonal university students, lower diagonal prison inmates

*Significant at $p=.05$ (2-tailed)

**Significant at $p=.01$ (2-tailed)

APPENDIX A-2

Preliminary Study Pilot Questionnaire

PILOT

QUESTIONNAIRE

Theory of Planned Behaviour

The following questions ask you about your attitudes and beliefs towards crime (such as burglary, theft, minor assault) in general.

Please rate these adjectives according to how you feel about crime (eg burglary, theft, minor assault) generally:

**Crime (such as burglary, theft, minor assault)
is....**

Pleasant 1...2...3...4...5...6...7 Unpleasant

Harmful 1...2...3...4...5...6...7 Beneficial

Good 1...2...3...4...5...6...7 Bad

Worthless 1...2...3...4...5...6...7 Valuable

Desirable 1...2...3...4...5...6...7 Undesirable

Enjoyable 1...2...3...4...5...6...7 Unenjoyable

Strong 1...2...3...4...5...6...7 Weak

Awful 1...2...3...4...5...6...7 Nice

Happy 1...2...3...4...5...6...7 Sad

Tense 1...2...3...4...5...6...7 Relaxed

Unsuccessful 1...2...3...4...5...6...7 Successful

Interesting 1...2...3...4...5...6...7 Boring

Calming 1...2...3...4...5...6...7 Exciting

Safe 1...2...3...4...5...6...7 Dangerous

Sick 1...2...3...4...5...6...7 Healthy

Active 1...2...3...4...5...6...7 Passive

Hot 1...2...3...4...5...6...7 Cold

Positive 1...2...3...4...5...6...7 Negative

Meaningful 1...2...3...4...5...6...7 Unmeaningful

Sociable 1...2...3...4...5...6...7 Unsociable

Please take a few minutes to list your thoughts on the following questions:

1. What do you believe are the **advantages** of committing a crime?

2. What do you believe are the **disadvantages** of committing a crime?

3. Is there anything else you associate with committing crime?

4. Are there individuals or groups who would **approve** of you committing a crime?

5. Are there individuals or groups who would **disapprove** of you committing a crime?

6. Are there any other individuals or groups who come to mind when you think about committing a crime?

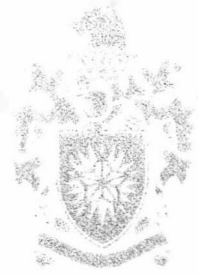
7. What factors or circumstances would **enable** you to commit a crime?

8. What factors or circumstances make it **difficult or impossible** for you to commit a crime?

9. Are there other issues that come to mind when you think about committing a crime?

APPENDIX A-3

**Preliminary Study Information Sheet:
University Students**



INFORMATION SHEET

Testing and extending a general theory of crime

This study is being carried out by Mei Wah Williams as her PhD research project, and is supervised by Associate Professor, Kevin Ronan, School of Psychology, Massey University. The purpose of this study is to investigate the causes of crime, and we are interested in looking at some of the attributes and attitudes people have towards crime. In this part of the study we would like you to complete a pilot questionnaire, which asks your attitudes and beliefs about certain behaviours. Your responses will be collated to develop items for the final questionnaire and this will be used in a preliminary study with an different group of university students. It is anticipated that after this initial study, other population groups including inmates of correction units will be asked to participate also.

We invite you to take part in the pilot study and your participation is entirely voluntary. As a university student, this study is independent of any papers in which you are enrolled and no course coordinators will be privy to your responses. Should you decide not to participate or choose to withdraw from the study, you will not be disadvantaged in any way. If you agree to participate you will be asked to complete a questionnaire, which should take about 30 minutes.

If you agree to take part in the study, you have the right to:

- Discuss any aspects of the study before agreeing to take part in the study
- Ask any questions about the study at any time during your participation
- Refuse to answer any particular question(s)
- Withdraw from participating in the study at any time
- Provide information on the understanding that it is confidential to the researcher.

By completing this questionnaire I have consented to participate in this study under the conditions set out in the Information Sheet.

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 01/98. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Regional Human Ethics Committee: Palmerston North, telephone 06 350 5249, or email: S.V.Rumball@massey.ac.nz

Should you wish to clarify any further aspects of this study, please contact Mei Wah Williams, School of Psychology, Massey University, PO Box 11-222; telephone (06) 350 5196, or email: M.W.Williams@massey.ac.nz or Dr Kevin Ronan, Associate Professor, School of Psychology, Massey University, PO Box 11-222; telephone (06) 350 5799 ext: 2069, or email: K.R.Ronan@massey.ac.nz

APPENDIX A-4

**Preliminary Study Information Sheet:
Prison Inmates**

INFORMATION SHEET & CONSENT FORM FOR PILOT STUDY

Testing and extending a general theory of crime

This study is being carried out by Mei Wah Williams as her PhD research project, and is supervised by Associate Professor, Kevin Ronan, School of Psychology, Massey University. The purpose of this study is to investigate the causes of crime, and we are interested in looking at some of the attributes and attitudes people have towards crime. In this part of the study we would like you to complete a pilot questionnaire, which asks your attitudes and beliefs about certain behaviours. Your responses will be collated to develop items for the final questionnaire and this will be used in a study with a different group of prison inmates. Other population groups, including university students, have participated in a similar study.

We invite you to take part in the pilot study and your participation is entirely voluntary. Information you provide for the questionnaire will not be divulged to a third party, including prison authorities, and will have no impact on your imprisonment or subsequent release conditions. Should you decide not to participate or choose to withdraw from the study, you will not be disadvantaged in any way. If you agree to participate you will be asked to complete a questionnaire, which should take about 20-30 minutes.

If you agree to take part in the study, you have the right to:

- Discuss any aspects of the study before agreeing to take part in the study
- Ask any questions about the study at any time during your participation
- Refuse to answer any particular question(s)
- Withdraw from participating in the study at any time
- Provide information on the understanding that it is confidential to the researcher.

By completing this questionnaire you have consented to participate in this study under the conditions set out in the Information Sheet.

Should you wish to clarify any further aspects of this study, please contact Mei Wah Williams, School of Psychology, Massey University, PO Box 102 904, North Shore MSC, Auckland; telephone (09) 443 9799, or email: M.W.Williams@massey.ac.nz or Dr Kevin Ronan, Associate Professor, School of Psychology, Massey University, PO Box 11-222; telephone (06) 350 5799, or email: K.R.Ronan@massey.ac.nz

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 02/147. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Campus Human Ethics Committee: Palmerston North, telephone 06 350 5249, or email: S.V.Rumball@massey.ac.nz

APPENDIX B-1

Williams, M.W.M., Fletcher, R.B., & Ronan, K.R. (2007)
Investigating the theoretical construct and invariance of
the self-control scale using confirmatory factor analysis.
Journal of Criminal Justice, 35, 205-218.



Investigating the theoretical construct and invariance of the self-control scale using confirmatory factor analysis

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Abstract

Low self-control is at the heart of Gottfredson and Hirschi's (1990) general theory of crime and had been extensively investigated with the Grasmick, Tittle, Bursik, and Arneklev (1993) self-control scale. An advanced analytical tool, confirmatory techniques, had been recently applied to elucidate the underlying theoretical structure of the self-control construct. Most of these studies were limited, as they did not compare competing factorial measurement models. Furthermore, measures such as the Grasmick et al. scale had been used widely with diverse population groups and it was essential that the invariance of the measure be examined. The few studies that had performed this had addressed the invariance of the scale's factorial structure, but neglected to examine the invariance of the latent means structures. Testing the invariance of the latent means eliminates spurious results that may be artifacts of biased responding. The purpose of the current study was to investigate the structure of self-control by comparing three measurement models using confirmatory factor analysis and to explore the invariance of self-control across multiple groups from New Zealand. Two male groups were used: prison inmates and university students. The overall findings supported the Grasmick et al. scale as usefully represented by both a hierarchical order and a multidimensional structure. The measure was found to be generalizable across disparate groups, although differences in latent means were found between the two groups on the self-control dimensions.

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Introduction

Gottfredson and Hirschi's (1990) *A General Theory of Crime* has undeniably aroused the attention of mainstream criminology, to such an extent that in the five years after its publication the authors have been one of the most cited in criminology and criminal justice journals (Cohn & Farrington, 1999). According to Gottfredson and Hirschi (1990; Hirschi & Gottfredson, 1993), *all* crime can be explained by two main constructs: self-control and opportunity. The founda-

tions of a person's self-control are laid in early childhood through parenting and other socialization processes. The apparent simplicity and parsimony of *A General Theory of Crime* makes the theory intuitively appealing, generating a plethora of empirical research. Such had been the extant literature that Pratt and Cullen (2000) were able to subject these studies to a meta-analysis; noted by the authors as quite a remarkable achievement in the criminological field. The researchers found self-control to have a mean effect size of .20 in predicting crime, regardless of the characteristics of the research sample such as gender, ethnicity, offenders versus non-offenders, or age. They concluded there was "impressive empirical support for Gottfredson and Hirschi's theory"

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(Pratt & Cullen, 2000, p. 951). The self-control construct ranks unarguably as one of the strongest predictors in the literature of crime compared with other known correlates of criminal behavior (Andrews & Bonta, 2003), yet despite this, it remains the most contentious in the theory.

Conceptualization of self-control

Although not synonymous with criminality, Gottfredson and Hirschi (1990) derived their conceptualization of self-control after considering the nature of crime. From this, they deduced the rewards from crime were generally meager and short-term and required little in the way of effort, planning, or skill. Those involved in crime do so for their own self-interested gratification, and as such, inferences could be drawn about the characteristics of the individual committing such acts. Crime, therefore, would be incompatible with a person's long-term aspirations and goals, appealing to individuals unconcerned about the long-term consequences of their behavior. Individuals lacking in self-control would not resist the transitory pleasures and short-term gain offered by crime or other analogous behaviors. Self-control, therefore, acts as a restraint on the individual to not commit deviant and antisocial acts despite the many opportunities to do so.

The characteristics of those lacking in self-control are: (1) impulsive and an inability to defer gratification of desires, (2) lack of persistence, tenacity, or diligence, and thus prefer tasks that are simple and easy, (3) lacking in cautiousness, engaging in activities that are exciting, thrilling, or risky, (4) placing little value on intellectual aptitude, (5) self-centered, insensitive, and indifferent to the needs of others, and (6) volatile temper. These dimensions tend to coalesce into a unitary characteristic that remains relatively stable throughout the lifespan of the individual. Not only is low self-control a stable trait but its manifestations are many, observable not only in criminal behavior but in events analogous to crime, such as instability in occupational and interpersonal relationships, excessive gambling and alcohol use, motor vehicle accidents, etc. (Gottfredson & Hirschi, 1990; Hirschi & Gottfredson, 1993). Low self-control is not a criminal disposition, but the individual lacking in control will be more susceptible and attracted to the apparent rewards of deviant and criminal acts.

Grasmick, Tittle, Bursik, and Arneklev (1993) self-control scale

The Grasmick et al. scale is comprised of twenty-four items, with four items tapping into each of the six elements of self-control as outlined by Gottfredson and

Hirschi (1990). The six dimensions in the scale are impulsivity, simple tasks ("preference for simple rather than complex tasks"), risk-seeking, physical activities ("preference for physical rather than cerebral activities"), self-centered orientation, and temper ("a volatile temper linked to a low tolerance for frustration") (Grasmick et al., 1993, p. 13). Each item is rated on a four-point Likert-type scale on the following statements: (1) strongly disagree, (2) disagree somewhat, (3) agree somewhat, and (4) strongly agree. Exploratory factor analysis found the measure to contain six factors with eigenvalues over one. Given the large differences in eigenvalues between the first and second factor, however, the authors believed aggregation of the scores would be justifiable to give a composite global trait on the measure. From a theoretical point of view, a unitary factor for self-control would be consistent with that conceptualized by Gottfredson and Hirschi's (1990) and therefore fundamental to the viability of the theory. The reliability and validity of the scale were found to be acceptable and demonstrated its predictive ability for crime and other deviant behaviors.

Similar findings and support for the unitary dimension of the Grasmick et al. (1993) scale were given by a number of other researchers (e.g., Burton, Evans, Cullen, Olivares, & Dunaway, 1999; Gibbs, Giever, & Higgins, 2003; LaGrange & Silverman, 1999; Nagin & Paternoster, 1993; Piquero, MacIntosh, & Hickman, 2000; Romero, Gomez-Fraguela, Luengo, & Sobral, 2003; Wood, Pfefferbaum, & Arneklev, 1993). The extent of the evidence was such that it became accepted practice to aggregate the scores into a composite measure of self-control (e.g., Arneklev, Grasmick, Tittle, & Bursik, 1993; Blackwell & Piquero, 2005; Burton, Cullen, Evans, Alarid, & Dunaway, 1998; Deng, 1994; Longshore, 1998).

The aggregation of the score into a composite single self-control trait, however, was not without misgivings. Longshore, Turner, and Stein (1996) and Wood et al. (1993) argued that a unitary score concealed differential motivation for involvement in deviant acts and would also result in a loss of conceptual clarity for the self-control construct. For example, Arneklev et al. (1993) found, of the six factors, risk-taking to be the most significant, contributing the greatest variance to crime, and performing better than the composite scale itself. Gender differences were found on the scale by LaGrange and Silverman (1999), with risk-taking to be the strongest predictor for delinquency in females and impulsivity for the males. These researchers found impulsivity and risk-taking factors to perform at least equal, if not better, than the overall composite score in

predicting different types of crime. In addition, Wood et al. (1993) found that when simple tasks and physical activities were deleted from the scale, the ability of the remaining factors to predict imprudent behaviors improved.

The ambiguity around the theoretical structure of self-control, however, cannot be satisfactorily resolved through these exploratory procedures. Confirmatory factor analysis (CFA) is an advanced analytical tool that is capable of elucidating the factorial validity of the Grasmick et al. (1993) measurement instrument by comparing sequentially various models using goodness-of-fit indices. Unlike exploratory techniques, which are principally descriptive, CFA is able to confirm the reliability of the measure and provide a clearer conceptualization of the self-control construct. Although confirmatory procedures were emergent in the criminological arena, they had been widely employed in various behavioral science fields.

Confirmatory factor analysis

Confirmatory factor analysis (CFA) is appropriately performed when the hypothesized number of underlying factors and the inter-factor relationships can be specified a priori, either from knowledge of the empirical literature or from theoretical hypothesizing (Anderson & Gerbing, 1988; Hair, Anderson, Tatham, & Black, 1998). A small number of studies had employed CFA to examine Gottfredson and Hirschi's (1990) claim that the underlying structure of self-control is a unidimensional construct consisting of six dimensions (e.g., Arneklev, Grasmick, & Bursik, 1999; DeLisi, Hochstetler, & Murphy, 2003; Longshore et al., 1996; Marcus, 2004; Piquero et al., 2000; Piquero & Rosay, 1998; Vazsonyi, Pickering, Junger, & Helsing, 2001). For example, Longshore et al. (1996) performed one of the early CFAs on the Grasmick et al. (1993) scale and found that contrary to the exploratory factor analyses, the multidimensional factor structure was more tenable than a unidimensional model. Piquero and Rosay (1998) reanalyzed the data and countered Longshore et al.'s (1996) claim of the multidimensionality of self-control, this was further strengthened by Arneklev et al. (1999) and Piquero et al. (2000) studies. Closer inspection of these researches showed that rather than the conventional unidimensional model used by Longshore et al., in which all twenty-four items loaded onto a single self-control factor, the researchers had in fact treated the six factors as separate indicators of self-control, a procedure analogous to a second-order factorial structure.

DeLisi et al. (2003) and Marcus (2003), in contrast, firmly rejected the hierarchical model basing their conclusion on less than optimal goodness-of-fit indices. Notwithstanding the differences in what constituted a good fitting model, the CFA studies were limited in scope. Most evaluated only a single model, which as pointed out by Hair et al. (1998) did not necessarily "prove" the model but only confirmed that it was but one of several possible alternatives. For model testing to be rigorous, competing factorial models need to be compared, with the most parsimonious model being preferred over complex ones. DeLisi et al. (2003) was the only study that compared all three factorial structures and they believed the single dimensional scale to be unacceptable, producing the worst solution of all the models. Their preference was for the six factor model as being the best performing amongst the three on the goodness-of-fit indices.

Current study

The purpose of this study was twofold. First, despite a considerable number of studies that had investigated the factorial properties of the Grasmick et al. (1993) scale, most were exploratory in nature and only a few had used confirmatory procedures to examine the theoretical construct of the latent trait, self-control. As the Grasmick et al. scale is a well-established and theoretically driven instrument, it is timely that confirmatory analysis be performed to determine the reliability and robustness of the measurement scale. Rigorous diligence with confirmatory procedures requires the instrument to be systematically compared with alternative factorial models. In this study, three models were constructed for examination: a conventional unidimensional model, a second-order general factor structure, and a six-factor multidimensional model. The determination of acceptable models was based on various goodness-of-fit criteria, which are discussed below.

The measurement models were cross-validated with research participants from New Zealand. Although considerable evidence had accumulated attesting to the robustness of the scale across diverse population samples, research participants had mainly been from North America, with a small number of studies emerging from European countries (Marcus, 2003; Vazsonyi et al., 2001) and Russia (Tittle & Botchkovar, 2005). If, as Gottfredson and Hirschi (1990) claim, their theory of crime is generalizable across time and place, then it would be appropriate that the Grasmick et al. (1993) scale be used with people from a culture that had

not been investigated to date. New Zealand has a diverse ethnic population that includes Māori (who are the indigenous people of New Zealand), Pākehā (an indigenous term for those of European descent), Polynesians, and Asians.

Second, to investigate the appropriateness of the Grasmick et al. (1993) self-control scale with two disparate groups. In the main, community or student samples had been largely targeted for investigation (see Pratt & Cullen, 2000) even though Hirschi and Gottfredson (1993) recommended the ideal population group for testing the theory of crime would be a disproportionate stratified sample that included sufficient number of individuals with low self-control. Two studies had used an offender group: drug offenders undergoing treatment (Longshore, Stein, & Turner, 1998; Longshore et al., 1996) and parolees (DeLisi et al., 2003), but none had compared both an offender and a non-offender group in the same study. University students would typify individuals having high levels of self-control, being engaged in activities such as academic study, working, and having a stable living environment. By the very nature of their offending, the prison population on the other hand, would contain considerable numbers of individuals having low self-control. In this study, the sample populations were male incarcerated prisoners and male university students in New Zealand.

When multiple groups are used, the central concern is whether the measurement scale operates equivalently across different populations group, such as age, gender, and culture. This study investigated whether the self-control measure was invariant across prison and non-prison groups. Confirmatory factor analysis is ideally suited to investigating the invariance of a measure in a series of nested models. Testing for the reliability of the measurement scale across diverse groups is typically the purpose of invariance analyses. Cheung and Rensvold (2000) recently highlighted problems associated with nonequivalence findings, in that rather than the source of non-invariance being directed towards the inadequacy of the measure, the cause may in fact be an artifact of a group or an individual's particular response style.

Administering a measurement instrument to disparate groups without taking into consideration particular characteristics of a group's response style can be problematic. Cheung and Rensvold (2000) revealed biased response styles could be manifested in two specific manners: extreme response style (ERS) and acquiescent response style (ARS). ERS is demonstrated by the tendency to use extreme scores on a rating scale and ARS are instances when one group typically gives

higher or lower scores compared to another group. ARS may be influenced by the group or an individual's idiosyncratic behavior, such as social desirability or extreme acquiescence or disagreement, affecting responses on the measure. Not only may these response styles lead to non-invariance on a measure, but if differences are found in one group's mean scores relative to the other, the source of this difference will be difficult to determine. Without explicit examination for biased response styles, it will be difficult to ascertain whether the resulting solution reflects real differences existing between the groups or are idiosyncratic response characteristics of a particular group. The possibility of spurious findings may lead to erroneous assumptions being made about particular groups.

Tests of invariance had been carried out by Piquero and Rosay (1998) who looked at gender and Arneklev et al. (1999) who compared two non-offender community samples in evaluating the equivalence of the factorial structure of the self-control scale across these multiple groups. Reliability of the factorial structure of the instrument across the two groups was found, but the researchers did not test for equivalence in latent mean structures and therefore could not rule out the related problems of ERS and ARS. Tests of equivalency in the latent means structures and the covariance structures were performed in this study to address these issues. As Marcus (2004, p. 46) had commented, a measure that "could be able to be used with every kind of population in every culture of the world" would be requisite if one was to generalize the theory of crime.

In summary, three measurement models of the factorial structure of the Grasmick et al. (1993) instrument would be compared to determine the underlying construct of self-control, and the invariance of the Grasmick et al. (1993) self-control measure examined for its reliability with two disparate male groups: prisoners and university students from New Zealand. The self-control scale had been administered cross-culturally and with various groups (see for example Marcus, 2003; Tittle & Botchkovar, 2005; Vazsonyi et al., 2001), and therefore it behooved the researchers to validate the scale as being appropriate for these different populations groups.

Method

Subjects and procedures

Ethical approval for the study was obtained from Massey University Human Ethics Committee and the prison authorities to approach potential subjects from

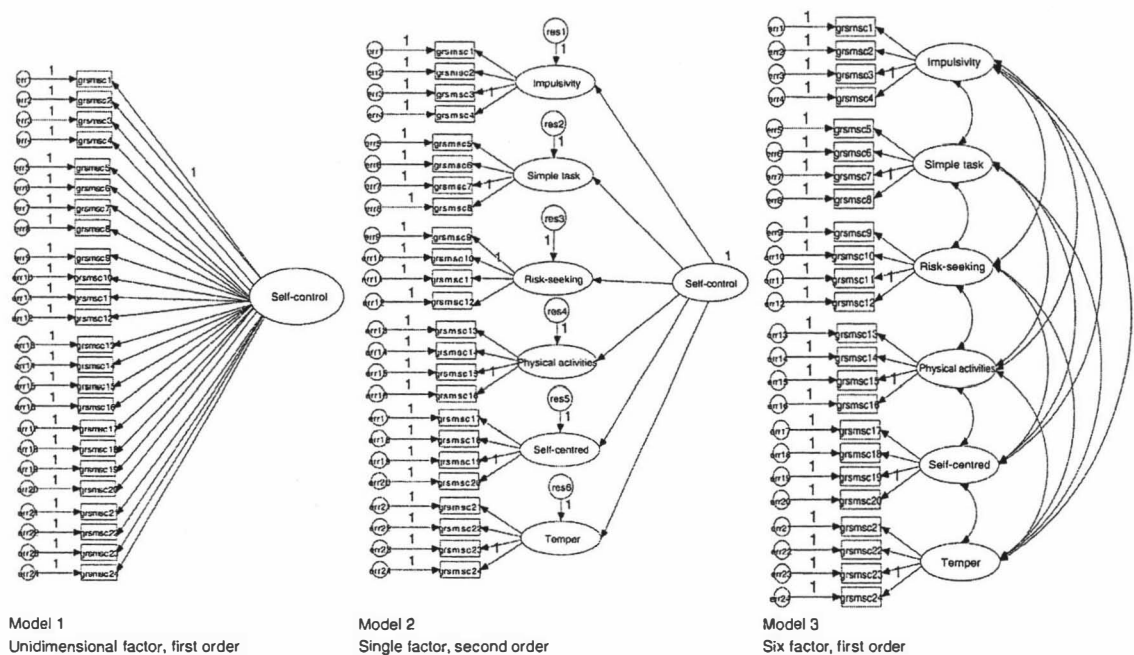


Fig. 1. Three hypothesized confirmatory factor measurement models for the twenty-four-item Grasmick et al. (1993) self-control scale.

their prisons. Data for the prison sample were collected from three prisons as part of a larger study: one in Palmerston North and two in Auckland. These prisons had minimum to medium security units. Prisoners were selected if they had served one year or less of their sentence. Of the 252 inmates approached, 116 (46 percent) voluntarily agreed to participate in the research. The response rate, while low, was consistent with previous studies with the offender population (e.g., Deane, Skogstad, & Williams, 1999; DeLisi et al., 2003; Williams, Skogstad, & Deane, 2001). Of these, data from eleven were unable to be used because their data were either incomplete or they withdrew part way through the study, making a total of 105 offenders used in the final data analysis. The mean age for the prison group was 36.31, with the range being from eighteen to seventy-eight years. The mean sentence length was 41.44 months, ranging from 3 to 148 months, with 56 percent of offenders having a prison sentence of less than two years. Forty-five percent identified as Māori and 44 percent as Pākehā/New Zealander. The remainder were of Pacific Island, Asian, or other ethnic groups. Most were charged for violence (including sexual violence) (61 percent), followed by property damage (21.6 percent), and drug-related offences (7.8 percent). According to the New Zealand Prison Census (Pullon, 2003), the inmates in this study were older, with more identifying as Pākehā/New Zealander, and serving lower prison terms compared to the inmates in the general prison population. The representativeness of the sample, however, was not necessarily problematic as according to Gottfredson and Hirschi's (1990) general theory, varying magnitudes of self-control are expected within any population sample.

Data for the male students were collected from 121 undergraduate students attending on-campus courses at the two Massey University campuses: Auckland and Palmerston North. Although the response rate for student participants was unable to be calculated due to the various methods used in data collection, the sample was similar on demographic characteristics to the general student population at the two campuses. Students were given reimbursement of \$10 for their participation. The average age of the students was 23.2 years, with the range from seventeen to forty-seven years of age. Most students identified themselves as Pākehā/New Zealander (59 percent), with Asians making up the next largest ethnic group (31 percent). Only 7.5 percent identified as Māori, and the remaining were from Pacific Island or other ethnic groups.

Recommended sample size for empirical analysis is frequently varied and inconsistent even though evidence

exists that smaller than suggested sample size are adequate when a number of factors are considered (MacCallum, Widaman, Zhang, & Hong, 1999). Using MacCallum, Browne, and Sugawara's (1996) framework for determining sample size in factor models, the sample size in this study was deemed to be adequate for a close fitting model. This was based on a power level of .80, an alpha level of .05, an effect size represented by the test of close fit, and degrees of freedom ranging between 155 and 252 for the measurement models, the minimum sample sizes of 74 to 101 were calculated.

Measure

The Grasmick et al. (1993) scale was used as the measure for self-control. All twenty-four items in the scale were used, with four items associated with each factor of self-control: impulsivity, simple task, risk-taking, physical activities, self-centered, and temper. These factors are frequently summed to form a composite self-control trait, with high scores on the scale indicating low self-control. The original Grasmick et al. (1993) Likert-type scale was retained for this study, where 1 = strongly disagree, 2 = disagree somewhat, 3 = agree somewhat, and 4 = strongly agree.

Data analyses

All univariate and bivariate statistical analyses were carried out with Statistical Package for Social Sciences (SPSS) for Windows 12.0.1 (SPSS Inc., 2003) and the CFA measurement models with the Analysis of Moment Structures (AMOS) 4.0 (Arbuckle & Wothke, 1999) statistical program.

Measurement models

A series of CFA measurement models were constructed with the Grasmick et al. instrument to test the theoretical construct of self-control (see Fig. 1). These included the first-order single factor structure, the second order seven factor structure, and finally the multidimensional six factor model. The three CFA measurement models were performed for the full male sample and then cross-validated across the two groups using invariance methods.

Models for invariance testing

When multiple groups are used, it is the convention for the covariance and latent mean structures to be examined for differences between the groups on the

Table 1
Description and criteria for fit indices

Index	Description and rationale	Recommended criteria for goodness-of-fit
<i>Absolute indexes</i>		
χ^2	Principal measure of absolute test of model fit and is the only “statistical test of the lack of fit resulting from over-identifying restriction placed on the model” in CFA (Hoyle & Panter, 1995; p. 166).	Statistically significant levels > .05 or .01.
Root mean square of approximation (RMSEA)	Corrects for the tendency of the χ^2 to reject models with large sample data. Takes into account estimation of approximation in the population, not just sample data (Byrne, 2001). Empirical support for its suitability in confirmatory or competing models strategy (Hair et al., 1998).	Values < .05 good. Values .05 to .08 acceptable. Values .08 to .10 mediocre. Values > .10 poor.
Goodness-of-fit index (GFI)	Analogous to R^2 statistics, gives overall degree of fit. Compares the hypothesized model with no model at all but is not adjusted for the degrees of freedom (Hair et al., 1998). Chosen for comparative purposes with other CFA studies that used this index.	Higher values superior, with values > .90 acceptable. No consensus on threshold levels (Hair et al., 1998).
<i>Comparative indexes</i>		
Tucker-Lewis index (TLI)	Also known as the Bentler-Bonett nonnormed index (NNFI) (Bentler & Bonett, 1980; Tucker & Lewis, 1973). Less biased by small sample size, and provides measure of parsimony between estimated and null models (Hair et al., 1998).	Values \geq .90 recommended.
Comparative fit index (CFI)	Developed by Bentler (1990) and similar to the fit index/relative noncentrality index (FI/RNI), but the values are truncated to vary between 0 and 1. This index overcomes the liability of the central χ^2 by replacing it with a non-central χ^2 , and estimates the lack of fit with this model versus a baseline model (Hu & Bentler, 1995). This is the most frequently used, is less biased by small sample size, and recommended as index of choice (Byrne, 2001; Hu & Bentler, 1995).	Values > .90 acceptable, but values closer to .95 strongly recommended by Hu and Bentler (1999).

latent variable (self-control), thus providing a more stringent test of reliability (Byrne, 2001; Cheung & Rensvold, 2000). First, a preliminary baseline model is achieved by analyzing the two groups simultaneously in which no equivalence constraints are placed on the parameters. This unconstrained model serves as the baseline hypothesized model in which increasingly constrained models are compared in a series of nested models.

The sequence of invariance tests was: first, imposition of constraints on the factor loadings, and then second, on the latent mean structures, with each successive model becoming increasingly restrictive (see Table 7). This sequence of tests examines for ERS and ARS response biases on the measure. Should equivalency be found between the two groups on the measure, any statistically significant fluctuations in the mean scores will reflect genuine between-group differences on self-control.

Estimation methods and fit criteria

Full information maximum likelihood (FIML or ML) was used as the scale satisfied the assumptions of normality (Ullman, 2001). The fit indices used in this study are explained in Table 1.

Goodness-of-fit criteria for invariance testing

Cheung and Rensvold (2000) recommend the criteria for estimation of goodness-of-fit indices for invariance tests are differences in TLI (Δ TLI) that is less than 0.5, and nonstatistically significant differences in RMSEA (Δ RMSEA) values. These recommended fit indices were used in this study.

Results

Descriptive and bivariate analyses

Univariate analyses, zero-order correlations, and reliability of the self-control scale for the total sample are shown in Table 2, and separately for prison inmates and university students in Table 3. As shown, the correlations between self-control and the six sub-scales are significant, showing the sub-scales to have moderate to strong correlations with total self-control. Correlations among the sub-scales were small to moderate for the total sample and the prison group, and mostly small to negligible for the university students. The prison group's mean scores were higher than the students' on all the self-control sub-scales and the total score except for risk-seeking.

Table 2
Univariate and bivariate analyses of the Grasmick et al. (1993) self-control scales for the full sample

	Correlations							Mean N=226	SD	Alpha (α)
	1	2	3	4	5	6	7			
1. Self-control	1.00							53.45	11.19	0.87
2. Impulsivity	0.74**	1.00						9.21	2.68	0.67
3. Simple task	0.67**	0.51**	1.00					8.17	2.70	0.73
4. Risk-seeking	0.65**	0.42**	0.24**	1.00				10.14	2.80	0.74
5. Physical activity	0.58**	0.33**	0.23**	0.31**	1.00			10.61	2.95	0.76
6. Self-centered	0.71**	0.38**	0.43**	0.36**	0.22**	1.00		7.36	2.60	0.73
7. Temper	0.66**	0.31**	0.30**	0.28**	0.17*	0.49**	1.00	7.96	3.16	0.79

Note: Possible range of scores for scale: full scale 24 to 96, sub-scales 4 to 16. Higher mean scores indicate lower self-control, scale ratings range from 1 to 4.

* Correlation is significant at the 0.05 level (two-tailed).

** Correlation is significant at the 0.01 level (two-tailed).

The Cronbach alpha coefficient for the full scale was .90 for the prison group, which was comparable to that of DeLisi et al.'s (2003) .91 for parolee sample and stronger than Piquero and Rosay's (1998) .72 for male offenders. The reliability of the full scale for the male students at .78 was not as large, but was comparable to that of other studies: for example Grasmick et al. (1993) .81, Blackwell and Piquero (2005) .81, and Tittle and Botchkovar (2005) .78. The mean for the sub-scales and full scale were similar to that reported by Grasmick et al.'s (1993) student sample, although risk-seeking was slightly higher for the students in this study.

Factorial structure

Model 1: Unidimensional factor, first order CFA

The standardized regression weights (factor loadings) on the self-control scale are displayed in Table 4 for the full sample, prison, and university students. Taking into

account the critical ratio based on $p < .05$ level, all parameter estimates for the full sample and prison group were statistically significant. For the university students, all except two items were statistically significant. These two items were item 9 ("I like to test myself every now and then by doing something a little risky") and 16 ("I seem to have more energy and a greater need for activity than most other people my age").

Chi-square statistics for the unidimensional scale for the combined group data was $\chi^2(252, n=226)=921.245$, $p=.000$, GFI=.710, CFI=.568, TLI=.526, and RMSEA=.109. For the prison group $\chi^2(252, n=105)=612.991$, $p=.000$, GFI=.655, CFI=.613, TLI=.577, and RMSEA=.117, and for the students $\chi^2(252, n=121)=627.812$, $p=.000$, GFI=.688, CFI=.460, TLI=.408, and RMSEA=.101. The CFI and TLI values were both well below 0.9 and RMSEA was greater than .10, and the large χ^2 :df ratio (i.e., 3.66) reinforced the previous studies that found the unidimensional model to be extremely weak.

Table 3
Univariate and bivariate analyses of the Grasmick et al. (1993) self-control scales for prison inmates and university students

	Correlations							Mean		SD		Alpha (α)	
	1	2	3	4	5	6	7	Prison	Students	Prison	Student	Prison	Students
								N=105	N=121				
1. Self-control	1.00	0.67**	0.58**	0.49**	0.55**	0.49**	0.64**	55.44	51.73	13.59	8.27	0.90	0.78
2. Impulsivity	0.76**	1.00	0.46**	0.20*	0.32**	0.12	0.21*	9.53	8.93	3.05	2.30	0.73	0.57
3. Simple task	0.70**	0.52**	1.00	0.03	0.17	0.14	0.23**	8.50	7.90	3.15	2.71	0.80	0.62
4. Risk-seeking	0.76**	0.56**	0.36**	1.00	0.23*	0.09	0.17	10.02	10.25	3.31	2.26	0.77	0.68
5. Physical activity	0.58**	0.32**	0.26**	0.38**	1.00	.003	0.09	11.04	10.23	3.20	2.67	0.74	0.76
6. Self-centered	0.82**	0.53**	0.58**	0.54**	0.34**	1.00	0.40**	7.97	6.83	2.92	2.16	0.73	0.69
7. Temper	0.66**	0.36**	0.32**	0.37**	0.20*	0.53**	1.00	8.38	7.59	3.47	2.82	0.82	0.76

Note: Male students in top diagonal, prisoners in lower diagonal. Possible range of scores for scale: full scale 24 to 96, sub-scales 4 to 16. Higher mean scores indicate lower self-control, scale ratings 1 to 4.

* Correlation is significant at the 0.05 level (two-tailed).

** Correlation is significant at the 0.01 level (two-tailed).

Table 4
Standardized factor loadings for the unidimensional model for full sample and subsamples on self-control scale

Self-control items	Full sample (N=226)	Prison (N=105)	Students (N=121)
1. Spur of the moment	.51	.56	.44
2. Prepare for future	.43	.50	.30
3. Pleasure here and now	.52	.56	.43
4. Short run	.45	.54	.35
5. Avoid projects	.44	.51	.35
6. Quit or withdraw	.47	.53	.33
7. Most pleasure	.49	.64	.27
8. Dislike hard tasks	.51	.56	.48
9. Do something risky	.27	.37	.08*
10. Take risk for the fun	.41	.54	.24
11. Get in trouble	.53	.64	.38
12. Excitement and adventure	.54	.63	.34
13. Choose physical things	.41	.36	.53
14. On the move	.40	.43	.37
15. Get out and do things	.32	.28	.37
16. More energy	.21	.29	.04*
17. Look out for self	.49	.54	.33
18. Not sympathetic	.50	.60	.27
19. Upset people	.49	.54	.30
20. Get things I want	.65	.75	.40
21. Lose temper easily	.43	.43	.42
22. Hurt others rather than talk	.56	.55	.59
23. People better stay away	.48	.48	.47
24. Unable to talk calmly	.54	.58	.51

* Not significant.

Model 2: Second order, single factor CFA

In the second combined group analysis, the second-order factor structure of the Grasmick et al. scale was examined. The standardized parameter estimates for all three groups are shown in Table 5. All parameter estimates were statistically significant at the $p < 0.05$ level.

The fit indices for the total group were X^2 (246, $n=226$)=422.574, $p=.000$, GFI=.865, CFI=.886, TLI=.872, and RMSEA=.056. The factor which explained the greatest proportion of variance on the general self-control factor was impulsivity, with physical activities factor contributing the least. The fit indices for the prison were X^2 (246, $n=105$)=389.752, $p=.000$, GFI=.777, CFI=.846, TLI=.827, RMSEA=.075. For this group, the self-centered factor accounted for the largest proportion of the variance explained by self-control, with impulsivity and risk-seeking also contributing moderately to the variance explained in this hypothesized construct. Physical activities again contributed the least variance to general self-control. Fit indices for the male students were X^2 (246, $n=121$)=348.778, $p=.000$, GFI=.818, CFI=.832, TLI=.811, and RMSEA=.059. For the male students, impulsivity accounted for the highest proportion of the variance

explained by self-control. Simple task and temper also contributed a moderate amount of variance. Compared to the prison group, self-centered and risk-seeking factors explained only a small proportion of the variance for self-control.

Although the absolute fit statistics indicated the model to be poor-fitting, the subjective goodness-of-fit statistics showed that it was marginal, with RMSEA less than 0.1, the CFI and TLI values close to 0.9, and the

Table 5
Standardized factor loadings for the second order, single factor model for full sample and subsamples on self-control scale

Self-control sub-scales and items	Full sample (N=226)	Prison (N=105)	Students (N=121)
<i>Factor 1: Impulsivity</i>			
1. Spur of the moment	.54	.62	.45
2. Prepare for future	.55	.61	.50
3. Pleasure here and now	.65	.68	.56
4. Short run	.58	.62	.52
<i>Factor 2: Simple tasks</i>			
5. Avoid projects	.67	.73	.61
6. Quit or withdraw	.68	.72	.63
7. Most pleasure	.54	.66	.37
8. Dislike hard tasks	.70	.76	.57
<i>Factor 3: Risk-seeking</i>			
9. Do something risky	.49	.57	.33
10. Take risk for the fun	.74	.77	.73
11. Get in trouble	.78	.83	.70
12. Excitement and adventure	.56	.55	.61
<i>Factor 4: Physical activities</i>			
13. Choose physical things	.66	.64	.71
14. On the move	.81	.79	.83
15. Get out and do things	.70	.68	.69
16. More energy	.47	.49	.42
<i>Factor 5: Self-centered</i>			
17. Look out for self	.60	.56	.67
18. Not sympathetic	.63	.64	.60
19. Upset people	.56	.57	.46
20. Get things I want	.75	.79	.67
<i>Factor 6: Temper</i>			
21. Lose temper easily	.69	.69	.68
22. Hurt others rather than talk	.73	.73	.70
23. People better stay away	.65	.75	.52
24. Unable to talk calmly	.72	.74	.71
<i>Factor 7: Self-control</i>			
25. Impulsivity	.83	.83	.98
26. Simple task	.70	.73	.68
27. Risk-seeking	.62	.73	.33
28. Physical activities	.46	.47	.47
29. Self-centered	.78	.97	.28
30. Temper	.63	.65	.42

Table 6
Standardized factor loadings for the six factor model for full sample and subsamples on self-control scale

Self-control sub-scales and items	Full sample (N=226)	Prison (N=105)	Students (N=121)
<i>Factor 1: Impulsivity</i>			
1. Spur of the moment	.52	.56	.42
2. Prepare for future	.55	.56	.55
3. Pleasure here and now	.64	.68	.53
4. Short run	.61	.70	.53
<i>Factor 2: Simple tasks</i>			
5. Avoid projects	.66	.73	.59
6. Quit or withdraw	.71	.75	.65
7. Most pleasure	.53	.64	.37
8. Dislike hard tasks	.69	.75	.58
<i>Factor 3: Risk-seeking</i>			
9. Do something risky	.50	.58	.33
10. Take risk for the fun	.75	.79	.74
11. Get in trouble	.78	.82	.68
12. Excitement and adventure	.56	.54	.61
<i>Factor 4: Physical activities</i>			
13. Choose physical things	.66	.63	.71
14. On the move	.81	.79	.83
15. Get out and do things	.70	.68	.69
16. More energy	.48	.49	.43
<i>Factor 5: Self-centered</i>			
17. Look out for self	.58	.53	.62
18. Not sympathetic	.63	.65	.61
19. Upset people	.57	.57	.50
20. Get things I want	.76	.80	.68
<i>Factor 6: Temper</i>			
21. Lose temper easily	.69	.68	.66
22. Hurt others rather than talk	.76	.74	.78
23. People better stay away	.64	.76	.52
24. Unable to talk calmly	.69	.72	.64

χ^2 :df ratio (i.e., 1.7) within the range of 2 to 1. Such findings were suggestive of a model that could be modified to improve the goodness-of-fit. Ill-fitting models might be caused by misspecification in the measurement model and several sources of information were examined, such as low factor loadings, standardized residual covariance matrix, and the modification indexes. This resulted in two items being deleted: items 9 (“I like to test myself every now and then by doing something a little risky”) and 16 (“I seem to have more energy and a greater need for activity than most other people my age”), and the model was respecified in a post-hoc analysis using the full sample. Changes in the fit indices on this respecified model with the previous model were negligible, and it was decided further efforts to modify this model would be unfruitful.

Model 3: Six factor CFA

In this final model, self-control was explained by six factors: impulsivity, simple tasks, risk-seeking, physical activities, self-centeredness, and temper, with inter-correlations among the six factors. Standardized regression weights for this model for the total sample and subsamples are reported in Table 6. All factor loadings were statistically significant at $p < .05$ level. Chi-square statistics for the combined group data were: χ^2 (237, $n=226$)=383.057, $p=.000$, GFI=.877, CFI=.906, TLI=.890, and RMSEA=.052; for the prison group: χ^2 (237, $n=105$)=366.947, $p=.000$, GFI=.788, CFI=.861, TLI=.838, and RMSEA=.073; and for the male students: χ^2 (237, $n=121$)=321.334, $p=.000$, GFI=.830, CFI=.862, TLI=.839, and RMSEA=.054.

Inferential statistics indicated the fit could be improved by freeing some of the equality constraints on the parameters. As with Model 2, post-hoc modification to the model was made to test whether the fit statistics could be improved. Error covariances were not extremely out of range with each other and the expected parameter change was not large. The MI values were not out of range from the other values, although it might be that items 12 and 13 also loaded onto simple task. It was therefore decided that parameters with factor loadings less than 0.5 be deleted from the model. These were items 1 (“I often act on the spur of the moment without stopping to think”), 7 (“The things in life that are easiest to do bring me the most pleasure”), 9 (“I like to test myself every now and then by doing something a little risky”), and 16 (“I seem to have more energy and a greater need for activity than most other people my age”). Although only item 16 had a factor loading less than 0.5 in the full sample and prison group, the other three items had the lowest weights for their particular factor. Furthermore, items 1 and 7 were identified earlier as having high residual value and were misspecified.

The self-control scale was respecified to a twenty-item six factor model and reestimated. Goodness-of-fit indices for the twenty-item scale improved significantly for the full sample with χ^2 (155, $n=226$)=216.213, $p=.001$, GFI=.914, CFI=.952, TLI=.941, RMSEA=.042; the prison χ^2 (155, $n=105$)=209.054, $p=.002$, GFI=.844, CFI=.927, TLI=.910, RMSEA=.058; and the male students χ^2 (155, $n=121$)=195.920, $p=.015$, GFI=.865, CFI=.921, TLI=.904, RMSEA=.047. Changes in the factor loadings on the modified twenty-item scale were mainly trivial and did not have a negative impact on the internal consistency of the construct, thus supporting the deletion of the four low loading indicators (Anderson & Gerbing, 1992).

Table 7

Tests of invariance for the modified twenty-item six factor self-control scale for prison inmates (N=105) and students (N=121)

Model description	χ^2	df	CFI	TLI	Δ TLI	RMSEA	Δ RMSEA
Model A: Unconstrained baseline model	405.000	310	.990	.986		.037	
Model B: Equality constraints on factor loadings	413.818	324	.991	.988	.002	.035	-.002*
Model C: Equality constraints on factor loadings and mean intercepts	451.436	344	.989	.986	-.002	.037	.002*

Note: df = degrees of freedom; CFI = comparative fit index; TLI = Tucker and Lewis's nonnormed index; RMSEA = root mean square error of approximation; Δ TLI = differences in values Tucker-Lewis's nonnormed index value between models; Δ RMSEA = differences in root mean square error of approximation values between models.

* Not significant.

Calculation of differences (for TLI and RMSEA): Model B = Model B - Model A, and Model C = Model C - Model B.

With improvements in the fit indices, the twenty-item six factor model proved to be a good fitting model and the best of the three factorial models.

Tests of invariance

For the test of invariance, it was decided to use the revised six factor twenty-item scale as this was the best fitting of the three models, although the choice might be arbitrary. This model was used for testing the invariance of the measure across the two male samples: prison inmates and university students. The baseline model for invariance testing was simultaneous analysis across the two groups in which no cross-group constraints were imposed on the parameters (see Table 7, Model A). The parameter estimates from this baseline model provided goodness-of-fit statistics with which subsequent constrained models could be statistically tested against. Goodness-of-fit statistics for the baseline model are shown in Table 7. All fit indices showed the unconstrained six factor model to be well-fitting across the two male groups.

Equality constraints on the factor loadings were then placed (Model B), with the goodness-of-fit indices displayed in Table 7. These showed the factorial structures for self-control to be invariant across the two groups. The final step in invariance testing was to examine equivalence of the latent mean structures between the groups (Model C). The goodness-of-fit results for invariant latent mean testing on Model C is presented in Table 7, with the results showing the latent mean structures and the factor structures to be invariant across the prisoner and male student groups.

Using the critical ratio value of ± 1.96 at the $p < .05$ level, statistically significant differences on the latent factor means between the groups were found ($p = .010$) and these are reported in Table 8. Prison inmates had significantly higher scores on self-centeredness and a preference for simple rather than complex tasks compared to their male student counterparts. No

significant differences were found in the latent means on the other factors: impulsivity, risk-seeking, physical activities, and temper.

Discussion and conclusion

The findings on the dimensionality of the self-control measure were remarkably consistent with previous CFA studies (e.g., DeLisi et al., 2003; Longshore et al., 1996; Marcus, 2003; Piquero et al., 2000; Vazsonyi et al., 2001). With regards to the dimensionality of the self-control measure, the multidimensional model was found to be the best fitting of the models and the unidimensional factor model considerably inferior to the other two factorial models. There was evidence, however, that the multidimensional scale could be modified to improve the goodness-of-fit indices by eliminating the variables that showed cross-loadings or had low factor loadings.

The unambiguous evidence showed the single order unidimensional structure of the Grasmick et al. (1993) scale to be untenable and probably injudicious to use. For the second-order general self-control factor, the goodness-of-fit indices were marginally acceptable and were similar to the earlier studies (e.g., Arneklev et al., 1999; DeLisi et al., 2003; Piquero et al., 2000). While the earlier researchers diverged on the merits of this model, with Arneklev et al. (1999) and Piquero et al. (2000) reporting the model to be acceptable and DeLisi

Table 8
Latent factor means for the prison and male students group

Factors	Estimate	Standard error	Critical ratio
Impulsivity	0.149	0.087	1.713
Simple task	0.221	0.101	2.175*
Risk-seeking	-0.055	0.114	-0.482
Physical activities	0.191	0.108	1.766
Self-centered	0.261	0.092	2.837*
Temper	0.198	0.108	1.834

* Statistically significant differences in latent factor means between prison inmates and male students.

et al. (2003, p. 256) firmly stating the model “should be confidently rejected,” it might be premature to reject unequivocally the hierarchical general factor model. This second-order model could be perceived as “marginal” fit and being a more parsimonious model than the multidimensional structure would be preferred over the more complex model.

Whether the measure is modeled as a multidimensional factor or a single general structure will depend on the substantive meaningfulness of the study being undertaken, and thus, the choice will be pertinent to the particular focus of the research (Byrne, 2001). For example, as already alluded to by Arneklev et al. (1993), a general factor scale may have little conceptual and empirical value if one’s interest was to understand the differential effects of low self-control and its interaction with unlawful and antisocial behavior, and thus, a multidimensional model would be entirely appropriate. In other circumstances, parsimony may be of utmost importance, so modeling the various dimensions into a single general trait would be appropriate.

The series of tests of invariance in the factorial structure and intercept latent showed the self-control measure to be equivalent across two disparate male groups (prisoners and students). The invariance tests extended that undertaken by Piquero and Rosay (1998) and Arneklev et al. (1999), in corroborating that not only are the factorial structures of the scale reliable but also the latent means across multiple groups. The influence of possible response biases, specifically ERS and ARS, were not found on the Grasmick et al. (1993) self-control scale, supporting the use of the measure with different sample populations. In this study, prison inmates were found to be significantly higher on self-centeredness and having stronger preference for tasks that required little in the way of effort, persistence, and diligence than the male students. No significant differences on the other factors were found between the groups, indicating students and prisoners were similar on the impulsivity, risk-seeking, preference for physical activities, and temper traits.

It would have been expected that differences in latent mean would have been found between the students and prisoners on all the elements of self-control, not just the two. It may be that some of the elements of self-control specified by Gottfredson and Hirschi (1990) are not symptomatic of one with low self-control, but may reflect general characteristics found in most young people, especially young males. The self-control elements that appeared to differentiate a person with low self-control from one who had high self-control were egocentricity and a lack of persistence and diligence for difficult tasks. This differed from previous studies which

found impulsivity and risk-seeking to be the most salient in predicting unlawful behavior (Arneklev et al., 1993; LaGrange & Silverman, 1999). Whether egocentricity and lack of diligence are associated with crime or antisocial behaviors, however, was not investigated in this study and was a limitation of this study.

The differences between the two groups, however, might be confounded by the fact that prison inmates, rather than offenders in the community, were used in this study. Within the prison environment, showing consideration to others would be perceived as a weakness, and in fact, might not be particularly functional in this environment. Egocentricity might act as a self-serving mechanism in which to survive a prison sentence, and thus, would exaggerate the differences between the students and the prison inmates. Further studies with multiple groups, especially with disparate groups that included a number of individuals with low self-control, both males and females, would be recommended to establish if these findings are replicated.

In summary, despite the criticisms of the attitudinal instrument to measure self-control (see Marcus, 2004), confirmatory techniques have attested to the robustness and reliability of the Grasmick et al. (1993) instrument as either a six factor or a hierarchical structure and that future research should continue to use these two models in testing the general theory of crime. The generalizability of the measure across divergent groups and cultural milieu further enhances the usefulness of this instrument for cross-cultural research. This study supplemented the few in the CFA literature and the similitude of findings from North America and Europe and now this study should not be undermined.

Limitations in this study need to be considered. First, the low response rate for the prison group might be biased by the participants being more compliant and cooperative than nonparticipants, attributes generally not expected in a person having low self-control. Despite this, manifestations of low self-control were demonstrated among these individuals, giving reassurance as to the stability of this characteristic. Second, this study did not validate the measure by examining the relationship between self-control and imprudent or antisocial behavior. While this was not the purpose of this study, future research would need to validate the self-control measure with deviant behavior using research samples containing a number of low self-controlled individuals. In conclusion, given the considerable amount of research that had investigated the general theory of crime using exploratory techniques, it is recommended that confirmatory analysis is performed in future studies to validate the causal relationship between the constructs of self-control and deviant behaviors.

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APPENDIX B-2

**Williams, M.W., Skogstad, P., & Deane, F.P. (2001).
Attitudes of male prisoners toward seeking
professional psychological help.
Journal of Offender Rehabilitation, 34, 49-61.**

Attitudes of Male Prisoners Toward Seeking Professional Psychological Help

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ABSTRACT Several variables have been associated with the tendency to seek psychological help. For example, attitudes, psychological distress, and treatment fearfulness have all been associated with mental health professionals and whether individuals seek help from counsellors. The aims of this study were: (1) to examine whether individuals seek help from mental health professionals, and (2) to assess the validity and utility of a short form of the Attitudes Toward Seeking Professional Psychological Help Scale (ATSPPHS) for assessing prison inmates' helpseeking attitudes. In addition, the relative impact of components of treatment fearfulness and psychological distress on helpseeking attitudes was assessed. Results were consistent with previous research, and indicated that male inmates ($N = 173$) have similar scores on the ATSPPHS to other male samples. Stigma-related treatment fears and psychological distress were significant unique predictors of attitudes toward professional psychological helpseeking. Factor analysis revealed a single general factor for the ATSPPHS. The potential utility of the brief version of the ATSPPHS was

also supported. Suggestions are made for further research with this population and with the two versions of the helpseeking attitude measure. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <getinfo@haworthpressinc.com> Website: <<http://www.HaworthPress.com>> © 2001 by The Haworth Press, Inc. All rights reserved.]

KEYWORDS Helpseeking attitudes, male prisoners, mental health professionals

Many individuals who experience serious mental health problems never seek help from a professional helping agency (Ware, Manning, Duan, Wells, & Newhouse, 1984). Carson and Butcher (1992) suggested that less than one-third of those diagnosed as clinically depressed or suicidal sought psychological help. Research in the helpseeking domain has found various factors to be associated with helpseeking behaviour (e.g., Fischer & Cohen, 1972). A consistent finding is that women hold more positive attitudes toward getting professional assistance for their problems than men (Deane & Chamberlain, 1994; Deane & Todd, 1996; Fischer & Farina, 1995; Fischer & Turner, 1970; Surgenor, 1985). Other variables that have shown significant effects on the intentions and attitudes toward seeking professional psychological services are ethnicity (Dadfar & Friedlander, 1982; Price & McNeill, 1992), education (Fischer & Cohen, 1972), level of distress (Deane & Chamberlain, 1994), fears about treatment (Deane & Todd, 1996), and previous contact with mental health agencies (Surgenor, 1985).

Kushner and Sher (1989) suggested that the process of seeking professional assistance involved conflicts between approach tendencies (for example, psychological distress) and avoidance tendencies (for example, treatment fears). Deane and Todd (1996) examined specific treatment fears that affected attitudes and created a barrier to seeking therapy. Only stigma concerns (that is, how others would negatively judge the individual for seeking psychological therapy) were found to significantly predict attitudes. Other fears about psychotherapy (such as therapist competence, image concerns, and coercion concerns) were not unique predictors of attitudes toward seeking psychological help. Using non-clinical samples, Deane and Chamberlain (1994) found that psychological distress and treatment fears also predicted the intention to seek professional psychological help for personal/emotional problems.

Previous studies have demonstrated that attitudes are significant predictors of intentions to seek help, with favourable attitudes being associated with

greater likelihood of future helpseeking for psychological distress and suicidal thinking (Deane & Todd, 1996; Kelly & Achter, 1995). Helpseeking attitudes have often been measured using the Attitudes Toward Seeking Professional Psychological Help Scale (ATSPPHS; Fischer & Turner, 1970). The scale has demonstrated internal reliability and discriminated between those who had previously sought help for psychological problems and those who had not (Fischer & Turner, 1970). The measure has been used with a diverse range of subjects from a variety of cultural backgrounds (e.g., Dadfar & Friedlander, 1982; Deane & Todd, 1996; Price & McNeill, 1992; Sanchez & Atkinson, 1983; Surgenor, 1985).

The ATSPPHS consists of four dimensions of attitudes including recognition of need for psychological help, stigma tolerance, interpersonal openness, and confidence in mental health professionals. This factor structure has not been replicated in subsequent studies (e.g., Dadfar & Friedlander, 1982; Surgenor, 1985) leading to suggestions that the scale be viewed as measuring a unitary general attitudinal dimension related to seeking professional psychological help (Fischer & Farina, 1995). Other concerns regarding the ATSPPHS have included the relatively high reading level required to complete the scale, which may present difficulties for those with limited literacy skills. This has led some researchers to modify and simplify the terminology used in the scale to improve the consistency of the terminology and face validity of the scale (Atkinson & Gim, 1989; Good, Dell, & Mintz, 1989; Surgenor, 1985; Tata & Leong, 1994).

In response to the criticisms about the factor structure of the ATSPPHS, Fischer and Farina (1995) developed a shortened version of the 29-item scale. A brief scale was considered to have several advantages, such as reducing the time to complete the measure, improving the readability of the scale, and enabling its use with population groups where English is a secondary language and where literacy skills are below average.

Fischer and Farina (1995) selected 14 items with the highest item-total correlations from the original scale. Factor analysis identified 10 items that had loadings above .50, and produced adequate internal consistency. The remaining four items formed a second factor which had weak internal consistency, and was subsequently discarded from the shortened scale. Fischer and Farina's final scale contained 10 items, thought to measure a unitary dimension of attitude. They suggested that the brief scale (developed using student samples) could be substituted for the longer scale.

The present study focused on assessing the attitudes of male prison inmates in New Zealand using ATSPPHS. Relatively little is known about the attitudes of prison inmates toward seeking professional psychological help. New Zealand prison inmates share similar characteristics to those from other countries, being predominantly male, young, and with low educational and socioeconomic status.

These demographic characteristics have all tended to be associated with negative attitudes toward seeking professional assistance for personal-emotional problems.

In addition, the prison environment tends to reinforce traditional male characteristics, such as competition, aggression, and limited emotional expression. Prison inmates who wish to seek professional psychological help within this environment have difficulty maintaining anonymity compared to individuals who seek counselling in the community (as prison staff are required to accompany the inmate to the therapist), and their helpseeking behaviour may be commented upon in a negative manner by other inmates and prison staff. This could exacerbate concerns about how significant others would view helpseeking efforts, and lead to treatment avoidance. However, the cost of not seeking help is potentially very high. For example, the suicide rate in New Zealand prisons is two to four times higher than that in the community (New Zealand Department of Justice, 1995).

The first aim of the present study was to improve the readability of the ATSPPHS, especially for subjects whose formal education is limited. Given the limited number of male participants ($N = 23$) in Fischer and Farina's (1995) study, the present study employed a male prison sample to replicate elements of Fischer and Farina's study and to investigate the appropriateness of the short scale. Factor analysis was conducted to explore the factor structure of the ATSPPHS and to determine the generalisability of the short-form proposed by Fischer and Farina. The present study aimed to compare the attitudes of male prisoners with those of males from other studies and contexts (e.g., Dadfar & Friedlander, 1982; Deane & Todd, 1994; Fischer & Farina, 1995; Fischer & Turner, 1970). Finally, the present research also aimed to investigate which components of treatment fearfulness and psychological distress predicted helpseeking attitudes in male prison inmates.

It was expected that male prison inmates would hold more negative attitudes toward seeking professional psychological help than other male samples because elements of the prison environment (such as reluctance to appear vulnerable) were thought to have an inhibitory effect on helpseeking behaviour. Due to the potential for displaying vulnerability if prisoners were seen by their peers to be seeking help, it was hypothesised that stigma concerns would be elevated amongst prison inmates, leading to less favourable helpseeking attitudes.

METHOD

Subjects and Procedure

The study received ethical approval from the Massey University Human Ethics Committee. Consent to approach potential subjects was also obtained

from the prison authorities. Inmates from minimum-, medium-, and maximum-security units voluntarily participated in the study. They were approached in their respective units, given a verbal explanation of the study, and provided with written information at the beginning of the questionnaires as part of the informed consent procedure. They were provided with a postage-paid envelope for the return of the questionnaires. All responses were anonymous.

Of the 500 questionnaires distributed, 178 questionnaires were returned, representing a return rate of 35%. The relatively low response rate raises concerns about the generalisability of the findings. However, a review by Le brow (1983) of 63 studies using self-report questionnaires found the average response rate to be 40%. This is comparable to the return rate received in the present study and, given the population being investigated, was considered acceptable. The mean age of the participants was 32.49 ($SD = 11.46$, range from 17 to 71 years), and the mean sentence length was 52.26 months (with sentences ranging from less than a month to 10 years). A few inmates (6.4%) indicated they had no high school education, 47.4% had completed between one and two years of high school, 36.8% between three and four years of high school, and 9.4% had received tertiary education. Most identified themselves as belonging to the indigenous people of New Zealand, Maori (47.3%), with 36.6% identifying as European (or Pakeha, the indigenous term for those of European descent), and 12.3% from a variety of other ethnic groups.

The age, ethnicity, and sentence length of the present sample was similar to the demographic data presented in the 1993 New Zealand Prison Census ($N = 3644$; Southey, Spier, & Edgar, 1995), which reported sample population characteristics of 46% Maori, 42% Pakeha, with a mean age of 31 years, and mean sentence length of 55 months. This suggested that the sample in the present study had similar demographic characteristics to that of the general prison population, thereby providing some reassurance regarding the representativeness of the sample obtained.

Measures

The Hopkins Symptom Checklist-21 (HSCL-21; Green, Walkey, McCormick, & Taylor, 1988) is a short-form of the Hopkins Symptom checklist (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). The HSCL-21 is a 21-item self-report measure which is rated on a likert-type scale from 1 (*not at all*) to 4 (*extremely*). A total distress score is obtained by summing the items. The HSCL-21 has been found to have acceptable reliability and validity (Derogatis, Lipman, Rickels, Uhlenhuth, & Covi, 1974). It is sensitive to changes in psychological

distress after brief psychotherapy, and the scores correlate with other psychotherapy outcome measures (Deane, Leathem, & Spicer, 1992).

Treatment fearfulness was assessed by the Thoughts About Psychotherapy Survey (TAPS; Kushner & Sher, 1989). TAPS was derived from the Thoughts About Counselling Survey (TACS; Pipes, Schwarz, & Crouch, 1985). The measure assesses fears of psychological services and has four main factors: *Therapist Responsiveness*, *Image Concerns*, *Coercion Concerns*, and *Stigma Concerns*. The TAPS consists of 30 items rated on a likert-type scale ranging from 1 (*no concern*) to 5 (*very concerned*). Cronbach's alpha for the four scales ranged from .92 to .87, and there is evidence for the concurrent and construct validity of the TAPS (Deane & Chamberlain, 1994; Kushner & Sher, 1989).

The Attitudes Toward Seeking Professional Psychological Help Scale (ATSPPHS; Fischer & Turner, 1970) was used to assess attitudes toward helpseeking. The 29-item questionnaire is rated on a likert-type scale from 1 (*strongly agree*) to 4 (*strongly disagree*). As the four-factor structure of the scale has not been consistently replicated, the total score was used in the present study. The ATSPPHS has adequate internal reliability with alpha coefficients ranging between .83 and .86. Test-retest application of the scale indicates the measure is stable over time with reliability scores ranging between .73 and .89 for periods from five days to two months.

Because of concerns about the readability of the ATSPPHS, modifications were made to reduce the level of literacy required to complete the scale. This included simplifying the language (such as replacing "If I were experiencing . . ." with "If I had . . ."), and using consistent terminology (such as "problems" instead of "difficulties," "disturbance"). These changes reduced the reading level from high school and some college education (15 year old) to 6th to 7th grade (11-12 year old), as assessed by the Flesch Reading Ease Scale.

RESULTS

Helpseeking Attitudes

Due to the use of listwise deletion, missing data resulted in variation in sample sizes for some analyses. Prison inmates' mean score on the ATSPPHS was 51.16 ($SD = 14.58$, $N = 145$, range 17-83). Table 1 compares the means and standard deviations of the present sample of male inmates with males from other groups, such as college students. Contrary to expectations, the male prisoners' attitudes toward seeking professional psychological assistance fell within the range of other male sample scores.

Factor Analysis

To examine the factor structure of the 29 items of the ATSPPHS, the present study replicated Fischer and Turner's (1970) study using factor analysis. Preliminary principal factor extraction with Varimax rotation was conducted using SPSS-PC+ (1988). The analysis produced seven factors with eigenvalues above one, accounting for 58.8% of the common variance. All but two items loaded significantly onto Factor I (.30 and above), which accounted for 24.1% of the common variance. The two items which did not load onto Factor I were concerned with interpersonal openness (item 22, "I believe that it is probably best not to know everything about oneself," and item 29, "It is hard to talk about personal problems with highly educated people such as doctors and teachers"). The remaining six factors either contained too few items or were ambiguous, thus rendering the factor structure uninterpretable. Internal consistency (Cronbach's alpha) for the full scale was .88, and item-total correlations ranged from .28 to .64.

Items from the factor analysis were compared with the items from Fischer and Farina's (1995) abbreviated scale. Fischer and Farina had selected the 14 items with the highest item-total correlation from the original Fischer and Turner (1970) scale, and administered these items to student samples. The resulting factor analyses revealed two factors, but items from the second factor were discarded, due to low reliability; a general helpseeking factor (comprising ten items) formed their final brief scale (Fischer & Farina, 1995).

In the present study, 14 items with the highest factor loadings and item-total correlations were selected from the data obtained with the prison sample using the full ATSPPHS (see Table 2). Seven of these items also featured in Fischer and Farina's (1995) brief 10 item scale and are noted.

Predictors of Attitudes

To investigate the predictors of attitudes toward seeking professional psychological help, a standard multiple regression was conducted using attitudes as the dependent variable (ATSPPHS full scale), and the four TAPS subscales and psychological distress as independent variables. A significant regression equation was found, with the five variables accounting for 18% of the variance in ATSPPHS, $F(5, 116) = 4.92, p < .0005$. The Stigma Concerns subscale of the TAPS ($\beta = -.27, t(1, 121) = 2.14, p < .05$) and distress ($\beta = .36, t(1, 121) = 3.84, p < .0005$) were significant predictors on the ATSPPHS. The intercorrelations, means, and standard deviations for the variables are shown in Table 3.

□ **Table 1: Comparison of male inmates' mean score on the ATSPPHS in the present study with the mean scores of males from other samples.**

Study	Sample	Mean	SD	N
Present study	Prison inmates	51.16	14.58	145
Fischer and Farina (1995)	Psychology students	45.36	24.74	22
Fischer and Turner (1970)	High school students	49.10	14.80	45
	College students	56.10	11.80	231
	Arts college students	58.20	10.50	113
Surgenor (1985)	Males	53.22	11.60	187
Dadfar and Friedlander (1982)	International students	48.90	12.60	87
Deane and Todd (1996)	University students	49.98	14.40	44

DISCUSSION

Consistent with previous research, male inmates' mean scores on the ATSPPHS measure were lower than those typically reported among female samples. Contrary to expectations, prisoners did not have less positive attitudes than other male samples. The proposed negative influences of the prison environment were not reflected by male inmates' scores on the attitudes toward helpseeking scale. This may suggest that interventions to increase appropriate helpseeking in prison samples may not need to modify extreme attitudinal sets, but only those at a level commensurate with other male samples. The attitude scores of the present sample were comparable to other male groups, such as college students and mental health clients. In short, the findings suggest that, on average, male prisoners' attitudes are consistent with those of other male samples.

Regarding Fischer and Turner's (1970) attitude measure, the present study confirms the scale predominantly reflects a unitary dimension. As with other studies, the present study did not replicate the original four-factor structure, which suggests that the scale is best used to assess a general attitude toward helpseeking. Further research is required to determine the specific components of attitudes toward professional psychological helpseeking.

The findings of the present study were also consistent with Kushner and Sher's (1989) "approach/avoidance" model of helpseeking. Psychological distress was associated with more favourable attitudes toward helpseeking, whereas stigma concerns were associated with less favourable treatment attitudes. Although the level of psychological distress is not directly amenable to

□ **Table 2: Factor loadings and item-total correlations on the ATSPPHS.**

Item	Factor loading	Item-total correlation
1. Although there are places to go for people with personal or emotional troubles, I would not have much faith in them.	.53	.45
*6. Considering the time and expense involved in psychological counselling, it would not have much value for a person like me.	.52	.47
7. I would willingly confide intimate matters to a psychologist or counsellor if I thought it might help me or a member of my family.	.55	.48
8. I would rather live with certain personal problems than go through the ordeal of seeing a psychologist or counsellor.	.69	.64
*9. I believe that emotional problems, like many things, tend to work out by themselves.	.59	.54
*12. If I believed I was having an emotional breakdown, my first inclination would be to get professional help.	.56	.48
14. I believe that having received psychological counselling is a blot on a person's life.	.63	.57
15. I would rather be advised by a close friend than by a psychologist/counsellor, even for an emotional problem.	.58	.52
17. I resent a person who wants to know about my personal or emotional problems, even if they are professionally trained.	.63	.57
*19. I think that talking about problems with a psychologist or counsellor is a poor way to get rid of emotional or personal conflicts.	.64	.57
*23. If I had a serious emotional crisis at this point in my life, I would be confident that I could find relief in psychological counselling.	.70	.62
*25. At some time in the future I might want to have psychological counselling.	.54	.45
26. In my opinion, people should work out their own problems; getting psychological counselling would be a last resort.	.52	.46
27. If I had received help from a psychologist or counsellor, I would want it covered up.	.49	.46

Note: Item numbers match the original scale for comparative purposes

*Items found for Fischer and Farina's (1995) abbreviated scale

manipulation prior to actually receiving treatment, stigma concerns could be targeted for intervention and be the focus of educational programmes. This could be achieved in two ways. Firstly, the development of programmes to provide accurate and positive information about psychological treatment (e.g., Deane, Spicer, & Leathem, 1992) would modify inmates' attitudes toward seeking help for mental health concerns, and decrease potential fears about seeking such help. Secondly, aspects of the prison environment and administrative procedures that are potential sources of stigma concerns could be the targets of interventions. For example, the provision of training in referral procedures, which emphasise to staff the need to be discrete about inmates seeing

□ **Table 3: Intercorrelations (2-tailed), means, and standard deviations between predictors of attitudes toward helpseeking (N = 122).**

Variable	2	3	4	5	6	M	SD
1. Attitudes toward helpseeking	.20 ^a	-.09	-.21 ^a	-.18 ^a	-.26 ^b	51.72	14.67
2. Psychological distress		.34 ^c	.41 ^c	.27 ^b	.34 ^c	40.04	11.33
TAPS subscales							
Therapist responsiveness			.68 ^c	.59 ^c	.39 ^c	18.47	7.91
Image concerns				.76 ^c	.71 ^c	19.17	8.07
Coercion concerns					.63 ^c	9.79	4.37
Stigma concerns						22.79	11.43

^a $p < .05$, ^b $p < .01$, ^c $p < .001$,

a psychologist or other mental health worker, would ensure greater anonymity and confidentiality for potential clients, and reduce concerns about being identified as receiving professional psychological help. Similarly, orientation programmes for new inmates could emphasise the need for appropriate helpseeking and normalise the seeking of help. Such an intervention could use such situations as depression and suicidal ideation that are particularly relevant to the prison environment.

Future research could assess the effect of significant others' beliefs about helpseeking and the extent to which this influences subsequent behaviour (e.g., Ajzen & Fishbein, 1980). The impact of significant others' beliefs may be particularly applicable to such confined living situations as a penal institution. In this context there is less opportunity for escape from the opinions of others.

The present study also supports the potential utility of a shortened form of the ATSPPHS. Despite methodological differences, the overlap of items between Fischer and Farina's (1995) short-form and the present study suggests the presence of a core pool of items for assessing a general helpseeking attitude. However, given that many of the items in the full-form had significant loadings on the general factor, caution is warranted in discarding items prematurely. A review of previous studies using the full-form would assess whether there is a consistent pool of items that would comprise a brief measure of helpseeking attitude. This measure could then be used with a variety of clinical and non-clinical samples of males and females. Future research needs to repli-

cate the factor analysis, which would then lead to a core pool of items for the short-form with more diverse samples. The present study provides one example of this replication process and has identified seven items in common with Fischer and Farina's short-form. Until such time as a generalisable and common set of items is identified for the ATSPPHS, the full-form should be employed where practicable. Where brevity or sample characteristics suggest the need for a simplified or shortened version, however, the present study suggests some support for Fischer and Farina's short-form of the ATSPPHS.

The present study highlights the importance of understanding the unique characteristics of specific groups (such as offenders) and environments (such as prisons), and how these factors might influence helpseeking attitudes. Within the prison environment, stigma concerns appeared to be a key factor in determining prison inmates' attitudes, and future research has yet to determine whether such concerns contribute to treatment avoidance (Bakker & Reilly, 1993). Ultimately, it may prove useful to develop interventions which encourage appropriate helpseeking behaviour among prison inmates with the aim of reducing levels of psychological distress and potentially reoffending.

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AUTHORS' NOTES

Mei Wah Williams, MA (Hons), Dip Clin Psych, is a Senior Clinical Psychologist at the Psychology Clinic at Massey University. She is currently completing a PhD in criminology and teaches in the Clinical Psychology training programme. Prior to this, Mei Wah was employed as a Senior Clinical Psychologist at Psychological Service, Department of Corrections for five years, involved in the assessment and rehabilitation of criminal offenders. Her research interests are in the criminal psychology area.

Philip Skogstad is currently working as a Senior Clinical Psychologist at the Forensic Service (Canterbury Health, Christchurch, New Zealand). His main research interests are in the area of clients' helpseeking attitudes and behaviour, including the impact of culture differences on mental health service utilisation.

Dr. Frank Deane is the Director of the Illawarra Institute for Mental Health which is a collaboration between the University of Wollongong and Illawarra Area Health Service in New South Wales, Australia. He is also a Professor in the Department of Psychology and teaches in the Clinical Psychology programs at the University of Wollongong. His primary research interests relate to the role of homework in psychotherapy and understanding what predicts helpseeking in distressed young people. He recently received an Australian NHMRC grant to assess helpseeking and mental health service engagement in young males. Attitudes towards psychological helpseeking is one of a number of key predictor variables in this research program.

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APPENDIX C-1

**Main Study Questionnaire:
University Students**

Student questionnaire

A doctoral research project by Mei Wah Williams, PhD student, and supervised by Associate Professor Kevin Ronan, School of Psychology, Massey University, Palmerston North

General Instructions

- In this booklet are a number of scales and questions designed to measure your opinions, beliefs and behaviour.
- Answer the questions as honestly as possible, in a way that shows how you really are, not how you would like to be or how you think you should be.
- Don't spend too much time thinking about your answers. The first answer that pops into your head is what is needed. There are no right or wrong answers.
- If you are unsure of an answer please tick the box that best describes your response to the question, rather than leaving the question unanswered.
- You have the right to decline to answer any particular question.
- Instructions are given for different sets of questions. Please read these carefully as they vary from section to section. It is important that you use the correct scale for each question.

PLEASE DO NOT WRITE YOUR NAME ON THIS QUESTIONNAIRE

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 01/98. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Regional Human Ethics Committee: Palmerston North, telephone 06 350 5249, email S.V.Rumball@massey.ac.nz

SURVEY

Office use only

Firstly we would like some general background information about you.

1. How old are you: _____ (in years)

--	--	--

2. Are you (please tick one)

Male Female

--

3. Which ethnic group(s) do you consider yourself? (tick as many as apply)

- New Zealander/European/Pakeha descent
- New Zealander/Maori (state iwi if you wish) _____
- Pacific Islander (state which if you wish) _____
- Asian (state which if you wish) _____
- Other (please state) _____

--

--

--

4. What is your current marital status?

- Married or living with a partner
- Single/never married
- Widowed
- Divorced/separated

--

5. What university degree(s) are you currently enrolled for? _____

--	--

6. How many years have you been studying for this degree? _____ (years)

--	--

7. Before coming to this university, please indicate the HIGHEST level of education you have completed (please tick only one box)

- Primary school
- Some secondary school
- School Certificate, University Entrance, Bursary, or similar
- Trade certificate or Professional certificate or diploma
- Other University degree, diploma, or certificate
- Other post-school qualification (please specify) _____

--	--

8. What year did you finish secondary school? _____

--	--

9. Are you a: (please tick one)

Full time student Part time student

--

10. In addition to studying at university, are you currently doing any work for pay?

- Yes, working full-time
- Yes, working part-time
- No, but looking for work
- No, full-time student

--

The next few questions are about your university experience. Please use the scale provided and tick the answer that best describes your situation.

Which of the following best describes the grades you are getting at university?

Mostly As	Some As/ Some Bs	Mostly Bs	Some Bs/ Some Cs	Mostly Cs	Some Cs/ Some Ds	Mostly D/Es	Office use
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How many papers have you successfully completed so far? _____

How many papers have you ever enrolled for but did not complete in your current university studies? _____

On the average how many days Monday through Friday do you spend studying, outside of class time?

0 days	1 day	2 days	3 days	4 days	5 days	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

On the weekends, how much time do you generally spend studying?

A great deal	Quite a bit	Some	Not too much	Very little	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

On the average, how many hours per week do you spend studying?
_____ hours

How important is your university work to you?

Very important	Pretty important	Somewhat important	Not too important	Not important at all	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This section focuses on your current and past work history. Please write details in the spaces provided.

1. Have you worked for pay since leaving secondary school? (*please tick one*)

- Yes – *please continue* No - *please go to question 2 below*

Please list below ALL the paid work you have had since leaving secondary school. Paid work includes full-time, part-time, seasonal, or temporary work. For each paid job, please record the length of time (in years and months) you worked in that job.


(1)	Occupation – <i>begin with the most recent paid job</i>	year		month		Office use only			
(2)									
(3)									
(4)									
(5)									
(6)									
(7)									
(8)									
(9)									
(10)									
(11)									
(12)									
(13)									
(14)									
(15)									

2. If you currently do not have a job, what is your main source of income? (*please tick as many as applies*)

- Student allowance ACC
 Student loan Sickness benefit
 Unemployment hardship Parents'/partner's support
 Income support services
 Other (*please state*) _____

The next questions ask you to record information about your current and past close relationships. Close relationships include defacto, boyfriend/girlfriend, and marital relationships.

Please list below the initials of ANYONE with whom you have or have had a close relationship. Once you have recorded the person's initials, rate how warm and close that relationship is/was for you using the scale provided. Circle the number that best captures how you feel about that particular relationship.

I have had no close relationships at all (*please go to page 5*) 

The close relationships I have had are as follows: (person's initials only)

Use this scale to rate each relationship				
Initials only	<i>Not close and warm</i>	<i>Seldom close and warm</i>	<i>Sometimes close and warm</i>	<i>Very close and warm</i>
	1	2	3	4
(1)	1	2	3	4
(2)	1	2	3	4
(3)	1	2	3	4
(4)	1	2	3	4
*(5)	1	2	3	4
(6)	1	2	3	4
(7)	1	2	3	4
(8)	1	2	3	4
(9)	1	2	3	4
(10)	1	2	3	4
(11)	1	2	3	4
(12)	1	2	3	4
(13)	1	2	3	4
(14)	1	2	3	4
(15)	1	2	3	4
(16)	1	2	3	4
(17)	1	2	3	4
(18)	1	2	3	4

This next part of the study asks about how you see yourself. Please circle the answer that comes closest to describing the way you think about yourself.

Please read through the following statements and decide how much you either agree or disagree with each. Use the scale and circle the number that best indicates how you feel

	<i>Strongly disagree</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Strongly agree</i>
	1	2	3	4
1. I often act on the spur of the moment without stopping to think	1	2	3	4
2. I don't devote much thought and effort to preparing for the future	1	2	3	4
3. I often do whatever brings me pleasure here and now, even at the cost of some distant goal	1	2	3	4
4. I'm more concerned with what happens to me in the short run than in the long run	1	2	3	4
5. I frequently try to avoid projects that I know will be difficult	1	2	3	4
6. When things get complicated, I tend to quit or withdraw	1	2	3	4
7. The things in life that are easiest to do bring me the most pleasure	1	2	3	4
8. I dislike really hard tasks that stretch my abilities to the limit	1	2	3	4
9. I like to test myself every now and then by doing something a little risky	1	2	3	4
10. Sometimes I will take a risk just for the fun of it	1	2	3	4
11. I sometimes find it exciting to do things for which I might get in trouble	1	2	3	4
12. Excitement and adventure are more important to me than security	1	2	3	4
13. If I had a choice, I would almost always rather do something physical than something mental	1	2	3	4
14. I almost always feel better when I am on the move than when I am sitting and thinking	1	2	3	4
15. I like to get out and do things more than I like to read or contemplate ideas	1	2	3	4
16. I seem to have more energy and a greater need for activity than most other people my age	1	2	3	4
17. I try to look out for myself first, even if it means making things difficult for other people	1	2	3	4

	<i>Strongly disagree</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Strongly agree</i>
	1	2	3	4
18. I'm not very sympathetic to other people when they are having problems	1	2	3	4
19. If things I do upset people, it's their problem not mine	1	2	3	4
20. I will try to get the things I want even when I know it's causing problems for other people	1	2	3	4
21. I lose my temper pretty easily	1	2	3	4
22. Often, when I'm angry at people I feel more like hurting them than talking to them about why I am angry	1	2	3	4
23. When I'm really angry, other people better stay away from me	1	2	3	4
24. When I have a serious disagreement with someone, it's usually hard for me to talk calmly about it without getting upset	1	2	3	4

This next section deals with your own behaviour. All your answers are confidential. Please give your best estimate of the exact number of times you've done each thing during the past 12 months, from today to a year ago just past.

How many times in the last year have you...?

1. Purposely damaged or destroyed property belonging to your parents or other family members?

Exact number of times (if never, put '0' and go to question 2) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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2. If working, purposely damaged or destroyed property belonging to your employer?

Exact number of times (if never, put '0' and go to question 3) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

--	--	--

3. Purposely damaged or destroyed other property that did not belong to you, not counting family, or work property?

Exact number of times (if never, put '0' and go to question 4) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

--	--	--

How many times in the last year have you...?

4. Stolen or tried to steal a motor vehicle such as a car or motor cycle?

Exact number of times (if never, put '0' and go to question 5) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

5. Stolen or tried to steal something worth more than \$50?

Exact number of times (if never, put '0' and go to question 6) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

6. Knowingly bought, sold or held stolen goods or tried to do any of these things?

Exact number of times (if never, put '0' and go to question 7) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

7. Purposely set fire to a building, a car, or other property or tried to do so?

Exact number of times (if never, put '0' and go to question 8) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

How many times in the last year have you...?

8. Carried a hidden weapon other than a plain pocket knife?

Exact number of times (if never, put '0' and go to question 9) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a Month	Once every 2-3 weeks	Once a Week	2-3 times a week	Once a day	2-3 times a day
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Office use

9. Stolen or tried to steal things worth \$5 or less?

Exact number of times (if never, put '0' and go to question 10) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a Month	Once every 2-3 weeks	Once a Week	2-3 times a week	Once a day	2-3 times a day
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Office use

10. Attacked someone with the idea of seriously hurting or killing that person?

Exact number of times (if never, put '0' and go to question 11) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a Month	Once every 2-3 weeks	Once a Week	2-3 times a week	Once a day	2-3 times a day
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Office use

11. Been paid for having sexual relations with someone?

Exact number of times (if never, put '0' and go to question 12) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a Month	Once every 2-3 weeks	Once a Week	2-3 times a week	Once a day	2-3 times a day
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Office use

How many times in the last year have you...?

12. Been involved in gang fights?

Exact number of times (if never, put '0' and go to question 13) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

13. Used cheques illegally or used counterfeit money to pay for something (includes intentional overdrafts, credit by fraud)?

Exact number of times (if never, put '0' and go to question 14) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

14. Sold marijuana or cannabis ("pot", "grass", "hash")?

Exact number of times (if never, put '0' and go to question 15) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

15. Stolen money or other things from your parents or other members of your family?

Exact number of times (if never, put '0' and go to question 16) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

How many times in the last year have you...?

Office use

16. If working, stolen money, goods or property from the place where you work?

Exact number of times (if never, put '0' and go to question 17) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

17. Had or tried to have sexual relations with someone against their will?

Exact number of times (if never, put '0' and go to question 18) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

18. Hit or threatened to hit one of your parents?

Exact number of times (if never, put '0' and go to question 19) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour.

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

19. If working, hit or threatened to hit your supervisor or other employee?

Exact number of times (if never, put '0' and go to question 20) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

How many times in the last year have you...?

20. Hit or threatened to hit anyone else (other than parents or persons at work)?

Exact number of times (if never, put '0' and go to question 21) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

21. Been loud, rowdy, or unruly in a public place – disorderly conduct?

Exact number of times (if never, put '0' and go to question 22) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

22. Sold hard drugs such as heroin, cocaine and LSD?

Exact number of times (if never, put '0' and go to question 23) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

23. Tried to cheat someone by selling them something that was worthless or not what you said it was?

Exact number of times (if never, put '0' and go to question 24) _____

Office use

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

How many times in the last year have you...?

24. Taken a vehicle for a ride or drive without the owner's permission?

Exact number of times (if never, put '0' and go to question 25) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

25. Bought or provided alcohol for a minor?

Exact number of times (if never, put '0' and go to question 26) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

26. Used force or strong-arm methods to get money or things from people?

Exact number of times (if never, put '0' and go to question 27) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

27. Been drunk in a public place?

Exact number of times (if never, put '0' and go to question 28) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

How many times in the last year have you...?

28. Stolen or tried to steal things worth between \$5 and \$50?

Office use

Exact number of times (if never, put '0' and go to question 29) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

29. Broken or tried to break into a building or vehicle to steal something or just to look around?

Office use

Exact number of times (if never, put '0' and go to question 30) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

30. Used or tried to use credit cards without the owner's permission?

Office use

Exact number of times (if never, put '0' and go to question 31) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

31. Made obscene telephone calls (such as calling someone and saying dirty things)?

Office use

Exact number of times (if never, put '0' and go to question 32) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

How many times in the last year have you...?

32. Snatched someone's purse or wallet or picked someone's pocket?

Exact number of times (if never, put '0' and go to question 33) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

Office use

33. Embezzled money; that is used money or funds entrusted to your care for some purpose other than that intended?

Exact number of times (if never, put '0' and go to the next set of questions) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

Office use

Now I am going to ask you some questions about your use of alcohol and drugs, and the effects it may have had on your relationships with your family and friends. Remember that your answers will be held strictly confidential and will not be revealed to anyone. Look at the frequency response scale, and tick the box that best describes how often you have been involved in that behaviour.

FREQUENCY RESPONSE SCALE					Office use
Never	Once or twice	3 or 4 times	5 or 6 times	More than 6 times	

1. If married or living with a partner, how many times in the last year have you gotten into trouble with *your partner* because of your use of...

a. alcohol?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. marijuana or cannabis?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. other drugs?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. How many times in the last year have you gotten into trouble with *your friends* because of your use of...

d. alcohol?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. marijuana or cannabis?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. other drugs?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. How many times in the last year have you had problems with *your family* because of your use of...

g. alcohol?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. marijuana or cannabis?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. other drugs?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. How many times in the last year have you gotten into *physical fights* because of your use of...

j. alcohol?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. marijuana or cannabis?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. other drugs?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. How often in the last year have you had problems with your *physical health* because of your use of...

m. alcohol?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. marijuana or cannabis?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. other drugs?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FREQUENCY RESPONSE SCALE

Office use

	Once or twice	3 or 4 times	5 or 6 times	More than 6 times
--	---------------------	-----------------	-----------------	----------------------------

6. During the past year how many times have you gotten into trouble with *the police* or been arrested because of your use of...

- p. alcohol?.....
- q. marijuana or cannabis?.....
- r. other drugs.....

7. During the past year how many times have you had *an accident* while driving because of your use of...

- s. alcohol?.....
- t. marijuana or cannabis?.....
- u. other drugs.....

8. If working, during the past year how many times have you *missed work* or had to call in sick because of your use of...

- v. alcohol?.....
- w. marijuana or cannabis?.....
- x. other drugs.....

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**The final section of this study asks about your views on
COMMITTING A CRIME**

Listed below are some words that describe people's attitudes toward doing a crime (such as burglary, assault, dishonesty offences). For each statement, circle the number that best describes your attitude toward this behaviour.

Doing a crime (such as burglary, assault, dishonest offences) is:.....

Harmful	1	2	3	4	5	6	7	Beneficial	<input type="checkbox"/>
Good	1	2	3	4	5	6	7	Bad	<input type="checkbox"/>
Happy	1	2	3	4	5	6	7	Sad	<input type="checkbox"/>
Desirable	1	2	3	4	5	6	7	Undesirable	<input type="checkbox"/>
Enjoyable	1	2	3	4	5	6	7	Unenjoyable	<input type="checkbox"/>
Safe	1	2	3	4	5	6	7	Dangerous	<input type="checkbox"/>

If I committed a crime (such as burglary, assault, dishonest offences), most people who are important to me would:

Disapprove	1	2	3	4	5	6	7	Approve	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	---------	--------------------------

For me to commit a crime (such as burglary, assault, dishonest offences) would be:

Impossible	1	2	3	4	5	6	7	Possible	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	----------	--------------------------

If I had the opportunity I would commit a crime (such as burglary, assault, dishonesty offences)

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>
--------------------	---	---	---	---	---	---	---	------------------	--------------------------

Most people who are important to me

Don't do crime	1	2	3	4	5	6	7	Do crime	<input type="checkbox"/>
----------------	---	---	---	---	---	---	---	----------	--------------------------

It is mostly up to me whether or not I commit a crime:

Strongly agree	1	2	3	4	5	6	7	Strongly disagree	<input type="checkbox"/>
----------------	---	---	---	---	---	---	---	-------------------	--------------------------

How likely is it that you will commit a crime in the near future?

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>
--------------------	---	---	---	---	---	---	---	------------------	--------------------------

With regards to crime, how much do you do what people who are important to you think you should?

Not at all	1	2	3	4	5	6	7	Very much	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	-----------	--------------------------

How much control do you feel you have over whether you commit a crime or not?

No control	1	2	3	4	5	6	7	Complete control	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	------------------	--------------------------

I intend to commit a crime in the near future

Definitely	1	2	3	4	5	6	7	Definitely not	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	----------------	--------------------------

Office use

Below are some reasons why people may or may not commit a crime (such as burglary, assault, dishonesty offences). For each statement circle the number that indicates what you think.

COMMITTING A CRIME WOULD:

Office use

1. Stop me getting bored

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Not getting bored would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

2. Gain respect from my friends

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Gaining respect from my friends would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

3. Get me things I want (such as money, food)

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Being able to get what I want (such as money, food) would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

4. Be doing a risky thing

Totally disagree 1 2 3 4 5 6 7 Totally agree

Doing a risky thing would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

5. Release my frustration or anger

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Being able to release my frustration or anger would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

6. Give me a "high"

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Getting a "high" would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

COMMITTING A CRIME WOULD:

Office use

7. Get me something I want for little effort

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Being able to get something I want for little effort would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

8. Give me a criminal record

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Having a criminal record would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

9. Make me feel sorry for the victim

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Feeling sorry for the victim would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

10. Make it hard for me to get a job

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Finding it hard to get a job would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

The next questions ask you to decide whether these people would or would not want you to commit a crime. You are also asked to decide whether you would follow the advice of these people

My friends who have done a crime would want me to commit a crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Generally speaking, I tend to follow the advice of my friends who have done a crime

Not at all 1 2 3 4 5 6 7 Very much

My partner would want me to do a crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Generally speaking, I tend to follow the advice of my partner

Not at all 1 2 3 4 5 6 7 Very much

My parents would want me to commit a crime								Office use	
Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>
Generally speaking, I tend to follow the advice of my parents									
Not at all	1	2	3	4	5	6	7	Very much	<input type="checkbox"/>
Other members of my family would want me to commit a crime									
Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>
Generally speaking, I tend to follow the advice of other members of my family									
Not at all	1	2	3	4	5	6	7	Very much	<input type="checkbox"/>

Using the scale below, please decide whether this applies to you, and whether this would make you more or less likely to commit a crime.

1. There is little chance getting caught by the police									
Strongly disagree	1	2	3	4	5	6	7	Strongly Agree	<input type="checkbox"/>

As there is little chance of getting caught by the police my committing a crime would be									
Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>

2. There are times when I find myself in desperate situations, such as having no money to pay the bills or buy food									
Never	1	2	3	4	5	6	7	Frequently	<input type="checkbox"/>

Being in desperate situations would make my committing a crime									
Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>

3. There are always lots of opportunities available to commit a crime, such as an unlocked car									
Strongly disagree	1	2	3	4	5	6	7	Strongly agree	<input type="checkbox"/>

Having lots of opportunities available would make my committing a crime									
Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>

4. I expect that in the near future I will be around people who encourage me to do a crime									
Strongly disagree	1	2	3	4	5	6	7	Strongly agree	<input type="checkbox"/>

Being around people who encourage me to do a crime would make my committing a crime									
Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>

5. There are times when I am provoked and have to defend myself

Never 1 2 3 4 5 6 7 Frequently

Being provoked and having to defend myself would make my doing crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

6. Doing a crime gives me feelings of power and control over the victim

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

The feelings of power and control over the victim would make my committing a crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

7. I expect that I will have problems and feel stressed in the near future

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Having problems and feeling stressed would make my committing a crime

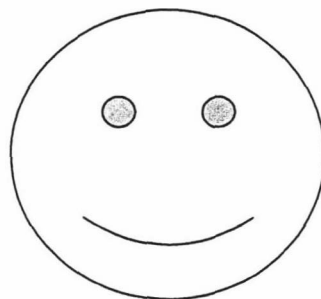
Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

8. I expect I would feel guilty if I committed a crime

Never 1 2 3 4 5 6 7 Frequently

Feelings of guilt would make my doing crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely



Please check to make sure that you have answered all the questions

**Thank you for taking
the time to complete
this questionnaire**

APPENDIX C-2

**Main Study Information Sheet:
University Students**



INFORMATION SHEET

Testing and extending a general theory of crime

This study is being carried out by Mei Wah Williams as her PhD research project, and is supervised by Associate Professor, Kevin Ronan, School of Psychology, Massey University. The purpose of this study is to investigate the causes of crime, and we are interested in looking at some of the attributes and attitudes people have towards crime. This current study is a preliminary study with a university student population. It is anticipated that after this initial study, other population groups including inmates of correction units will be asked to participate also. In this study we would like you to complete a questionnaire, which asks how you describe yourself generally on several characteristic traits, your attitudes and beliefs about certain behaviours, and describing your own behaviours.

We invite you to take part in the study and your participation is entirely voluntary. As a student, this study is independent of any papers in which you are enrolled and no course coordinators will be privy to your responses. Should you decide not to participate or choose to withdraw from the study, you will not be disadvantaged in any way. If you agree to participate you will be asked to:

- Complete a questionnaire, which should take about 45-60 minutes
- Sign a consent form to indicate that you have read the information sheet and agree to participate in the study
- Agree to have Mrs Robyn Knuth, an independent third party, who is the Head of School Secretary, School of Psychology send you a follow-up questionnaire consisting of similar questions in about 3-6 months time. The follow-up questionnaire should take 10-15 minutes to complete.
- In case you shift residence, sign a release of confidential information consent form that will allow Mrs Knuth, to access your new address from the Massey University database. Please note that the researchers do not have access to the Massey University student database.

If you agree to take part in the study, you have the right to:

- Discuss any aspects of the study before agreeing to take part in the study
- Ask any questions about the study at any time during your participation
- Refuse to answer any particular question(s)
- Withdraw from participating in the study at any time
- Provide information on the understanding that it is confidential to the researcher. Your personal information on the consent sheet will be kept separate from the questionnaire and will only be viewed by the researchers in reference to the study. All questionnaires will be identified only by code numbers and will be kept confidential to the researchers. No names will appear on your questionnaire, and everything you provide will be kept

confidential and will only be used for this study. It will not be possible to identify you in any reports that are prepared from the study.

- Have access to a summary of the findings of the study when it is concluded

The information you provide in the questionnaire will be useful for purposes related to research into the theory of crime. If you agree to participate in the study it is important that you answer the questions as honestly and openly as you can, and this information will remain confidential. However ensure that you do not give out any other information from that asked in the questionnaire. Should you do so, depending on the information you provide and which may reveal your identity, an obligation to breach that confidentiality may be required.

A token payment of \$10 for participating in the first assessment and \$10 for the follow-up assessment will be given to participants. This reimbursement is to cover the time and effort in completing the questionnaire and other costs that are incurred, such as travel.

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 01/98. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Regional Human Ethics Committee: Palmerston North, telephone 06 350 5249, or email: S.V.Rumball@massey.ac.nz

Should you wish to clarify any further aspects of this study, please contact Mei Wah Williams, School of Psychology, Massey University, Private Bag 102 904, North Shore MSC, Auckland; telephone (09) 414 0800 ext: 9886, or email: M.W.Williams@massey.ac.nz or Dr Kevin Ronan, Associate Professor, School of Psychology, Massey University, PO Box 11-222, Palmerston North; telephone (06) 350 5799 ext: 2069, or email: K.R.Ronan@massey.ac.nz

APPENDIX C-3

**Main Study Consent Form:
University Students**

CONSENT FORM

Testing and extending a general theory of crime

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree / do not agree (*please circle one*) to Mrs Robyn Knuth, Head of School Secretary, School of Psychology, forwarding me a follow-up questionnaire in 3-6 months' time. This follow-up questionnaire consists of part of the measures you have already completed and should only take 10-15 minutes to complete.

I consent / do not consent (*please circle one*) to Mrs Robyn Knuth, accessing my new address through the Massey University student records database should I shift residence. At all times my personal records will remain strictly confidential and my identity will remain anonymous.

I wish / do not wish (*please circle one*) to receive a summary of the results of the study when it is concluded.

As long as I respond only to the questions asked in the questionnaire, I agree to provide such information on the understanding that it is completely confidential and my identity will remain anonymous.

I understand I have the right to withdraw from the study at any time and to decline to answer any particular questions.

I agree to participate in this study under these conditions and those set out in the Information Sheet.

Signed:

Date:

Name:

Student ID:

Address:

.....

Email address:.....

In accordance with the Privacy Act (1993) this information will not be released to any other individual or organisation, or used for anything other than the stated purpose.

Please return in the envelope addressed to: Mrs Robyn Knuth, HOS Secretary, School of Psychology, Massey University, Palmerston North

APPENDIX D-1

**Main Study Questionnaire:
Prison Inmates**

Prison questionnaire

A doctoral research project by Mei Wah Williams, PhD student, and supervised by Associate Professor Kevin Ronan, School of Psychology, Massey University, Palmerston North

General Instructions

- In this booklet are a number of scales and questions designed to measure your opinions, beliefs and behaviour.
- Answer the questions as honestly as possible, in a way that shows how you really are, not how you would like to be or how you think you should be.
- Don't spend too much time thinking about your answers. The first answer that pops into your head is what is needed. There are no right or wrong answers.
- If you are unsure of an answer please tick the box that best describes your response to the question, rather than leaving the question unanswered.
- You have the right to decline to answer any particular question.
- Instructions are given for different sets of questions. Please read these carefully as they vary from section to section. It is important that you use the correct scale for each question.

PLEASE DO NOT WRITE YOUR NAME ON THIS QUESTIONNAIRE

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 02/147. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Regional Human Ethics Committee: Palmerston North, telephone 06 350 5249, email S.V. Rumball@massey.ac.nz

SURVEY

Office use
only

Firstly we would like some general background information about you.

1. How old are you: _____ (in years)

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2. Are you (please tick one)

Male Female

--

3. Which ethnic group(s) do you consider yourself?(*tick as many as apply*)

- New Zealander/European/Pakeha descent
- New Zealander/Maori (state iwi if you wish) _____
- Pacific Islander (state which if you wish) _____
- Asian (state which if you wish) _____
- Other (please state) _____

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4. What is your current marital status?

- Married or living with a partner
- Single/never married
- Widowed
- Divorced/separated

--

5. Please indicate the HIGHEST level of education you have completed (*please tick only one box*)

- Primary or intermediate school
- Some secondary schooling (3rd or 4th form)
- School Certificate, University Entrance, Bursary, or similar
- Trade certificate or Professional certificate or diploma
- Other University degree, diploma, or certificate
- Other post-school qualification (*please specify*) _____

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6. What year did you finish secondary school? _____

The next questions ask you to record information about your current and past close relationships. Close relationships include defacto, boyfriend/girlfriend, and marital relationships.

Please list below the initials of ANYONE with whom you have or have had a close relationship, such as a girlfriend/defacto/partner. Once you have recorded the person's initials, rate how warm and close that relationship is/was for you using the scale provided. Circle the number that best captures how you feel about that particular relationship.

I have had no close relationships at all (*please go to page 4*) 

The close relationships (such as defacto or partner) I have had are as follows: (person's initials only)

Use this scale to rate each relationship				
<u>Initials only</u>	<i>Not close and warm</i>	<i>Seldom close and warm</i>	<i>Sometimes close and warm</i>	<i>Very close and warm</i>
	1	2	3	4
(1)	1	2	3	4
(2)	1	2	3	4
(3)	1	2	3	4
(4)	1	2	3	4
(5)	1	2	3	4
(6)	1	2	3	4
(7)	1	2	3	4
(8)	1	2	3	4
(9)	1	2	3	4
(10)	1	2	3	4
(11)	1	2	3	4
(12)	1	2	3	4
(13)	1	2	3	4
(14)	1	2	3	4
(15)	1	2	3	4
(16)	1	2	3	4
(17)	1	2	3	4
(18)	1	2	3	4

This next part of the study asks about how you see yourself. Please circle the answer that comes closest to describing the way you think about yourself.

Please read through the following statements and decide how much you either agree or disagree with each. Use the scale and circle the number that best indicates how you feel

	<i>Strongly disagree</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Strongly agree</i>
	1	2	3	4
1. I often act on the spur of the moment without stopping to think	1	2	3	4
2. I don't devote much thought and effort to preparing for the future	1	2	3	4
3. I often do whatever brings me pleasure here and now, even at the cost of some distant goal	1	2	3	4
4. I'm more concerned with what happens to me in the short run than in the long run	1	2	3	4
5. I frequently try to avoid projects that I know will be difficult	1	2	3	4
6. When things get complicated, I tend to quit or withdraw	1	2	3	4
7. The things in life that are easiest to do bring me the most pleasure	1	2	3	4
8. I dislike really hard tasks that stretch my abilities to the limit	1	2	3	4
9. I like to test myself every now and then by doing something a little risky	1	2	3	4
10. Sometimes I will take a risk just for the fun of it	1	2	3	4
11. I sometimes find it exciting to do things for which I might get in trouble	1	2	3	4
12. Excitement and adventure are more important to me than security	1	2	3	4
13. If I had a choice, I would almost always rather do something physical than something mental	1	2	3	4
14. I almost always feel better when I am on the move than when I am sitting and thinking	1	2	3	4
15. I like to get out and do things more than I like to read or contemplate ideas	1	2	3	4
16. I seem to have more energy and a greater need for activity than most other people my age	1	2	3	4
17. I try to look out for myself first, even if it means making things difficult for other people	1	2	3	4

	<i>Strongly disagree</i>	<i>Disagree somewhat</i>	<i>Agree somewhat</i>	<i>Strongly agree</i>
	1	2	3	4
18. I'm not very sympathetic to other people when they are having problems	1	2	3	4
19. If things I do upset people, it's their problem not mine	1	2	3	4
20. I will try to get the things I want even when I know it's causing problems for other people	1	2	3	4
21. I lose my temper pretty easily	1	2	3	4
22. Often, when I'm angry at people I feel more like hurting them than talking to them about why I am angry	1	2	3	4
23. When I'm really angry, other people better stay away from me	1	2	3	4
24. When I have a serious disagreement with someone, it's usually hard for me to talk calmly about it without getting upset	1	2	3	4

This next section deals with your own behaviour. All your answers are confidential. Please give your best estimate of the exact number of times you've done each thing in the 12 months before coming to prison

How many times in the 12 months before coming to prison have you...?

1. Purposely damaged or destroyed property belonging to your parents or other family members?

Exact number of times (if never, put '0' and go to question 2) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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2. If working, purposely damaged or destroyed property belonging to your employer?

Exact number of times (if never, put '0' and go to question 3) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Office use

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3. Purposely damaged or destroyed other property that did not belong to you, not counting family, or work property?

Exact number of times (if never, put '0' and go to question 4) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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How many times in the 12 months before coming to prison have you...?

4. Stolen or tried to steal a motor vehicle such as a car or motor cycle?

Exact number of times (if never, put '0' and go to question 5) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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5. Stolen or tried to steal something worth more than \$50?

Exact number of times (if never, put '0' and go to question 6) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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6. Knowingly bought, sold or held stolen goods or tried to do any of these things?

Exact number of times (if never, put '0' and go to question 7) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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7. Purposely set fire to a building, a car, or other property or tried to do so?

Exact number of times (if never, put '0' and go to question 8) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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How many times in the 12 months before coming to prison have you...?

8. Carried a hidden weapon other than a plain pocket knife?

Office use

Exact number of times (if never, put '0' and go to question 9) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

9. Stolen or tried to steal things worth \$5 or less?

Office use

Exact number of times (if never, put '0' and go to question 10) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

10. Attacked someone with the idea of seriously hurting or killing that person?

Office use

Exact number of times (if never, put '0' and go to question 11) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

11. Been paid for having sexual relations with someone?

Office use

Exact number of times (if never, put '0' and go to question 12) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

How many times in the 12 months before coming to prison have you...?

12. Been involved in gang fights?

Exact number of times (if never, put '0' and go to question 13) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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13. Used cheques illegally or used counterfeit money to pay for something (includes intentional overdrafts, credit by fraud)?

Exact number of times (if never, put '0' and go to question 14) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Office use

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14. Sold marijuana or cannabis ("pot", "grass", "hash")?

Exact number of times (if never, put '0' and go to question 15) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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15. Stolen money or other things from your parents or other members of your family?

Exact number of times (if never, put '0' and go to question 16) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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How many times in the 12 months before coming to prison have you...?

16. If working, stolen money, goods or property from the place where you work?

Exact number of times (if never, put '0' and go to question 17) _____

Office use

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If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

17. Had or tried to have sexual relations with someone against their will?

Exact number of times (if never, put '0' and go to question 18) _____

Office use

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If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

18. Hit or threatened to hit one of your parents?

Exact number of times (if never, put '0' and go to question 19) _____

Office use

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If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

19. If working, hit or threatened to hit your supervisor or other employee?

Exact number of times (if never, put '0' and go to question 20) _____

Office use

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If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

How many times in the 12 months before coming to prison have you...?

20. Hit or threatened to hit anyone else (other than parents or persons at work)?

Exact number of times (if never, put '0' and go to question 21) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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21. Been loud, rowdy, or unruly in a public place – disorderly conduct?

Exact number of times (if never, put '0' and go to question 22) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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22. Sold hard drugs such as heroin, cocaine and LSD?

Exact number of times (if never, put '0' and go to question 23) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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23. Tried to cheat someone by selling them something that was worthless or not what you said it was?

Exact number of times (if never, put '0' and go to question 24) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

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How many times in the 12 months before coming to prison have you...?

24. Taken a vehicle for a ride or drive without the owner's permission?

Exact number of times (if never, put '0' and go to question 25) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

25. Bought or provided alcohol for a minor?

Exact number of times (if never, put '0' and go to question 26) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

26. Used force or strong-arm methods to get money or things from people?

Exact number of times (if never, put '0' and go to question 27) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

27. Been drunk in a public place?

Exact number of times (if never, put '0' and go to question 28) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

Office use

How many times in the 12 months before coming to prison have you...?

28. Stolen or tried to steal things worth between \$5 and \$50?

Exact number of times (if never, put '0' and go to question 29) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

29. Broken or tried to break into a building or vehicle to steal something or just to look around?

Exact number of times (if never, put '0' and go to question 30) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

30. Used or tried to use credit cards without the owner's permission?

Exact number of times (if never, put '0' and go to question 31) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

31. Made obscene telephone calls (such as calling someone and saying dirty things)?

Exact number of times (if never, put '0' and go to question 32) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

- | | | | | | |
|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------------|
| Once a
Month | Once every
2-3 weeks | Once a
Week | 2-3 times
a week | Once a
day | 2-3 times
a day |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Office use

How many times in the 12 months before coming to prison have you...?

32. Snatched someone's purse or wallet or picked someone's pocket?

Exact number of times (if never, put '0' and go to question 33) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

Office use

33. Embezzled money; that is used money or funds entrusted to your care for some purpose other than that intended?

Exact number of times (if never, put '0' and go to the next set of questions) _____

If you put 10 or more times, please also select the one which best describes how often you were involved in that behaviour

Once a
Month

Once every
2-3 weeks

Once a
Week

2-3 times
a week

Once a
day

2-3 times
a day

Office use

The next series of questions deals with some drugs and other substances you may have used. Please give me your best estimate of the exact number of times you've used each substance in the 12 months before coming to prison.

How many times in the 12 months before coming to prison have you used...?	Number of times	If you put 10 or more times, please also select the one which best describes how often you have used the substance						Office use
		Once a month	Once every 2-3 weeks	Once a week	2-3 times a week	Once a day	2-3 times a day	
Beer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Wine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Hard liquor eg spirits, fortified wines eg port, sherry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
RTDs(Ready to drinks eg Vodka Cruisers, KGB, Tattoo, Woodstock)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Marijuana or cannabis (grass, pot, hash, oil, dope)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Hallucinogens, LSD, psilocybin (acid, strawberry fields, magic mushrooms, datura, buttons)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Amphetamines, methamphetamines, (bennies, uppers, meth, speed)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Barbiturates (rollies, pinkies)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Heroin, opium, morphine (misties, MST, poppies, crack, morp, homebake, horse)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Cocaine (coke)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Dance drugs (Ecstasy, GHB)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Now I am going to ask you some questions about your use of alcohol and drugs, and the effects it may have had on your relationships with your family and friends. Remember that your answers will be held strictly confidential and will not be revealed to anyone. Look at the frequency response scale, and tick the box that best describes how often you have been involved in that behaviour.

FREQUENCY RESPONSE SCALE

Never	Once or twice	3 or 4 times	5 or 6 times	More than 6 times	Office use
-------	---------------------	-----------------	-----------------	----------------------------	---------------

1. If married or living with a partner, how many times in the 12 months before coming to prison have you gotten into trouble with *your partner* because of your use of...

a. alcohol?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. marijuana or cannabis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. other drugs?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. How many times in the 12 months before coming to prison have you gotten into trouble with *your friends* because of your use of...

d. alcohol?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. marijuana or cannabis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. other drugs?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. How many times in the 12 months before coming to prison have you had problems with *your family* because of your use of...

g. alcohol?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. marijuana or cannabis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. other drugs?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. How many times in the 12 months before coming to prison have you gotten into *physical fights* because of your use of...

j. alcohol?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. marijuana or cannabis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. other drugs?.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. How often in the 12 months before coming to prison have you had problems with your *physical health* because of your use of...

m. alcohol?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
n. marijuana or cannabis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
o. other drugs?.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FREQUENCY RESPONSE SCALE

Office use

Never	Once or twice	3 or 4 times	5 or 6 times	More than 6 times
-------	---------------	--------------	--------------	-------------------

6. During the 12 months before coming to prison how many times have you gotten into trouble with *the police* or been arrested because of your use of...

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
p. alcohol?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
q. marijuana or cannabis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
r. other drugs.....						<input type="checkbox"/>

7. During the 12 months before coming to prison how many times have you had an *accident* while driving because of your use of...

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
s. alcohol?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
t. marijuana or cannabis?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
u. other drugs.....						<input type="checkbox"/>

8. If working, during the 12 months before coming to prison how many times have you *missed work* or had to call in sick because of your use of...

	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
v. alcohol?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
w. marijuana or cannabis?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
x. other drugs.....						<input type="checkbox"/>

--	--	--

--	--	--

**The final section of this study asks about your views on
COMMITTING A CRIME**

Listed below are some words that describe people's attitudes toward doing a crime (such as burglary, assault, dishonesty offences). For each statement, circle the number that best describes your attitude toward this behaviour.

Doing a crime (such as burglary, assault, dishonest offences) is:.....

Harmful	1	2	3	4	5	6	7	Beneficial	<input type="checkbox"/>
Good	1	2	3	4	5	6	7	Bad	<input type="checkbox"/>
Happy	1	2	3	4	5	6	7	Sad	<input type="checkbox"/>
Desirable	1	2	3	4	5	6	7	Undesirable	<input type="checkbox"/>
Enjoyable	1	2	3	4	5	6	7	Unenjoyable	<input type="checkbox"/>
Safe	1	2	3	4	5	6	7	Dangerous	<input type="checkbox"/>

If I committed a crime (such as burglary, assault, dishonest offences), most people who are important to me would:

Disapprove	1	2	3	4	5	6	7	Approve	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	---------	--------------------------

For me to commit a crime (such as burglary, assault, dishonest offences) would be:

Impossible	1	2	3	4	5	6	7	Possible	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	----------	--------------------------

If I had the opportunity I would commit a crime (such as burglary, assault, dishonesty offences)

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>
--------------------	---	---	---	---	---	---	---	------------------	--------------------------

Most people who are important to me

Don't do crime	1	2	3	4	5	6	7	Do crime	<input type="checkbox"/>
----------------	---	---	---	---	---	---	---	----------	--------------------------

It is mostly up to me whether or not I commit a crime:

Strongly agree	1	2	3	4	5	6	7	Strongly disagree	<input type="checkbox"/>
----------------	---	---	---	---	---	---	---	-------------------	--------------------------

How likely is it that you will commit a crime in the near future?

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely	<input type="checkbox"/>
--------------------	---	---	---	---	---	---	---	------------------	--------------------------

With regards to crime, how much do you do what people who are important to you think you should?

Not at all	1	2	3	4	5	6	7	Very much	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	-----------	--------------------------

How much control do you feel you have over whether you commit a crime or not?

No control	1	2	3	4	5	6	7	Complete control	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	------------------	--------------------------

I intend to commit a crime in the near future

Definitely	1	2	3	4	5	6	7	Definitely not	<input type="checkbox"/>
------------	---	---	---	---	---	---	---	----------------	--------------------------

Office use

Below are some reasons why people may or may not commit a crime (such as burglary, assault, dishonesty offences). For each statement circle the number that indicates what you think.

COMMITTING A CRIME WOULD:

1. Stop me getting bored
 Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Not getting bored would be
 Extremely bad 1 2 3 4 5 6 7 Extremely good

2. Gain respect from my friends
 Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Gaining respect from my friends would be
 Extremely bad 1 2 3 4 5 6 7 Extremely good

3. Get me things I want (such as money, food)
 Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Being able to get what I want (such as money, food) would be
 Extremely bad 1 2 3 4 5 6 7 Extremely good

4. Be doing a risky thing
 Totally disagree 1 2 3 4 5 6 7 Totally agree

Doing a risky thing would be
 Extremely bad 1 2 3 4 5 6 7 Extremely good

5. Release my frustration or anger
 Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Being able to release my frustration or anger would be
 Extremely bad 1 2 3 4 5 6 7 Extremely good

6. Give me a "high"
 Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Getting a "high" would be
 Extremely bad 1 2 3 4 5 6 7 Extremely good

Office use

COMMITTING A CRIME WOULD:

Office
use

7. Get me something I want for little effort

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Being able to get something I want for little effort would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

8. Give me a criminal record

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Having a criminal record would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

9. Make me feel sorry for the victim

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Feeling sorry for the victim would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

10. Make it hard for me to get a job

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Finding it hard to get a job would be

Extremely bad 1 2 3 4 5 6 7 Extremely good

The next questions ask you to decide whether these people would or would not want you to commit a crime. You are also asked to decide whether you would follow the advice of these people

My friends who have done a crime would want me to commit a crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Generally speaking, I tend to follow the advice of my friends who have done a crime

Not at all 1 2 3 4 5 6 7 Very much

My partner would want me to do a crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

Generally speaking, I tend to follow the advice of my partner

Not at all 1 2 3 4 5 6 7 Very much

My parents would want me to commit a crime

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely
--------------------	---	---	---	---	---	---	---	------------------

Office use

Generally speaking, I tend to follow the advice of my parents

Not at all	1	2	3	4	5	6	7	Very much
------------	---	---	---	---	---	---	---	-----------

Other members of my family would want me to commit a crime

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely
--------------------	---	---	---	---	---	---	---	------------------

Generally speaking, I tend to follow the advice of other members of my family

Not at all	1	2	3	4	5	6	7	Very much
------------	---	---	---	---	---	---	---	-----------

Using the scale below, please decide whether this applies to you, and whether this would make you more or less likely to commit a crime.

1. There is little chance getting caught by the police

Strongly disagree	1	2	3	4	5	6	7	Strongly Agree
-------------------	---	---	---	---	---	---	---	----------------

As there is little chance of getting caught by the police my committing a crime would be

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely
--------------------	---	---	---	---	---	---	---	------------------

2. There are times when I find myself in desperate situations, such as having no money to pay the bills or buy food

Never	1	2	3	4	5	6	7	Frequently
-------	---	---	---	---	---	---	---	------------

Being in desperate situations would make my committing a crime

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely
--------------------	---	---	---	---	---	---	---	------------------

3. There are always lots of opportunities available to commit a crime, such as an unlocked car

Strongly disagree	1	2	3	4	5	6	7	Strongly agree
-------------------	---	---	---	---	---	---	---	----------------

Having lots of opportunities available would make my committing a crime

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely
--------------------	---	---	---	---	---	---	---	------------------

4. I expect that in the near future I will be around people who encourage me to do a crime

Strongly disagree	1	2	3	4	5	6	7	Strongly agree
-------------------	---	---	---	---	---	---	---	----------------

Being around people who encourage me to do a crime would make my committing a crime

Extremely unlikely	1	2	3	4	5	6	7	Extremely likely
--------------------	---	---	---	---	---	---	---	------------------

5. There are times when I am provoked and have to defend myself

Never 1 2 3 4 5 6 7 Frequently

Being provoked and having to defend myself would make my doing crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

6. Doing a crime gives me feelings of power and control over the victim

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

The feelings of power and control over the victim would make my committing a crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

7. I expect that I will have problems and feel stressed in the near future

Strongly disagree 1 2 3 4 5 6 7 Strongly agree

Having problems and feeling stressed would make my committing a crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely

8. I expect I would feel guilty if I committed a crime

Never 1 2 3 4 5 6 7 Frequently

Feelings of guilt would make my doing crime

Extremely unlikely 1 2 3 4 5 6 7 Extremely likely



Please check to make sure that you have answered all the questions

**Thank you for taking
the time to complete
this questionnaire**

APPENDIX D-2

**Main Study Information Sheet:
Prison Inmates**

INFORMATION SHEET

Testing and extending a general theory of crime

This study is being carried out by Mei Wah Williams as her PhD research project, and is supervised by Associate Professor, Kevin Ronan, School of Psychology, Massey University. A research assistant will assist the researcher in the collection of information for this study, and will be closely supervised throughout the collection of this data. The purpose of this study is to investigate the causes of crime, and we are interested in looking at some of the attributes and attitudes people have towards crime. This study has been carried out with a university student group and we are interested in having other population groups participate also, such as the inmates of correction units. In this study we would like you to complete a questionnaire, which asks how you describe yourself generally on several characteristic traits, your attitudes and beliefs about certain behaviours, and describing your own behaviours.

We invite you to take part in the study and your participation is entirely voluntary. Any information you provide for the study (whether to the researcher or research assistant) will not be divulged to a third party, including prison authorities, and will have no impact on your imprisonment or subsequent release conditions. Should you decide not to participate or choose to withdraw from the study, you will not be disadvantaged in any way. If you agree to participate you will be asked to:

- Complete a questionnaire, which should take about 60-90 minutes
- Sign a consent form to indicate that you have read the information sheet and agree to participate in the study
- Allow Mei Wah Williams to view your prison file for your criminal record and any misconduct charges in the prison. No other information from the prison file will be recorded.

If you agree to take part in the study, you have the right to:

- Discuss any aspects of the study before agreeing to take part in the study
- Ask any questions about the study at any time during your participation
- Refuse to answer any particular question(s)
- Withdraw from participating in the study at any time
- Provide information on the understanding that it is confidential to the researcher/research assistant. Your personal information on the consent sheet will be kept separate from the questionnaire and will only be viewed by the researchers in reference to the study. All questionnaires will be identified only by code numbers and will be kept confidential to the researchers. No names will appear on your questionnaire, and everything you provide will be kept confidential and will only be used for this study. It will not be possible to identify you in any reports that are prepared from the study.
- Have access to a summary of the findings of the study when it is concluded

The information you provide in the questionnaire will be useful for purposes related to research into the theory of crime. If you agree to participate in the study it is important that you answer the questions as honestly and openly as you can, and this information will remain confidential. However ensure that you do not give out any other information from that asked in the questionnaire. Should you do so, depending on the information you provide and which may reveal your identity, an obligation to breach that confidentiality may be required.

Should you wish to clarify any further aspects of this study, please contact Mei Wah Williams, School of Psychology, Massey University, Private Bag 102 904, North Shore MSC, Auckland; telephone (09) 443 9799 extn 9886, or email: M.W.Williams@massey.ac.nz or Dr Kevin Ronan, Associate Professor, School of Psychology, Massey University, PO Box 11-222; telephone (06) 350 5799 ext: 2069, or email: K.R.Ronan@massey.ac.nz

This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 02/147. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Campus Human Ethics Committee: Palmerston North, telephone 06 350 5249, or email: S.V.Rumball@massey.ac.nz

APPENDIX D-3

**Main Study Consent Form:
Prison Inmates**

CONSENT FORM

Testing and extending a general theory of crime

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree / do not agree (*please circle one*) to Mei Wah Williams or her research assistant to view my prison file for my criminal history record and any misconduct charges in the prison. No other information from the prison file will be recorded.

I wish / do not wish (*please circle one*) to receive a summary of the results of the study when it is concluded.

As long as I respond only to the questions asked in the questionnaire, I agree to provide such information on the understanding that it is completely confidential and my identity will remain anonymous.

I understand I have the right to withdraw from the study at any time and to decline to answer any particular questions.

I agree to participate in this study under these conditions and those set out in the Information Sheet.

Signed:

Date:

Name:

Prison no:

Prison/Unit address:

In accordance with the Privacy Act (1993) this information will not be released to any other individual or organisation, or used for anything other than the stated purpose.

**Please place in the envelope, seal it, and return in the envelope addressed to:
Mei Wah Williams, Crime Study, School of Psychology, Private Bag 102-904,
North Shore MSC, Auckland**

APPENDIX E-1

**Massey University Human Ethics Committee Approval:
University Student Study**

>From K.A.Kahukoti@massey.ac.nz Thu Mar 21 11:17:03 2002
From: "Kahukoti, Karen" <K.A.Kahukoti@massey.ac.nz>
To: "Williams, Mei" <M.W.Williams@massey.ac.nz>
Cc: "Ronan, Kevin" <K.R.Ronan@massey.ac.nz>
Subject: HEC: PN Protocol 01/98
Date: Thu, 21 Mar 2002 11:16:59 +1200
Importance: high
X-Mailer: Internet Mail Service (5.5.2655.55)

01/98 Testing and extending Gottfredson and Hirschi's (1990)
general theory of crime

Ms Mei Wah Williams (HEC: PN Protocol 01/98)
Department: Psychology - TURITEA
Supervisor(s): Dr Kevin R Ronan

Thank you for the above protocol that was received and considered by the
Massey University Regional Human Ethics Committee: Palmerston North at their
meeting held on Tuesday 19 March 2002.

Phase I of the protocol was approved, subject to approval by Professor
Sylvia V Rumball (Chair) of the reply to the following comment:

Information Sheet

- * first paragraph, sixth line, amend sentence to read 'other
population groups including inmates of correction units will be asked ...',
- * supply a copy of the amended Information Sheet.

Please supply to Miss Karen A Kahukoti (Secretary), one (1) copy of your
reply.

Any departure from the approved protocol will require the researcher to
return this project to the Massey University Human Ethics Committee for
further consideration and approval.

Yours sincerely

Professor Sylvia V Rumball, Chair
Massey University Regional Human Ethics Committee: Palmerston North

Miss Karen A Kahukoti
Ethics Administrator
Equity & Ethics
Old Main Building, Turitea PN221
Massey University/Te Kunenga ki Purehuroa
Private Bag 11222, Palmerston North
NEW ZEALAND

Phone 64 6 350 6171
Fax 64 6 350 5622
Email K.A.Kahukoti@massey.ac.nz
Animal Ethics WWW <http://www.massey.ac.nz/~muaec>
Human Ethics WWW <http://www.massey.ac.nz/~muhec>



17 May 2002

Ms Mei Wah Williams
Psychology
TURITEA PN320

Dear Mei

**Re: HEC: PN Protocol – 01/98
Testing and extending Gottfredson and Hirschi's (1990) general theory of
crime**

Thank you for your letter dated 6 May 2002 outlining changes you wish to make to the above protocol.

The amendments were approved and noted.

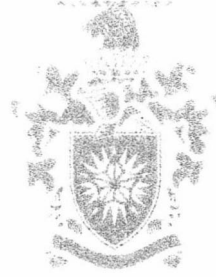
Any departure from the approved protocol will require the researcher to return this project to the Massey University Regional Human Ethics Committee: Palmerston North for further consideration and approval.

Yours sincerely

A handwritten signature in black ink that reads "Sylvia Rumball".

Professor Sylvia V Rumball, Chair
Massey University Regional Human Ethics Committee: Palmerston North

cc Dr Kevin R Ronan
Psychology
TURITEA PN320



06 May 2002

The Secretary
Massey University Human Ethics Committee
Palmerston North

Dear Sir/Madam

**Re: HEC: PN Protocol – 01/98
Testing and extending Gottfredson and Hirschi's (1990) General theory
of crime**

Approval was received from the MUHEC on 22 March 2002 to undertake the project. Since that application I wish to further seek the Committee's approval to reimburse research participants for partaking in the study, as this was not included in the original proposal. The study requires a not inconsiderable amount of commitment from participants, such as 1-1 ½ hours to complete the questionnaire and participate in the follow-up questionnaire 3-6 months later. The reimbursement for participants will be only a token payment to cover their time and effort in completing the questionnaire and other costs they may incur, such as travel. This will be \$15 for the first assessment, and \$10 for the follow-up study. External funding will be sought to pay the participants.

I look forward to your response.

Yours sincerely

Mei Wah Williams
PhD student

Dr Kevin Ronan
Supervisor



Massey University

Private Bag 11 222,
Palmerston North,
New Zealand
Telephone: 64 6 356 9099

25 June 2003

Ms Mei Wah Williams
Psychology
TURITEA PN320

Dear Mei

**Re: HEC: PN Protocol – 01/98
Testing and extending Gottfredson and Hirschi's (1990) general theory of
crime**

Thank you for your letter dated 16 June 2003 outlining changes you wish to make to the above protocol.

The changes were approved and noted.

Any departure from the approved protocol will require the researcher to return this project to the Massey University Campus Human Ethics Committee: Palmerston North for further consideration and approval.

A reminder to include the following statement on all public documents "This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol NO/NO. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Campus Human Ethics Committee: Palmerston North, telephone 06 350 5249, email S.V.Rumball@massey.ac.nz"

Yours sincerely

A handwritten signature in cursive script that reads "Sylvia Rumball".

Professor Sylvia V Rumball, Chair
Massey University Campus Human Ethics Committee: Palmerston North

cc Dr Kevin R Ronan
Psychology
TURITEA PN320

To: S.V.Rumball@massey.ac.nz
From: Mei Williams <M.W.Williams@massey.ac.nz>
Subject: HEC: PN Protocol 01/98
Cc:
Bcc:
Attached:

Dear Sylvia, as per our phone conversation today, I wish to increase my sample size from 100 to 250 as originally intended. This is due to insufficient power for the study with the lower number of students. As I have moved to the Albany campus I am requesting that I can recruit the extra students needed from Albany rather than Palmerston North campus. Thanks. If you have any further queries please contact me.



8 July 2002

Ms Mei Wah Williams
Psychology
TURITEA PN320

Dear Mei

**Re: HEC: PN Protocol – 01/98
Testing and extending Gottfredson and Hirschi's (1990) general theory of
crime**

Thank you for your email received 3 July 2002 outlining changes you wish to make to the above protocol.

The amendments were approved and noted.

Any departure from the approved protocol will require the researcher to return this project to the Massey University Regional Human Ethics Committee: Palmerston North for further consideration and approval.

Yours sincerely

K.A. Kahukoti

Dr Gurjeet Gill, Deputy Chair
Massey University Regional Human Ethics Committee: Palmerston North

cc Dr Kevin R Ronan
Psychology
TURITEA PN320

To: S.V.Rumball@massey.ac.nz
From: Mei Williams <M.W.Williams@massey.ac.nz>
Subject: HEC: PN Protocol 01/98
Cc: Kevin Ronan
Bcc:
Attached:

Dear Sylvia,

1. I wish to clarify that the approval for the protocol is to undertake phase 1 of the study, with phase 1 including both stage 1 and 2 of the study with a university student population (as outlined on page 3 of the protocol). Phase II is with a prison inmate population and a separate protocol for this population group will be submitted at such time.
2. There are minor changes to the protocol for which I seek approval:
 - a. pg 3, no. 2 In the protocol the main study is to use first year undergraduate students. However this should have been second or third year undergraduate students, as first year students will be unable to complete part of the questionnaire due to their lack of university experience. Therefore I wish to seek approval to approach second and/or third year undergraduate students, not first year undergraduate students.
 - b. 1.3 Procedure for recruiting participants (pg4) - I will retain the first part of the procedure which is to approach HOS to obtain consent to talk to individual course controllers about talking to their students during class time. However in order to simply the process and for practicality sake, instead of coming back a week later to see which students wish to participate in the study, I will leave a form in the class in which students can leave their name and contact no. if they wish to participate in the study. In addition, I will leave some information sheets which they can take away with them to read. If students wish to participate in the study they can be followed up either by leaving their name on the form or contacting me after reading the the information sheet. Therefore I wish to seek approval to change to procedure to that outlined above, instead of that in the protocol.

Thank you for considering the above and I await your response.

APPENDIX E-2

**Massey University Human Ethics Committee Approval:
Prison Study**



Private Bag 11 222,
Palmerston North,
New Zealand
Telephone: 64 6 356 9099

28 May 2003

Ms Mei W Williams
School of Psychology
TURITEA

Dear Mei

**Re: HEC: PN Protocol – 02/147
Testing and extending Gottfredson & Hirschi's (1990) general theory of
crime**

Thank you for your letter dated 13 May 2003 and the amended protocol.

The amendments you have made now meet the requirements of the Massey University Human Ethics Committee and the ethics of your protocol are approved.

Any departure from the approved protocol will require the researcher to return this project to the Massey University Campus Human Ethics Committee: Palmerston North for further consideration and approval.

A reminder to include the following statement on all public documents "This project has been reviewed and approved by the Massey University Human Ethics Committee, PN Protocol 02/147. If you have any concerns about the conduct of this research, please contact Professor Sylvia V Rumball, Chair, Massey University Campus Human Ethics Committee: Palmerston North, telephone 06 350 5249, email S.V.Rumball@massey.ac.nz"

Yours sincerely

A handwritten signature in black ink, appearing to read "S.V. Rumball".

Professor Sylvia V Rumball, Chair
Massey University Campus Human Ethics Committee: Palmerston North

cc Dr Kevin Ronan
Department of Psychology
TURITEA

APPENDIX E-3

**Department of Corrections Approval
for Research with Prison Inmates**



DEPARTMENT
OF CORRECTIONS

12 February 2003

Policy
Development

Mayfair House
44-52 The Terrace
Private Box 1206
Wellington, New Zealand
Tel 64-4-499 5620, Fax 64-4-460 321

Mei Wah Williams
School of Psychology
Private Bag 102 904
North Shore MSC
AUCKLAND

Dear Mei Wah

Conditional approval of research with inmates

You have submitted a proposal for PhD research involving prison inmates. As you know, this research has been approved by the Department subject to the receipt of a letter of approval from Massey University's Research Ethics Committee.

I look forward to receiving an appropriate letter in the near future. Once received, all formalities required by the Department will have been completed.

May I take this opportunity to wish you well with your research.

Yours sincerely

Jared Mullen
General Manager
Policy Development Group



DEPARTMENT
OF CORRECTIONS

Public Prisons

Midland Region

Manawatu Prison

Camp Road

Private Bag 11-023, Palmerston North

Tel 0-6-351 0300

Fax 0-6-325 8904

13 May 2003

Mei Wah Williams
School of Psychology
Private Bag 102 904
North Shore MSC
AUCKLAND

FAX: 09 433 9732

Dear Mei

RESEARCH WITH INMATES

Further to your enquiry about your research proposal, I consent to you undertaking research on inmates at Manawatu Prison on condition of the final approval from the Massey University Research Ethics Committee.

Yours sincerely

Trevor Riddle
SITE MANAGER

APPENDIX F-1

Factor analysis and scree plot

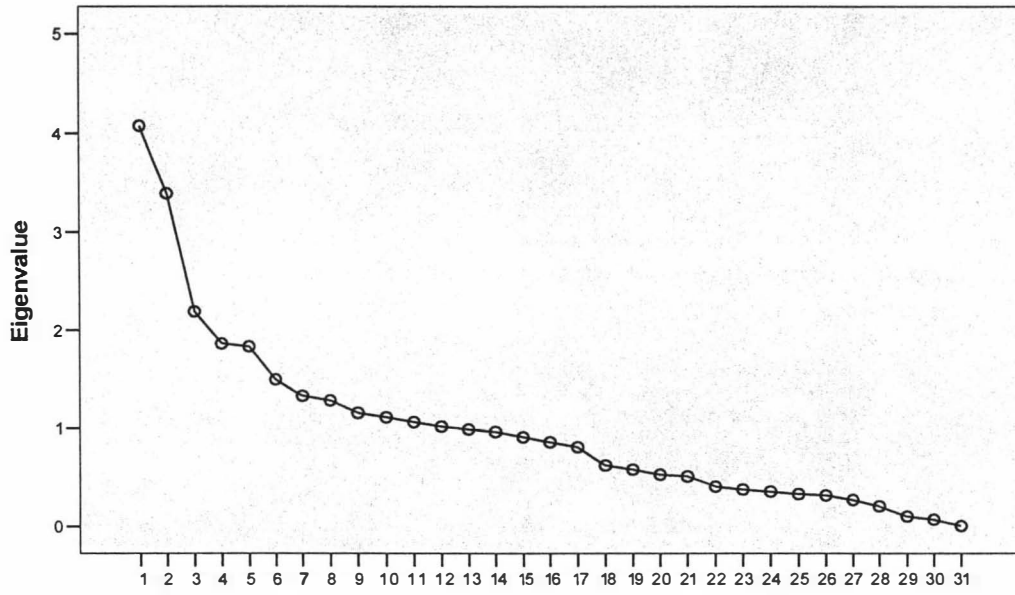
Factor Analysis

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.077	13.152	13.152	4.077	13.152	13.152	3.392	10.943	10.943
2	3.393	10.946	24.098	3.393	10.946	24.098	3.369	10.868	21.811
3	2.190	7.065	31.163	2.190	7.065	31.163	1.955	6.308	28.118
4	1.865	6.016	37.179	1.865	6.016	37.179	1.937	6.248	34.366
5	1.835	5.919	43.097	1.835	5.919	43.097	1.794	5.787	40.152
6	1.497	4.830	47.928	1.497	4.830	47.928	1.559	5.029	45.181
7	1.329	4.288	52.216	1.329	4.288	52.216	1.426	4.599	49.781
8	1.283	4.138	56.353	1.283	4.138	56.353	1.424	4.594	54.375
9	1.155	3.726	60.080	1.155	3.726	60.080	1.337	4.314	58.689
10	1.110	3.582	63.662	1.110	3.582	63.662	1.298	4.188	62.877
11	1.062	3.425	67.086	1.062	3.425	67.086	1.207	3.892	66.769
12	1.017	3.279	70.365	1.017	3.279	70.365	1.115	3.596	70.365
13	.987	3.185	73.550						
14	.962	3.104	76.655						
15	.908	2.928	79.583						
16	.857	2.766	82.348						
17	.807	2.602	84.950						
18	.621	2.002	86.952						
19	.578	1.864	88.816						
20	.527	1.701	90.517						
21	.509	1.641	92.158						
22	.406	1.309	93.467						
23	.375	1.211	94.678						
24	.355	1.144	95.821						
25	.330	1.063	96.885						
26	.317	1.022	97.906						
27	.269	.869	98.775						
28	.205	.662	99.437						
29	.101	.326	99.763						
30	.069	.224	99.988						
31	.004	.012	100.000						

Extraction Method: Principal Component Analysis.

Scree Plot



APPENDIX F-2

Monte Carlo PCA for Parallel Analysis

Monte Carlo PCA for Parallel Analysis

2/08/2007 10:46:40 a.m.
Number of variables: 31
Number of subjects: 269
Number of replications: 100

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+++++
```

Eigenvalue #	Random Eigenvalue	Standard Dev
1	1.6898	.0528
2	1.5963	.0376
3	1.5240	.0362
4	1.4631	.0297
5	1.4088	.0259
6	1.3586	.0254
7	1.3106	.0238
8	1.2659	.0208
9	1.2228	.0221
10	1.1828	.0224
11	1.1424	.0240
12	1.1040	.0218
13	1.0669	.0197
14	1.0338	.0190
15	0.9961	.0169
16	0.9655	.0167
17	0.9342	.0196
18	0.9018	.0189
19	0.8696	.0188
20	0.8408	.0182
21	0.8073	.0151
22	0.7760	.0178
23	0.7458	.0156
24	0.7151	.0171
25	0.6829	.0183
26	0.6500	.0172
27	0.6190	.0180
28	0.5860	.0183
29	0.5519	.0182
30	0.5164	.0215
31	0.4718	.0216

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+++++
```

2/08/2007 10:46:54 a.m.

Monte Carlo PCA for Parallel Analysis
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APPENDIX G-1

Confidentiality Agreements with Research Assistants

Confidentiality Agreement
for Research Assistant

**Testing and extending Gottfredson and Hirschi's (1990) General Theory of
Crime**

Principal Investigators: Mei Wah Williams, Kevin Ronan, and Richard Fletcher

Maintaining confidentiality and privacy for people taking part in this study is a high priority. Participants have been assured that everything they disclose in the questionnaire will be treated with the strictest confidence. It is vital that this confidential information is not discussed with anyone outside the research team.

I have read the Confidentiality Form and I agree to keep confidential all information concerning the project and people taking part in this study as outlined above.

Signed: *[Signature]*.....
Name: *MICHAEL GORDON SCOTT*.....
Date: *09/07/03*.....

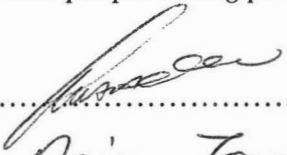
Confidentiality Agreement
for Research Assistant

Testing and extending Gottfredson and Hirschi's (1990) General Theory of Crime

Principal Investigators: Mei Wah Williams, Kevin Ronan, and Richard Fletcher

Maintaining confidentiality and privacy for people taking part in this study is a high priority. Participants have been assured that everything they disclose in the questionnaire will be treated with the strictest confidence. It is vital that this confidential information is not discussed with anyone outside the research team.

I have read the Confidentiality Form and I agree to keep confidential all information concerning the project and people taking part in this study as outlined above.

Signed: 

Name: *Anja Isaacson*

Date: *14-11-2003*




Confidentiality Agreement
for Research Assistant

Testing and extending Gottfredson and Hirschi's (1990) General Theory of Crime

Principal Investigators: Mei Wah Williams, Kevin Ronan, and Richard Fletcher

Maintaining confidentiality and privacy for people taking part in this study is a high priority. Participants have been assured that everything they disclose in the questionnaire will be treated with the strictest confidence. It is vital that this confidential information is not discussed with anyone outside the research team.

I have read the Confidentiality Form and I agree to keep confidential all information concerning the project and people taking part in this study as outlined above.

Signed: 

Name: MICHELLE KING

Date: 21/07/2003