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Tracing the Evolution of Gottfredson and Hirschi's Concept of Self-Control: A Conceptual and Empirical Analysis

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TRACING THE EVOLUTION OF GOTTFREDSON AND HIRSCHI'S CONCEPT OF SELF-CONTROL: A CONCEPTUAL AND EMPIRICAL ANALYSIS

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Title: Tracing the Evolution of Gottfredson and Hirschi's Concept of Self-Control: A Conceptual and Empirical Analysis

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The principal purpose of this dissertation was to develop and test a measure of self-control based on Hirschi's (2004) revised conceptualization of the central theoretical construct in Gottfredson and Hirschi's (1990) *A General Theory of Crime.* This study also tests the principal proposition of Gottfredson and Hirschi's (1990) general theory by using path analysis to examine the association between a measure of Hirschi's (2004) modified concept of self-control and self-reported deviance while incorporating gender, a theoretically and empirically important variable.

The survey instrument was administered to an availability sample (n = 257) of undergraduate students who are enrolled in introductory criminology courses at Indiana University of Pennsylvania. The quality of the revised bond-based self-control measures was assessed by examining its reliability, validity, and dimensionality. The findings indicate that the bond-based self-control scale developed for this study was a reliable and valid measure. The results also indicate the bond-based self-control measure was a unidimensional construct as suggested by Hirschi (2004).

In this study, two theoretical models based on Gottfredson and Hirschi's (1990) discussion on gender and crime were evaluated i.e., an indirect effects model and a direct and indirect effects model. Two measures of self-control and one measure of deviance

were developed and included in the models that were tested. In the first model, the indirect effects of gender on hypothetical scenario design (HSD) theft via HSD self-control were tested. The second model tested the indirect effects of gender on deviance through bond-based self-control.

The results indicate that there is empirical support for Gottfredson and Hirschi's (1990) assertions about the gender-crime relationship. That is, gender has a direct effect on both the HSD and bond-based self-control measures and gender has a direct effect on deviance. In addition, self-control has a direct effect on both deviance and theft.

Future research should focus on further development of a measure of self-control based on Hirschi's (2004) reconceptualization of the self-control concept. Researchers should also continue to test theoretical models that include gender so that we might gain a better understanding of the role gender in Gottfredson and Hirschi's (1990) general theory.

DEDICATION

In memory of my brother, Zack, who was the man “behind blues eyes.”

Behind Blues Eyes

No one knows what it’s like
To be the bad man
To be the sad man
Behind blue eyes

No one knows what it’s like
To be hated
To be fated
To telling only lies

But my dreams
They aren’t as empty
As my conscience seems to be
I have hours, only lonely
My love is vengeance
That’s never free

No one knows what it’s like
To feel these feelings
Like I do, and I blame you!
No one bites back as hard
On their anger
None of my pain and woe
Can show through

No one knows what it’s like
To be mistreated, to be defeated
Behind blue eyes
No one knows how to say
That they’re sorry and don’t worry
I'm not telling lies

No one knows what it’s like
To be the bad man
To be the sad man
Behind blue eyes

~Limp Biskit

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The completion of my dissertation and doctoral studies has been a long road. I recognize that I would not be here today if it were not for many, many individuals helping me along the way. First and foremost, I thank God for bringing me to this place. Without faith, prayer and His guidance, I know I would not have reached this goal.

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I would like to thank the members of my committee, Dennis Giever, Kate Hanrahan, and Jamie Martin. Without their guidance, I would not have been able to achieve this goal. Dennis' your statistics courses were very demanding but I learned so much from you. Thank you for expecting my best and not accepting anything less. Kate you have inspired me to be the best teacher I can be by your example. You always took the time to see that your students succeeded both professionally and personally. Kate you're the best teaching has to offer. Jamie you offered encouragement and support throughout my doctoral studies. I could just pop into your office unannounced and you would take the time to listen. Thank you, Jamie, for your kindness and consideration.

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through one of the most difficult adventures that I have ever embarked upon. During the dissertation process, Jake and I corresponded through e-mail because of the distance involved. Jake your e-mails were always encouraging, upbeat, and very, very funny. I always looked forward to every e-mail because I was never quite sure what you would have to say. You taught me to never take myself too seriously and to keep my priorities straight. Here's to you Jake—thank you for being an example, a mentor, and most of all a friend.

A big thank you goes out to LeAnn Cabage. Your friendship means a great deal to me. Thank you for helping me to revised former drafts of my dissertation and, of course, helping me with the data entry. I know you took time away from your own studies and family to help me. It is nice to know that there are friends who you count on no matter the circumstance.

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CHAPTER I

PURPOSE AND SIGNIFICANCE OF THE STUDY

The principal purpose of this dissertation is to develop and test a measure of self-control based on Hirschi's (2004) revised conceptualization of the central theoretical construct in Gottfredson and Hirschi's (1990) *A General Theory of Crime.* In constructing a context for presenting the reconceptualization of self-control and its measurement, Gottfredson and Hirschi's (1990) theory will be presented and measures based on their earlier conceptualization of self-control will be reviewed.

Since its formal introduction, criminologists have continued to call for further clarification of the central concepts and measures of Gottfredson and Hirschi's (1990) general theory (see e.g., Arneklev, Grasmick, Tittle, & Bursik, 1993; Barlow, 1991; Geis, 2000; Grasmick, Tittle, Bursik, & Arneklev, 1993; Longshore, Stein, & Turner, 1998; Longshore, Chang, Hsieh, & Messina, 2004; Miller & Burack, 1993; Stylianou, 2002; Tittle, Ward, & Grasmick, 2003). To their credit, Gottfredson and Hirschi (1990) have welcomed these criticisms viewing them as opportunities to offer additional guidance to those testing their theory (Gottfredson, 2005; Hirschi, 1995; 2004; Hirschi & Gottfredson, 1993; 1994; 2000).

Hirschi's (2004) reconceptualization of the central concept of self-control has been the major alteration in the theory to date. A "shift" in the conceptualization of self-control was necessary because, as Hirschi (2004) sees it, Gottfredson and Hirschi (1990) presented a conceptualization of self-control that mislead researchers and researchers in turn misinterpreted the meaning of the self-control construct (see also Marcus, 2003; 2004; Taylor, 2001).

This dissertation builds on research conducted by Gibbs, Dodson, Cho, and Clevenger (2008) and Piquero and Bouffard (2007). Like Gibbs et al. (2008), the principal purpose of this study is to develop and test a measure of self-control based on Hirschi's (2004) revised conceptualization. Similar to Piquero and Bouffard (2007), a second measure of self-control is developed and tested using a hypothetical scenario design. This study extends the research of Gibbs et al. (2008) and Piquero and Bouffard (2207) by testing the principal proposition of Gottfredson and Hirschi's (1990) general theory using path analysis to examine the association between a measure of Hirschi's (2004) modified concept of self-control and self-reported deviance while incorporating gender.

The Importance of Gottfredson and Hirschi's Theory

Gottfredson and Hirschi note that in formulating their theory "Our expressed hope was that our book would stimulate discussion about crime. Within a few years it was clear that it had succeeded in doing so" (Hirschi & Gottfredson, 2000, p. 55). This is evidenced by the fact that Gottfredson and Hirschi's (1990) general theory has become one of the most widely cited (Cohn & Farrington, 1999) and tested theories of crime (Pratt & Cullen, 2000; Vazsonyi, Pickering, Junger, & Hessing, 2001). A growing body of empirical research has demonstrated at least moderate support for the theory's central proposition (Hirschi, 2004) that low self-control predicts a variety of criminal and noncriminal deviant behaviors (Arneklev et al., 1993; Benson & Moore, 1992; Bichler-Robertson, Potchak, & Tibbetts, 2003; Brownfield & Sorenson, 1993; Burton, Cullen, Evans, Alarid, & Dunaway, 1998; Cochran, Wood, Sellers, Wilkerson, & Chamlin, 1998;

DeLisi, Hochstetler, & Murphy, 2003; Evans, Cullen, Burton, Dunaway, & Benson, 1997; Gibbs & Giever, 1995; Gibbs, Giever, & Higgins, 2003; Giever, 1995; Grasmick et al., 1993; Hay, 2001; Higgins, 2002; 2004; Higgins & Makin, 2004; Higgins & Ricketts, 2004; Keane, Maxim, & Teevan, 1993; LaGrange & Silverman; 1999; Longshore, 1998; Longshore & Turner, 1998; Longshore, Turner, & Stein, 1996; Lynskey-Peterson, Winfree, Esbensen, & Clason, 2000; Nagin & Paternoster, 1993; Nakhaie, Silverman, & LaGrange, 2000a; Nakhaie, Silverman, & LaGrange, 2000b; Paternoster & Brame, 1997; 2000; Piquero, Gibson, & Tibbetts, 2002; Piquero & Tibbetts, 1996; Polakowski, 1994; Tibbetts, 1999; Tibbetts & Myers, 1999; Tibbetts & Whittimore, 2002; Tittle et al., 2003; Unnever, Cullen, & Pratt, 2003; Wood, Pfefferbaum, & Arneklev, 1993; Zager, 1993). Pratt and Cullen (2000) concluded from their meta-analysis that "…self-control [is] one of the strongest known correlates of crime" (p. 952).

Gottfredson and Hirschi's (1990) theory has been frequently tested in part because it is parsimonious and comprised of relatively straightforward concepts that meet some of the criteria of usefulness (see Sartori, 1984), including denoting observed variables that researchers have adequately measured using convenient and inexpensive methods like self-reports (Gibbs & Giever, 1995; Gibbs, Giever, & Martin, 1998; Grasmick et al., 1993; Higgins, 2002). Gottfredson and Hirschi's critical and contentious style of presentation also may have drawn attention to their theory and their claims of empirical support (Gibbs & Giever, 1995; Gibbs et al., 1998). Their lively debates in the literature and at conferences with researchers of the stature of Alfred Blumstein have generated interest in the theory over the past two decades (J. Gibbs, personal communication, October 16, 2005). Their book, *A General Theory of Crime* is among a

handful of theoretical works that have become part of the criminology canon in the past quarter century.

Theoretical Overview

Gottfredson and Hirschi (1990) express a great deal of dissatisfaction with the ability of academic criminology to provide credible explanations of criminal and deviant behavior. They argue this condition is due in large part to criminologists who attempt to explain the causes of crime without first investigating the nature and/or characteristics of crime. Therefore, unlike others, Gottfredson and Hirschi (1990) begin by examining "crime itself, exploring its essential nature before attempting to explain it" (Preface, p. xv).

Based on their perusal of the literature, Gottfredson and Hirschi (1990) derive a conception of the criminal that is, they maintain, more logically consistent with the nature of crime. The authors regard this as one of the major strengths of their theory and suggest that they have developed a more explicit and definitive explanation of crime and deviance than other theorists. Specifically, they argue that they make clear, logical connections between their conception of the criminal actor and the criminal act, while "many theorists leave this task to those interpreting or testing their theory" (Hirschi & Gottfredson, 1993, p. 52).

Characteristics of the Crime: The Event

According to Gottfredson and Hirschi (1990), criminal acts are best explained by the Classical Theory of criminal behavior. From this perspective, crime, like all human

behavior reflects two elements: benefits and costs (Beccaria, 1764; Gottfredson & Hirschi, 1990; Hirschi, 2004). The assumption is that people have agency and make rational choices to obtain the greatest benefit at the least cost. Gottfredson and Hirschi (1990) argue that, "the existence of any item of behavior is prima facie evidence that its benefits exceed its costs" (p. 9). Criminal behavior is merely a matter of assessing the consequences of the act, which humans do by their very nature. Therefore, crime does not require any special motivation, it is merely a manifestation of an individual's natural human inclination to pursue pleasure and avoid pain (Gottfredson & Hirschi, 1990). What does require explanation is individual variation in choosing to act in particular circumstances.

Consistent with the classical view of human nature, Gottfredson and Hirschi (1990) define crime as potentially pleasurable acts of "force or fraud undertaken in pursuit of self-interest" (p. 15). After examining a variety of criminal acts, they conclude that the majority of crimes share several common features i.e., "criminal acts tend to be short lived, immediately gratifying, easy, simple, and exciting" (Gottfredson & Hirschi, 1990, p. 14). Criminal acts require minimal investment or effort but result in immediate gain for the offender.

Gottfredson and Hirschi (1990) also claim that individuals who participate in criminal behavior will "tend to pursue immediate pleasures that are not criminal: they will tend to smoke, drink, use drugs, gamble, have children out of wedlock, and engage in illicit sex" (p. 90). Thus, the general theory is not just a theory of crime, but also of deviance, defined broadly to include such problems as instability in relationships and employment, drug and alcohol abuse, involvement in accidents, and sexual promiscuity

(Hay, 2001). Gottfredson and Hirschi (1990) refer to this wide range of deviant behaviors as crime equivalents or acts analogous to crime.

Characteristics of the Criminal: Self-Control

In their presentation of their theory in their book *A General Theory of Crime*, Gottfredson and Hirschi (1990) define self-control as "the differential tendency of people to avoid criminal acts whatever the circumstances in which they find themselves" (p. 87). The decision to commit a crime or equivalent act when presented with an opportunity is related to the individual's calculation of costs and benefits. This reflects the individual characteristic or trait of self-control. Crime and equivalent acts appeal to those lacking self-control because they lack the capacity to consider the long-term consequences of their behavior for themselves and others. Gottfredson and Hirschi (1990) observe

> . . . the dimensions of self-control are, in our view, factors affecting calculation of the consequences of one's acts. The impulsive or shortsighted person fails to consider the negative or painful consequences of his acts; the insensitive person has fewer negative consequences to consider; the less intelligent person also has fewer negative consequences to consider (has less to lose) (p. 95).

As far as Gottfredson and Hirschi (1990) are concerned, self-control is *the* primary characteristic that accounts for consistent individual rate differences in the commission of criminal acts and crime equivalents. Those who lack self-control are

more likely to pursue the immediate pleasure of criminal behavior when presented with an opportunity.

The nature of low self-control, according to Gottfredson and Hirschi (1990), "can be derived from the nature of criminal acts" (p. 88). As noted above, they describe criminal acts as "…short lived, immediately gratifying, easy, simple, and exciting" (Gottfredson & Hirschi, 1990, p. 14). It is expected that people involved in acts with these event characteristics would exhibit similar person characteristics or traits. Specifically, people who lack self-control have a tendency to (1) act on the spur of the moment, or impulsively, seeking short-term immediate pleasures; (2) prefer easy or simple tasks over complex ones; (3) have a propensity for risk-seeking, showing a preference for "excitement and danger over sameness and safeness" (Winfree & Bernat, 1998, p. 540); (4) prefer physical activities over mental or cognitive pursuits; (5) be self-centered and insensitive to the wants and needs of others; and (6) lose their temper and resort to aggressive coping strategies when faced with frustrating situations and circumstances.

However, Gottfredson and Hirschi (1990) are careful to point out that their conception of self-control is not deterministic (see also Hirschi & Gottfredson, 1993; 2000) i.e., "crime is not an automatic or necessary consequence of low self-control" (Gottfredson & Hirschi, 1990, pp. 89-90). Other properties of the individual or situational conditions may affect the likelihood of participating in criminal or deviant acts. For example, Gottfredson and Hirschi (1990) recognize that a lack of self-control cannot be acted on unless the opportunity to do so presents itself. As a result, they see

crime as a product of individuals with low self-control who come into contact with opportunities to commit crime and equivalent acts.

Versatility

Gottfredson and Hirschi (1990) also contend that there is a great deal of versatility among offenders in the kinds of criminal and deviant acts in which they will engage. By versatility, they mean that ". . . offenders commit a wide variety of criminal acts, with no strong inclination to pursue a specific criminal act or a pattern of criminal acts to the exclusion of others" (Gottfredson & Hirschi, 1990, p. 91). This assertion has been met with skepticism by a number of researchers who maintain that offenders specialize (see e.g., Benson & Moore, 1992; Geis, 2000; Wright, Logie, & Decker, 1995).

Despite the opposition Gottfredson and Hirschi (1990) continue to maintain that the empirical support for a lack of versatility in offending is "overwhelming" (p. 91). Although they admit some offenders may repeat a pattern of behavior (e.g., robbery or rape) if an obvious opportunity presents itself, generally speaking, offenders do not specialize. As an example, they point to research conducted by Akers in which he found that

> compared to the abstaining teenager, the drinking, smoking, and drug-taking teen is much more likely to be getting into fights, stealing, hurting other people, and committing other delinquencies. . . . but the variation in the order in which they take up these things leaves little basis for proposing the causation of one by the other (Akers as quoted in Gottfredson & Hirschi, 1990, p. 93).

Crime and analogous behaviors appeal to those lacking self-control because they are able to see the immediate benefits but fail to see the long-term costs. As Gottfredson and Hirschi (1990) see it, low self-control is a general trait that limits one's ability to assess the broader implications of crime for oneself and others. Consequently, those with self-control deficits more favorably assess opportunities for crime than their more self-restrained counterparts.

Gottfredson and Hirschi (1990) assert that early childhood socialization or parental management is the central factor shaping self-control. The next section presents a discussion of the child rearing model proposed by Gottfredson and Hirschi (1990).

Sources of Self-Control

Above all else, according to Hirschi (1995), "…what children must learn is self-control; the ability to resist temptations of the moment in favor of long-term projects or prospects" (p. 122). Parents, through socialization, are the primary agents responsible for instilling self-control in their children. Self-control is dependent on effective child rearing practices, what Gottfredson and Hirschi (1990) refer to as parental management. Its absence is the primary cause of low self-control, which in turn influences the calculation of the costs and benefits of criminal and deviant behavior (Hirschi, 2004).

Gottfredson and Hirschi (1990) credit many of their ideas on parental management to the work of Gerald Patterson of the Oregon Social Learning Center, although more recently credit is given "…to that Sheldon and Eleanor Glueck, and to the most general 'social control' model" (Hirschi, 2004, p. 541). Patterson's (1980) research focuses on the process by which parents socialize their children to avoid deviant or

antisocial behavior. He ultimately concludes children act in antisocial ways because parents lack the skills necessary to effectively manage their children.

Patterson (1980) presents the primary elements of parental management as monitoring and discipline. These were later adopted by Gottfredson and Hirschi (1990) in the formulation of *A General Theory of Crim*e. They indicate the effective management of a child requires parents to: (1) monitor the child's behavior, (2) recognize and acknowledge deviant behavior when it arises, and (3) apply consistent and proportionate (preferably non-corporal) punishment for deviant behavior when it occurs (Gottfredson & Hirschi, 1990). In addition, affection for or an emotional investment in the child represent a necessary condition for setting effective parental management in motion. That is, parents who care about their child will monitor the child's behavior, identify inappropriate or deviant behavior, and correct the behavior when it happens. If these conditions are met, a child is likely to develop self-control.

According to Gottfredson and Hirschi (1990), ". . . low self-control is not produced by training, tutelage, or socialization; as a matter of fact all of the characteristics associated with low self-control tend to show themselves in the absence of nurturance, discipline, or training" (p. 95). Put differently, children are naturally inclined to have low self-control unless parents are willing to effectively manage their children.

It is important to point out that a breakdown can occur at any stage of the parental management process. As Hirschi (1995) explains:

> parents may not care for the child (in which case none of the other conditions would be met); the parents, even if they care, may not have the time or energy to monitor the child's behavior; the parents, even if they

> care and monitor, may not see anything wrong with the child's behavior; finally, even if everything else is in place, the parents may not have the means or inclination to punish the child (p. 125).

Self-control is most likely fostered in children whose parents consistently apply the child rearing model outlined by Gottfredson and Hirschi (1990; see also Hirschi, 1994; 1995). The good news for parents is when children are successfully socialized it is highly unlikely that socialization can be undone.

Stability

Once established in early childhood, one's level of self-control remains relatively stable over the life course. This is reflected in "differences between people in the likelihood that they will commit criminal acts persist over time" (Gottfredson & Hirschi, 1990, p. 107). Individuals with high self-control are substantially less likely to participate in deviant and criminal behavior at all stages of their lives in comparison to those with low self-control. However, within levels of self-control, there is variation in offending over the life course. Both those with high and low self-control, are more likely to offend when they are adolescents than when they are elderly.

Opportunity

Opportunity is one of the necessary situational conditions for crime to occur. When an individual with low self-control is presented with an opportunity, he or she is more likely to commit crime and crime equivalent acts. However, Gottfredson and Hirschi (1990, p. 190) contend that opportunity is "not central" to their theory of

criminality because opportunities to commit crime or analogous acts are “limitless” (Hirschi & Gottfredson, 1993, p. 50). Stated differently, opportunities to commit criminal or deviant acts are essentially available to everyone. Since there is little or no variation in opportunity, it will not be included as part of Gottfredson and Hirschi’s (1990) conceptual model in this dissertation.

Gottfredson and Hirschi’s Conceptual Model of Offending

To summarize, Gottfredson and Hirschi’s (1990) theory is built on three primary concepts: parental management, self-control, and deviance. The conceptual model, in its most basic form, posits that parental management is positively related to self-control, which influences deviance (see Figure 1).

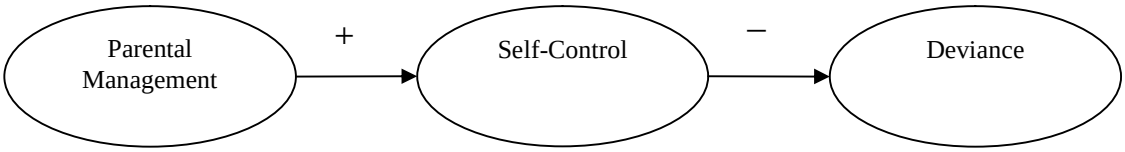

Figure 1. Gottfredson and Hirschi’s conceptual model of offending.

Before continuing it again should be emphasized that the principal purpose of this dissertation is to develop and test a measure of self-control based on Hirschi’s (2004) revised conceptualization. Therefore, in the chapter that follows, I will trace the evolution of Gottfredson and Hirschi’s (1990) self-control construct from its original exposition through its most recent modification proposed by Hirschi (2004). This will include a review of the conceptualization and operationalization of the concept of self-control, the main focus of this dissertation. A detailed discussion of parental

management, including all extant attempts at conceptualization and measurement, is presented in Appendix A.

CHAPTER II

CONCEPTUALIZATION AND OPERATIONALIZATION OF SELF-CONTROL

This chapter will focus on two broad areas. First, it will present a detailed discussion outlining Gottfredson and Hirschi's (1990) conceptualization of self-control. This section will include a brief discussion of Gottfredson and Hirschi's (1990) choice of the self-control concept as an explanation of criminal and deviant behavior. Second, it will include an assessment of how other researchers conceptualize and operationalize self-control. The conceptual definitions and operational measures of self-control used by these researchers are presented in Table 1.

Defending the Self-Control Concept

There are numerous publications in which Gottfredson and Hirschi defend their choice of the self-control concept as an explanation of criminal and deviant behavior (see e.g., Gottfredson, 2005; Hirschi, 1994; 1995; 2004; Hirschi & Gottfredson, 1993; 1994; 2000; 2006). They indicate that the selection of self-control as an explanation of deviant behavior is based on the careful and deliberate consideration of several alternative concepts. Specifically, they state that

> …the concept of self-control captures the relatively stable tendency to engage in (and avoid) a wide range of criminal, deviant, or reckless acts better than such traditional concepts as criminality, aggression, or conscience (Hirschi & Gottfredson, 1994, pp. 51-52).

In a prelude to *A General Theory of Crime*, Gottfredson and Hirschi had endorsed the criminality concept. Criminality, according to Hirschi and Gottfredson (1986, p. 58), refers to "stable differences across individuals in the propensity to commit criminal (or equivalent) acts." However, after further reflection, they rejected the concept of criminality because, in their view, it suggested a deterministic view of the offender i.e., "a positive tendency to crime that is contrary to the classical model" (Gottfredson & Hirschi, 1990, p. 88). In other words, criminality implies that people differ in the extent to which they are compelled to crime, while self-control suggests that people differ in the extent to which they are restrained from criminal behavior. In a follow-up article, Hirschi and Gottfredson (1993) reiterate that "there is no personality trait predisposing people toward crime" although there appears to be "an enduring predisposition to consider the long-term consequences of one's acts" (p. 49).

Another reason for the rejection of the concept of criminality is it implies that offenders tend to specialize in criminal acts. That is, according to Gottfredson and Hirschi (1990), a number of researchers have made the concept of criminality theoretically equivalent to offender specialization (see e.g., Blumstein, Cohen, Roth, & Visher, 1986; Cloward & Ohlin, 1960; Sutherland, 1949). The idea that offenders specialize is contrary to Gottfredson and Hirschi's (1990) assertion that offenders are versatile. By versatile, Gottfredson and Hirschi (1990) mean that offenders do not show a strong preference for certain crimes to the exclusion of others. As previously noted, after careful review of the research, they conclude "no credible evidence" exist to support the contention that offenders specialize (Gottfredson & Hirschi, 1990, p. 91). In addition, Hirschi and Gottfredson (1994) indicate that they do not make self-control theory

"…conducive to specialization in some deviant acts rather than others, because that would be contrary to its generality" claims (p. 3). Put differently, self-control theory is meant to "…explain all crime, at all times, and, for that matter, many forms of behavior that are not sanctioned by the state" (Gottfredson & Hirschi, 1990, p. 117).

Gottfredson and Hirschi (1990) also explore the concept of aggression as a plausible explanation of criminal behavior. At first glance, aggression would appear to have several attractive qualities. For one, aggression implies an offender who possesses an internal mechanism that naturally propels or drives their behavior. For another, aggression seems applicable to a wide variety of situations ranging from verbal arguments to physical assaults. It also seems to be compatible with the conceptual frameworks of most disciplines, e.g., aggression suggests "…frustration to the sociologist, testosterone to the biologist, and imitation to the psychologist" (Gottfredson & Hirschi, 1990, p. 65). Finally, aggression suggests that individual differences exist among people in their proclivity to use force in the pursuit of their own self-interests.

Although the concept of aggression has many desirable properties, Gottfredson and Hirschi (1990) ultimately reject it because it does not fit their conception of crime. Gottfredson and Hirschi (1990) define crime as potentially pleasurable acts of "force or fraud undertaken in pursuit of self-interest" (p. 15). Aggression seems to do a fairly good job of explaining behaviors involving force (e.g., hitting, shoving, pushing, and verbal and physical threats) but does a poor job of explaining the majority of deviant acts most of which are "passive, surreptitious, or retreatist (e.g., theft and drug use)" (Hirschi & Gottfredson, 1994, p. 52). Given the limited utility of aggression, Gottfredson and

Hirschi see no other choice but to eliminate it as a viable explanation of crime and deviance.

Subsequently, Gottfredson and Hirschi (1990) turn their attention to the concept of conscience as a potential explanation of criminal and deviant behavior. Conscience, according to Gottfredson and Hirschi (1990), implies compulsion, which, once again, is in direct opposition to their assertion that human behavior is nondeterministic. In addition, the concept of conscience turns out to be problematic because it "typically refers to how people feel about their acts rather than the likelihood that they will or will not commit them" (Gottfredson & Hirschi, 1990, p. 88). Conscience also appears to be an inadequate explanation of behaviors analogous to crime because "…accidents and employment instability are not usually seen as produced by failures of conscience, and writers in the conscience tradition do not typically make the connection between moral and prudent behavior" (Gottfredson & Hirschi, 1990, p. 88).

After weighing and considering these concepts and ultimately rejecting each, Gottfredson and Hirschi (1990) propose self-control as a superior concept for explaining criminal and analogous behavior. As they see it, one of the primary advantages of the self-control concept is that it does not presuppose that criminal behavior is a necessary outcome. On the contrary, Gottfredson and Hirschi (1990) indicate that "We do not make commission of criminal acts part of the definition of the individual with low self-control" (p. 94). And again, Hirschi and Gottfredson (1993, p. 53, emphasis in the original) "explicitly propose that the link between self-control and crime is *not* deterministic, but probabilistic, affected by opportunities and other constraints" (see also Hirschi &

Gottfredson, 1994, p. 9). Stated another way, self-control leaves room for the possibility that other situational and/or individual factors may influence whether crime occurs.

An added advantage of the self-control concept, according to Gottfredson and Hirschi (1990), is that it is more logically consistent with the nature of crime than other concepts. That is, people who commit crimes possess traits that reflect the nature of such acts. Criminal acts are "…short lived, immediately gratifying, easy, simple, and exciting" (Gottfredson & Hirschi, 1990, p. 14). Therefore, it logically follows that people who lack self-control tend to be "impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and non-verbal" (Gottfredson & Hirschi, 1990, p. 90). Gottfredson and Hirschi (1990) argue that self-control is "the individual characteristic relevant to the commission of criminal acts" (p. 88).

Defining and Measuring Self-Control

According to Gottfredson and Hirschi (1990), self-control refers to "the differential tendency of people to avoid criminal acts whatever the circumstances in which they find themselves" (p. 87). Self-control is best seen as an orientation that shapes behavioral choices because Gottfredson and Hirsch (1990) claim that

> …the dimensions of self-control are…factors affecting calculation of the consequences of one's acts. The impulsive or shortsighted person fails to consider the negative or painful consequences of his acts; the insensitive person has fewer negative consequences to consider; the less intelligent person also has fewer negative consequences to consider (has less to lose) (p. 95).

In other words, although those with low self-control can easily recognize the immediate benefits of criminal and deviant behavior, they have substantial difficulty calculating the potential long-term costs. Because those with low self-control fail to fully appreciate the potential long-term costs of their behavior, they are more likely to engage in criminal or deviant acts when presented with an opportunity.

As previously noted, Gottfredson and Hirschi (1990) propose that those with low self-control are "impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and non-verbal" (Gottfredson & Hirschi, 1990, p. 90). They further assert that "There is considerable tendency for these traits to come together in the same people,…it seems reasonable to consider them as comprising a stable construct useful in the explanation of crime" (Gottfredson & Hirschi, 1990, pp. 90-91). That is, these six elements are considered a single construct and a unidimensional hypothetical or latent trait.

Table 1 presents a summary of the conceptualization and operationalization of the self-control construct from various empirical studies. The measures presented in Table 1 can be roughly classified into two categories: (1) cognitive and attitude scales similar to personality inventories that more or less measure the six elements of self-control specified by Gottfredson and Hirschi (1990) and (2) behavioral measures designed to capture imprudent acts that reflect a lack of self-control. The discussion of the measurement devices will begin with a review of what has become known as the Grasmick Scale, which is the most popular measure of self-control in the criminological literature (Marcus, 2003; 2004; Tittle et al., 2003). This will be followed by a discussion of alternatives to the Grasmick Scale, and finally, measures of imprudent behavior.

Table 1. *Self-Control Measures*

Arneklev et al., 1993[1]

Conceptualization

There are six essential elements that make up the personality trait of low self-control: impulsivity, simple tasks, risk-seeking, physical activities, self-centeredness, and temper.

Operationalization

Impulsivity

1. I often act on the spur of the moment.
2. I don't devote much thought and effort to preparing for the future.
3. I often do whatever brings me pleasure here and now, even at the cost of some distant goal.
4. I'm more concerned with what happens in the short run than in the long run.

Simple Tasks

5. I frequently try to avoid things that I know will be difficult.
6. When things get complicated, I tend to quit or withdraw.
7. The things in life that are easiest to do bring me the most pleasure.
8. I dislike really hard tasks that stretch my abilities to the limit.

Risk Seeking

9. I like to test myself every now and then by doing something a little risky.
10. Sometimes I will take a risk just for the fun of it.
11. I sometimes find it exciting to do things for which I might get in trouble.
12. Excitement and adventure are more important to me than security.

Physical Activities

13. If I had a choice, I would almost always rather do something physical than something mental.
14. I almost always feel better when I am on the move than when I am sitting and thinking.
15. I like to get out and do things more than I like to read or contemplate ideas.
16. I seem to have more energy and a greater need for activity than most other people my age.

Self-Centeredness

17. I try to look out for myself first, even if it means making things difficult for other people.
18. I'm not very sympathetic to other people when they are having problems.
19. If things I do upset people, it's their problem, not mine.
20. I will try to get the things I want even when I know it's causing problems for other people.

Temper

21. I lose my temper pretty easily.
22. Often, when I'm angry at people I feel more like hurting them than talking to them about why I am angry.
23. When I am really angry, other people better stay away from me.
24. When I have a serious disagreement with someone, it's usually hard for me to talk about it without getting upset.

[1] A 4-point Likert response scale: 1 = Strongly disagree, 2 = Disagree somewhat, 3 = Agree somewhat, and 4 = Strongly agree. The possible range of the scale was 24 to 96. Cronbach's alpha = .81 (with the deletion of item number 16) which is considered good by DeVellis (1991). The greatest break in eigenvalues was between the first (4.7) and second (2.3) factors (a difference of 2.4) which indicates a unidimensional construct.

Table 1 (continued). *Self-Control Measures*

Arneklev et al. (1993)[2]

Conceptualization

Imprudent Behavior

Imprudent behavior is conceptualized as irresponsible acts as describe by Gottfredson and Hirschi (1990) some of which include smoking, drinking, and gambling.

Operationalization

1. Do you smoke tobacco products?
   (0) No (1) Yes
2. Do you usually drink more than two or three alcoholic beverages over the span of a week?
   (0) No (1) Yes
3. Do you now and then like to gamble?
   (0) No (1)

[2] Imprudent behaviors were the sum of the items having a range of 0 to 3.

Bichler-Robertson et al. (2003)[3]

Conceptualization

Persons with low self-control will tend to engage in risky behaviors in order to provide an easier way of completing difficult tasks (e.g., term papers and exams). These individuals are not likely to consider the long-term consequences of their imprudent actions, and they will tend to be self-centered (e.g., they lack a sense of fundamental fairness to their peers).

Operationalization

Attitudinal and Behavioral Self-Control Measures

1. It is okay to cheat to get high grades in college.
2. Getting others to do your homework is okay.
3. I spontaneously buy things that I can't afford and I don't need.
4. I go out to socialize and drink alcohol on weeknights.
5. I usually drive faster than the speed limit.
6. I prefer reading a book than going out to a party.

[3] A 5-point Likert response scale ranging from 1 = "Strongly agree" to 5 = "Strongly disagree." The self-control scale ranged from 6 to 30 with a mean of 20.20 and a standard deviation of 5.14. Cronbach's alpha = .68 which is considered minimally acceptable by DeVellis (1991).

Table 1 (continued)**.** *Self-Control Measures*

Burton et al. (1998)[4]

Conceptualization

Self-control refers to six characteristics including an individual's desire for immediate gratification, ease of frustration, preference for physical versus mental activities, ability to verbalize feelings, patience, and a preference for risk.

Operationalization

Attitudinal and Behavioral Self-Control Measures

1. If I see something in a store I want, I just buy it.
2. I'd rather spend my money on something I wanted now than to put it in the bank.
3. I don't deal well with anything that frustrates me.
4. I really get angry when I ride behind a slow driver.
5. If someone insulted me, I would be likely to hit or slap them.
6. I enjoy activities where there is a lot of physical contact.
7. I like to read books.
8. The best way to solve an argument is to sit down and talk things out, even if it takes an hour.
9. I enjoy roller coaster rides.
10. Even when I'm not in a hurry, I like to drive at high speeds.
11. I like to take chances.
12. The things I like to do best are dangerous.

[4] A 6-point Likert response scale: 1 = Strongly disagree, 2 = Moderately disagree, 3 = Mildly disagree, 4 = Mildly agree, 5 = Moderately agree, and 6 = Strongly agree. The possible range of the scale was 12 to 72. Cronbach's alpha = .64 which is considered undesirable by DeVellis (1991). Burton et al. (1998) report self-control is a unidimensional construct although they do not report the eigenvalues. See also Burton et al. (1994) scale items.

Conceptualization[5]

Self-control as measured by imprudent behaviors is conceptualized as deviant acts that share common characteristics with crime (e.g., immediately gratifying, easy to commit) but fall outside Gottfredson and Hirschi's (1990) definition of crime.

Operationalization

Imprudent Behavior Measures

1. Had an accident in your car
2. Skipped work without an excuse
3. Been suspended from a job
4. Been drunk in public
5. Smoked a pack of cigarettes in one day
6. Parked a car illegally
7. Been loud and unruly in public
8. Hitchhiked illegally
9. Had an accident in your home where you hurt yourself
10. Been so sick you couldn't leave the house
11. Speeding in vehicle
12. Begged money from strangers
13. Driven a car while drunk
14. Urinated in public
15. Used marijuana
16. Used hallucinogens
17. Used amphetamines
18. Used barbiturates
19. Used heroin
20. Used cocaine

[5] An open-ended response category asking respondents the number of times they had committed each offense in the last 12 months. Scores on the 20 items were summated to form a composite crime index. Cronbach's alpha = .74 which is considered respectable by DeVellis (1991).

Table 1 (continued). *Self-Control Measures*

DeLisi et al. (2003)[6]

Conceptualization

Self-control refers to a personality trait predisposing people to criminal acts.

Operationalization

Grasmick et al. Scale

Impulsivity (Cronbach's alpha = .79; respectable)

1. I often act on the spur of the moment without stopping to think.
2. I don't devote much thought and effort to preparing for the future.
3. I often do what brings me pleasure here and now, even at the cost of some distant goal.
4. I am more concerned with what happens to me in the short run than the long run.

Simple Tasks (Cronbach's alpha = .81; very good)

5. I frequently try to avoid projects that I know will be difficult.
6. When things get complicated, I tend to quit or withdraw.
7. The things in life that are easiest to do bring me the most pleasure.
8. I dislike really hard tasks that stretch my abilities to the limit.

Risk Seeking (Cronbach's alpha = .79; respectable)

9. I like to test myself every now and then by doing something a little risky.
10. Sometimes I will take a risk just for the fun of it.
11. I sometimes find it exciting to do things for which I might get in trouble.
12. Excitement and adventure are more important to me than security.

Physical Activities (Cronbach's alpha = .72; respectable)

13. If I had a choice, I would almost always rather do something physical than mental.
14. I almost always feel better when I am on the move rather than sitting and thinking.
15. I like to get out and do things more than I like read or contemplate ideas.
16. I seem have more energy and greater need for activity than most other people my age.

Self-Centeredness (Cronbach's alpha = .81; very good)

17. I try to look out for myself first, even if it means making things difficult for other people.
18. I'm not very sympathetic to other people when they are having problems.
19. If things I do upset people, it's their problem not mine.
20. I will try to get things I want even when it is causing problems for other people.

Temper (Cronbach's alpha = .86; very good)

21. I lose my temper very easily.
22. Often when I'm angry at people, I feel more like hurting them than talking about why I am angry.
23. When I'm really angry, other people better stay away from me.
24. When I have a serious disagreement with someone, it's usually hard for me to talk calmly about it without getting upset.

[6] A 5-point Likert response scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, and 5 = Strongly Agree. The possible range for the scale was 24 to 120. Cronbach's alpha = .91 which is considered excellent by DeVellis (1991). Scree indicates greatest break in eigenvalues is between the first (7.9) and second (2.4) factor (a difference of 5.5) indicating the self-control scale is unidimensional.

Table 1 (continued). *Self-Control Measures*

Driscoll (1992)

Conceptualization

Self-control refers to the personality traits of impulsivity, sensation seeking, and empathy.

Operationalization

Barratt's Impulsiveness Scale[7]

1. I plan tasks carefully.
2. I do things without thinking.
3. I make up my mind quickly.
4. I am happy-go-lucky.
5. I don't "pay attention."
6. I have racing thoughts.
7. I plan trips well ahead of time.
8. I am self-controlled.
9. I concentrate easily.
10. I save regularly.
11. I squirm at plays or lectures.
12. I am a careful thinker.
13. I plan for job security.
14. I say things without thinking.
15. I like to think about complex problems.
16. I change jobs.
17. I act on impulse.
18. I get easily bored when solving thought problems.
19. I have regular health checkups.
20. I act on the spur of the moment.
21. I am a steady thinker.
22. I change residencies.
23. I buy things on impulse.
24. I can only think about one problem at a time.
25. I change hobbies.
26. I walk and move fast.
27. I solve problems by trial and error.
28. I spend or charge more than I earn.
29. I talk fast.
30. I often have extraneous thoughts when thinking.
31. I am more interested in the present than the future.
32. I am restless at the theater or lectures.
33. I like puzzles.
34. I am future oriented.

Zuckerman's Sensation Seeking Scale[8]

1. A. I like "wild" uninhibited parties.
   B. I prefer quite parties with good conversation.
2. A. There are some movies I enjoy seeing a second or even a third time.
   B. I can't stand watching a movie I have seen before.
3. A. I often wish I could be a mountain climber.
   B. I can't understand people who risk their necks climbing mountains.
4. A. I dislike all body odors.
   B. I like some of the earthy body smells.
5. A. I get bored seeing the same old faces.
   B. I like the comfortable familiarity of everyday friends.
6. A. I like to explore a strange city or section of town by myself, even if it means getting lost.
   B. I prefer a guide when I am in a place I don't know well.
7. A. I dislike people who do or say things to shock or upset others.
   B. When you can predict almost everything a person will do and say he or she must be a bore.
8. A. I usually don't enjoy a movie or play where I can predict what will happen in advance.
   B. I don't mind watching a play or movie where I can predict what will happen in advance.
9. A. I have tried cannabis or would like to.
   B. I would never smoke cannabis.

[7] A 4-point Likert response scale: 1 = Rarely/Never, 2 = Occasionally, 3 = Often, and 4 = Almost Always/Always. Cronbach's alpha = .71 which is considered minimally acceptable by DeVellis (1991).

[8] Respondents were presented with forced response categories (i.e., they had to choose categories A or B). Cronbach's alpha = .81 which is considered very good by DeVellis (1991).

Table 1 (continued)**.** *Self-Control Measures*

Driscoll (1992)

10. A. I would not like to try any drug which might produce strange and dangerous effects.
    B. I would like to try some of the drugs that produce hallucinations.
11. A. A sensible person avoids activities that are dangerous.
    B. I sometimes like to do things that are a little frightening.
12. A. I dislike "swingers" (people who are uninhibited and free about sex).
    B. I enjoy the company of real "swingers."
13. A. I find that stimulants make me uncomfortable.
    B. I often like to get high (drinking alcohol or smoking marijuana).
14. A. I like to try new foods that I have never tasted before.
    B. I order the dishes which I am familiar so as to avoid disappointment and unpleasantness.
15. A. I enjoy looking at home movies, videos, or travel slides.
    B. Looking at someone's home movies, videos, or travel slides bores me tremendously.
16. A. I would like to take up the sport of water skiing.
    B. I would not like to take up water skiing.
17. A. I would like to try surfboard riding.
    B. I would not like to try surfboard riding.
18. A. I would like to take off on a trip with no preplanned or definite routes or timetables.
    B. When I go on a trip I like to plan my route and timetable fairly carefully.
19. A. I prefer the "down to earth" kinds of people as friends.
    B. I would like to make friends in some of the "far-out" groups like artists or anarchists.
20. A. I would not like to learn to fly an airplane.
    B. I would like to learn to fly an airplane.
21. A. I prefer the surface of the water to the depths.
    B. I would like to go scuba diving.
22. A. I would like to meet some people who are homosexual (men or women).
    B. I stay away from anyone I suspect of being gay or lesbian.
23. A. I would like to try parachute jumping.
    B. I would never want to try jumping out of a plane, with or without a parachute.
24. A. I prefer friends who are exciting and unpredictable.
    B. I prefer friends who are reliable and predictable.
25. A. I am not interested in experience for its own sake.
    B. I like to have new and exciting experiences and sensations even if they are a little frightening, unconventional, or illegal.
26. A. The essence of good art is in its clarity, symmetry of form, and harmony of colours.
    B. I often find beauty in the clashing colours and irregular forms of modern paintings.
27. A. I enjoy spending time in the familiar surroundings of home.
    B. I get very restless if I have to stay around home for any length of time.
28. A. I like to dive off the high board.
    B. I don't like the feeling I get standing on the high board (or I don't go near it at all).
29. A. I like to date people who are physically exciting.
    B. I like to date people who share my values.
30. A. Heavy drinking usually ruins a party because people get loud and boisterous.
    B. Keeping the drinks full is the key to a good party.
31. A. The worst social sin is to be rude.
    B. The worst social sin is to be a bore.
32. A. A person should have considerable sexual experience before marriage.
    B. It's better if two married people begin their sexual experience with each other.
33. A. Even if I had money, I would not care to associate with filthy rich people in the jet set.
    B. I could conceive of myself seeking pleasure around the world with the jet set.
34. A. I like people who are sharp and witty even if they sometimes insult others.
    B. I dislike people who have their fun at the expense of hurting the feelings of others.

Table 1 (continued). *Self-Control Measures*

Driscoll (1992)

35. A. There is altogether too much portrayal of sex in the movies.
    B. I enjoy watching sexy scenes in movies.
36. A. I feel best after taking a couple of drinks.
    B. Something is wrong with people who need alcohol to feel good.
37. A. People should dress according to some standard of taste, neatness and style.
    B. People should dress in individual ways even if it effects are sometimes strange.
38. A. Sailing long distances in small sailing crafts is foolhardy.
    B. I would like to sail a long distance in a small but seaworthy sailing craft.
39. A. I have no patience with dull or boring people.
    B. I find something interesting in almost every person I talk to.
40. A. Skiing down a high mountain slope is a good way to end up on crutches.
    B. I think I would enjoy the sensations of skiing very fast down a high mountain slope.

Hogan's Empathy Scale[9]

Even-Tempered

1. I easily become impatient with people.
2. I enjoy the company of strong-willed people.
3. I am not easily angered.
4. I am usually calm and not easily upset.
5. I am usually short-tempered with people who come around and bother me with foolish questions.
6. People have often misunderstood my intentions when I was trying to put them right and be helpful.
7. I must admit I often try to get me own way regardless of what others want.
8. I am sometimes cross and grouchy without any good reason.
9. I am often sorry because I am so cross and grouchy.

Sensitivity

10. As a rule I have difficulty in "putting myself into other people's shoes."
11. I have seen some things so sad that I almost felt like crying.
12. I have at one time or another tried my hand at writing poetry.
13. What others think of me does not bother me.
14. I don't really care whether people like me or dislike me.
15. I like poetry.

Tolerance

16. Disobedience to the government is never justified.
17. It is the duty of a citizen to support his country, right or wrong.
18. People today have forgotten how to feel properly ashamed of themselves.
19. I feel sure there is only one true religion.
20. I don't like to work on a problem unless there is the possibility of coming out with a clear-cut unambiguous answer.
21. It bothers me when something unexpected interrupts my daily routine.
22. I like to have a place for everything and everything in its place.

Self-Possessed/Outgoing

23. I like to talk before groups.
24. I think I am usually a leader in a group.
25. I usually don't like to talk much unless I am with people I know well.
26. I am a good mixer.
27. I usually take an active part in the entertainment at parties.
28. I have a natural talent for influencing people.
29. I have a pretty clear idea of what I would try to impart to my students if I were a teacher.

[9] True and false response categories. Cronbach's alpha = .54 which is considered unacceptable by DeVellis (1991). Hogan's (1969) scale has a total of 64 items which cannot be replicated in their entirety without permission of the author. Therefore, only a sample of the items is included.

Table 1 (continued)**.** *Self-Control Measures*

Evans et al. (1997)

Conceptualization

Self-control was defined as a behavioral trait. Those who lack self-control will tend to be impulsive, risk-taking, insensitive, physical, short-sighted, and nonverbal.

Operationalization

Attitudinal and Behavioral Self-Control Measures[10]

1. I'd rather spend money on something I wanted now than to put it in the bank.
2. I really don't care all that much about people who are homeless.
3. If someone insulted me, I would be likely to slap them.
4. Even when I'm not in a hurry, I like to drive at high speeds.
5. I like to take chances.
6. I like to read books.
7. I don't deal well with anything that frustrates me.
8. The best way to solve an argument is to sit down and talk things out, even if it takes an hour or two.
9. I enjoy activities where there is a lot of physical contact.
10. I really don't care that much about other people's problems or illnesses.
11. The things I like to do best are dangerous.

[10] A 6-point Likert response scale ranging from 1 = "Strongly agree" to 6 = "Strongly disagree." Responses for each item were standardized, multiplied by the factor coefficient, and added to form a factor score. Cronbach's alpha =. 61 which is considered undesirable by DeVellis (1991).

Conceptualization

Those who lack self-control will engage in noncriminal acts theoretically equivalent to crime e.g., accidents, skipping school, illness, smoking, and drinking.

Operationalization

Analogous Acts as Self-Control Measures[11]

1. Drove your car more than 15 mph above the speed limit
2. Drove your car while drunk
3. Been drunk in public places
4. Been loud, rowdy, or unruly in a public place
5. Hitchhiked where it was illegal to do so
6. Urinated in a public place (like behind a bush)
7. Gambled illegally such as betting on sporting events or playing cards
8. Smoked a pack of cigarettes in one day
9. Had alcoholic beverages
10. Had marijuana or hashish
11. Had hallucinogens
12. Had amphetamines
13. Had barbiturates
14. Had cocaine
15. Been suspended from a job
16. Had an accident in your home where you hurt yourself
17. Had an accident in your car
18. Been so sick you couldn't leave the house

[11] An open-ended response category asking respondents the number of times they had committed each offense in the last 12 months. Responses for each item were standardized, multiplied by the factor coefficient, and added to form a factor score. Cronbach's alpha = .65 which is considered undesirable by DeVellis (1991). These items are questionable as analogous behaviors since most describe criminal acts.

Table 1 (continued). *Self-Control Measures*

Feldman and Weinberger (1994)[12]

Conceptualization

Self-control (self-restraint) refers to the tendencies across the life span to inhibit immediate, self-focused desires in the interest of promoting long-term goals and positive relations with others.

Operationalization

Aggression

1. I lose my temper and "let people have it" when I'm angry.
2. I can remember a time when I was so angry at someone that I felt like hurting them.
3. I usually don't let things upset me too much.
4. Once in awhile, I get upset about something that I later see was not that important.
5. People who get me angry better watch out.
6. If someone tries to hurt me, I make sure I get even with them.
7. If someone does something I really don't like, I yell at them about it.
8. I pick on people I don't like.
9. When someone tries to start a fight with me, I fight back.

Impulse Control

10. I do things without giving them enough thought.
11. I'm the kind of person who will try anything once, even if it is not safe.
12. I should try harder to control myself when I'm having fun.
13. When I'm doing something for fun (for example, partying, acting silly), I tend to get carried away and go too far.
14. I like to do new and different things that many people would consider weird or not really safe.
15. I say the first thing that comes into my mind without thinking enough about it.
16. I stop and think things through before I act.

Consideration of Others

17. Before I do something, I think about how it will affect the people around me.
18. I often go out of my way to do things for other people.
19. I am never unkind to people I don't like.
20. I think about other people's feelings before I do something they might not like.
21. I enjoy doing things for other people, even when I don't receive anything in return.
22. I become "wild and crazy" and do things other people might not like.
23. I do things that are really not fair to people that I don't care about.
24. I make sure that doing what I want will not cause problems for other people.
25. I try very hard not to hurt other people's feelings.

Responsibility

26. People can depend on me to do what I know I should.
27. There have been times when I said I would do one thing but did something else.
28. Once in awhile, I don't do something that someone has asked me to do.
29. Once in awhile, I break promises I have made.
30. There have been times when I did not finish something because I spent too much time "goofing off."

[12] A 5-point Likert response scale: 1 = False, 2 = Somewhat false, 3 = Not sure, 4 = Somewhat true, and 5 = True. Cronbach's alpha = .85 which is considered very good by DeVellis.

Table 1 (continued). *Self-Control Measures*

Forde and Kennedy (1997)[13]

Conceptualization

Self-control is a personality trait that includes six characteristics: impulsivity, simple tasks, physical activities, self-centeredness, risk seeking, and temper.

Operationalization

Modified Grasmick et al. Scale

Impulsivity

1. I often act on impulse (spur of the moment) without stopping to think.
2. I often devote much thought and effort to preparing for the future.
3. I often do whatever brings me pleasure here and now, even at the cost of some distant goal.
4. I'm more concerned with what happens to me in the short run than in the long run.

Simple Tasks

5. I frequently try to avoid projects that I know will be difficult.
6. When things get complicated, I tend to quit or withdraw.
7. The things in life that are easiest to do bring me the most pleasure.
8. I dislike really hard tasks that stretch my abilities to the limit.

Physical Activities

9. I almost always feel better when I am on the move than when I am sitting and thinking.
10. I would rather go out and do things than sit at home and read.
11. I seem to have more energy than most people my age.
12. If I had a choice, I would always do something physical rather than something mental.

Self-Centered

13. I try to look out for myself first (even if it means making things difficult for other people).
14. I'm not very sympathetic to other people even when they are having problems.
15. If things I do upset people, it's their problem not mine.
16. I will try to get the things I want even when I know it's causing problems for other people.

Risk Seeking

17. I like to test myself every now and then by doing something a little risky.
18. Sometimes I will take a risk just for the fun of it.
19. Excitement and adventure are more important to me than security.

Temper

20. I lose my temper pretty easily.
21. Often, when I am angry at people I feel more like hurting them than talking to them about why I am angry.
22. When I am angry, other people better stay away from me.
23. When I have a serious disagreement with someone, it's usually hard for me to talk calmly about it without getting upset.

Conceptualization[14]

Imprudent behaviors refer to noncriminal acts that individuals with low self-control tend to pursue.

Operationalization

1. How often do you drink alcohol?
   (0) None to (19) Every day
2. How often do you smoke cigarettes?
   (1) Not at all, (2) Occasionally, and (3) Every day
3. How often would you exceed the speed limit by 20/km (15 mph) if you could get away with it?
   (1) Never, (2) Occasionally, and (3) Always
4. How often do you wear your seat belt?
   (1) Every trip, (2) Occasionally, and (3) Not at all

[13] A 4-point Likert response scale: 1 = Strongly disagree, 2 = Somewhat disagree, 3 = Somewhat agree, and 4 = Strongly agree. Cronbach's alpha = not reported. Scree indicates greatest break in eigenvalues is between the first (3.7) and second (2.4) factor a difference of 1.3 indicating the self-control scale is unidimensional.

[14] Each of the measures was converted to standardized z-scores and then the four measures were summated to form an imprudence index. Cronbach's alpha = not reported. Imprudent behaviors were conceptualized as a dependent variable.

Table 1 (continued). *Self-Control Measures*

Gibbs and Giever (1995)[15]

Conceptualization

Self-control refers to an individual's concern for the consequences of his or her actions.

Operationalization

1. I seldom pass up an opportunity to have a good time.
2. My life is pretty carefully planned.
3. I'm a very organized person.
4. I'm seldom out of control.
5. Resisting temptation is one of my strong suits.
6. If a friend calls with an offer to have a good time, I usually drop what I am doing and go along.
7. I like it when things happen on the spur of the moment.
8. I get bored easily.
9. I like lots of predictability in my life.
10. If I have a strong desire for something, it really gets to me if I have to wait for it.
11. I like to take chances.
12. I usually consider the risks carefully before I take any action.
13. If I don't do everything by the book, I feel guilty.
14. It's hard to understand what people find interesting in life when they get old.
15. Rules were meant to be broken.
16. I know some people whose clocks I'd clean if I were given the right opportunity.
17. I never bend the rules.
18. I'm a pacifist.
19. If it feels good, do it.
20. Don't postpone until tomorrow a good time that could be had today.
21. Look out for Number One because nobody else will.
22. If desires weren't meant to be satisfied, we wouldn't have them.
23. Most classes are boring.
24. If you want to have fun, you have to willing to take a few chances.
25. Take your pleasure when and where you can get it.
26. You should grab what you can get in life.
27. Take care of yourself, then worry about everyone else.
28. Enjoy yourself while you're young, because you won't when you're older.
29. I think sometimes people reach the point in conflict where hitting is the only way to resolve it one way or another.
30. When I consider all the things in life that are really important to me, my performance in school rates right up near the top.
31. Most of the people who know me would describe me as very conscientious.
32. What happens to you in this life is mostly out of your hands.
33. It is hard to understand what old people find to get excited about in their lives.
34. I'm pretty wild.
35. I'd rather have great looks and average intelligence that exceptional intelligence and average looks.
36. My social life is extremely important to me.
37. Keeping up with my studies is my first priority.
38. Most days I make a list of things to do.
39. Eat, drink, and be merry sums up my philosophy of life.
40. I've given college my best effort.

[15] The response category was a visual analog featuring a 10 centimeter response line anchored by the terms "Totally disagree" and "Totally agree." The possible range for the scale was 0 to 400. Cronbach's alpha = .88 which is considered very good by DeVellis (1991). Scree indicates greatest break in eigenvalues is between the first (4.7) and second (2.3) factor (a difference of 2.4) indicating the self-control scale is unidimensional.

Table 1 (continued). *Self-Control Measures*

Gibbs et al. (1998)[16]

Conceptualization

Low self-control is a failure of individuals to consider the consequences of their actions for others or the long-term consequences for themselves.

Operationalization

1. I seldom pass up an opportunity to have a good time.
2. My life is pretty carefully planned.
3. I'm easily drawn away from studying when more exciting or interesting activities come along.
4. If a friend calls with an offer to have a good time, I usually drop what I am doing and go along.
5. I like it when things happen on the spur of the moment.
6. I like to take chances.
7. I usually consider the risks carefully before I take any action.
8. If I don't do everything by the book, I feel guilty.
9. Rules were made to be broken.
10. I know some people whose clocks I'd clean of I were given the right opportunity.
11. If it feels good, do it.
12. Don't postpone until tomorrow a good time that can be had today.
13. If desires weren't meant to be satisfied, we wouldn't have them.
14. Most classes are boring.
15. If you want to have fun, you have to be willing to take a few chances.
16. Take your pleasure where and when you can get it.
17. You should grab what you can get in this life.
18. Most of the people who know me would describe me as very conscientious.
19. I'm pretty wild.
20. It's hard to understand what old people find to get excited about in their lives.
21. My social life is extremely important to me.
22. Eat, drink, and be merry sums up my philosophy of life.
23. I seldom lose my temper when I run into a frustrating person or situation.
24. I sometimes find it exciting to do things for which I might get into trouble.
25. If things I do upset people, it's their problem not mine.
26. I don't have a lot of patience.
27. When I am angry with someone, I usually feel more like yelling at them or hurting them than talking about why I'm mad.
28. I try to look out for myself first, even if it makes things difficult for other people.
29. I get mad pretty easily.
30. If I start a book or a project and it turns out to be a drag, I usually drop it for something more exciting or interesting.
31. I get bored easily.
32. I'm not very sympathetic to other people when they are having problems.
33. I try to avoid really hard courses that stretch you to the limit.
34. I will try to get things I want, even when I know it's causing problems for other people.
35. I often do whatever brings me pleasure here and now, even at the cost of some distant goal.
36. Excitement and adventure are more important to me than security.
37. I much prefer doing things that pay off right away rather than in the future.
38. Often people make me so mad I'd like to hit them.
39. Sometimes I will take a risk just for the fun of it.
40. I often find that I get pretty irritated when things aren't going my way.

[16] The response category was a visual analog featuring a 10 centimeter response line anchored by the terms "Totally disagree" and "Totally agree." The possible range for the scale was 0 to 400. Cronbach's alpha = .92 which is considered excellent by DeVellis (1991). Scree test indicates self-control may be considered a unidimensional construct although the actual eigenvalues were not reported.

Table 1 (continued). *Self-Control Measures*

Grasmick et al. (1993)[17]

Conceptualization

Self-control refers to a personality trait predisposing people to criminal acts.

Operationalization

Impulsivity

1. I often act on the spur of the moment without stopping to think.
2. I devote much thought and effort to preparing for the future.
3. I often do what brings me pleasure here and now, even at the cost of some distant goal.
4. I am more concerned with what happens to me in the short run than the long run.

Simple Tasks

5. I frequently try to avoid projects that I know will be difficult.
6. When things get complicated, I tend to quit or withdraw.
7. The things in life that are easiest to do bring me the most pleasure.
8. I dislike really hard tasks that stretch my abilities to the limit.

Risk Seeking

9. I like to test myself every now and then by doing something a little risky.
10. Sometimes I will take a risk just for the fun of it.
11. I sometimes find it exciting to do things for which I might get in trouble.
12. Excitement and adventure are more important to me than security.

Physical Activities

13. If I had a choice, I would almost always rather do something physical than mental.
14. I almost always feel better when I am on the move rather than sitting and thinking.
15. I like to get out and do things more than I like read or contemplate ideas.
16. I seem to have more energy and greater need for activity than most other people my age.

Self-Centeredness

17. I try to look out for myself first, even if it means making things difficult for other people.
18. I'm not very sympathetic to other people when they are having problems.
19. If things I do upset people, it's their problem not mine.
20. I will try to get things I want even when it is causing problems for other people.

Temper

21. I lose my temper very easily.
22. Often when I'm angry at people, I feel more like hurting them than talking about why I am angry.
23. When I'm really angry, other people better stay away from me.
24. When I have a serious disagreement with someone, it's usually hard for me to talk calmly about it without getting upset.

[17] A 4-point Likert response scale: 1 = Strongly disagree, 2 = Disagree somewhat, 3 = Agree somewhat, and 4 = Strongly agree. Cronbach's alpha = .80 which is considered good by DeVellis (1991). Scree indicates the greatest break in eigenvalues is between the first (4.7) and second (2.3) factor (a difference of 2.4) indicating the self-control scale is unidimensional.

Table 1 (continued). *Self-Control Measures*

Hay (2001)[18]

Conceptualization

Low self-control is conceptualized as comprising six traits: impulsivity, preference of simple tasks, risk seeking, preference for physical activities, self-centeredness, and temper.

Operationalization

Modified Grasmick et al. Scale

Impulsivity

1. I often act on the spur of the moment without stopping to think.
2. I often do whatever brings me pleasure here and now, even at the cost of come distant goal.
3. I'm more concerned with what happens in the short run than in the long run.

Simple Tasks

4. I frequently try to avoid projects that I know will be difficult.
5. When things get complicated, I tend to quit or withdraw.
6. The things in life that are easiest to do bring me the most pleasure.

Risk Seeking

7. I like to test myself every now and then by doing something a little risky.
8. Sometimes I will take a risk for the fun of it.
9. I sometimes find it exciting to do things for which I might get in trouble.
10. Excitement and adventure are more important to me than security.

Physical Activities

11. If I had a choice, I would almost always rather do something physical than something mental.
12. I almost always feel better when I am on the move than when I am sitting and thinking.
13. I like to get out and do things more than I like to read or contemplate ideas.

Self-Centeredness

14. I try to look out for myself first, even if it means making things difficult for other people.
15. If things I do upset people, it's their problem not mine.
16. I will try to get things I want even when I know it is causing problems for other people.

Temper

17. I lose my temper pretty easily.
18. Often, when I am angry at people I feel more like hurting them than talking about why I am angry.
19. When I am angry, other people better stay away from me.

[18] A 7-point Likert scale ranging from 1 = "Not true at all" to 7 = "Very true." Cronbach's alpha = .86 which is considered very good by DeVellis (1991). The greatest break in eigenvalues was between the first and second factors (a difference of 4.01) which indicate a unidimensional construct.

Table 1 (continued). *Self-Control Measures*

Higgins (2001)[19]

Conceptualization

Low self-control is a failure of individuals to consider the consequences of their actions for others or the long-term consequences for themselves.

Operationalization

Modified Gibbs & Giever (1995) Scale

1. I always like to have a good time.
2. I plan my life fairly carefully.
3. I'm easily drawn away from studying when more exciting or interesting activities come along.
4. If a friend calls with an offer to have a good time, I usually drop what I'm doing and go along.
5. I like it when things happen on the spur of the moment.
6. I like to take chances.
7. I usually think about the risks very carefully before I take action.
8. If I don't do everything openly and honestly, I feel guilty.
9. Rules were made to be broken.
10. I know some people whose clocks I'd clean if I were given the right opportunity.
11. If it feels good, do it.
12. Don't postpone until tomorrow a good time that can be had today.
13. If desires weren't meant to be satisfied, we wouldn't have them.
14. Most classes that I am taking are boring.
15. If you want to have fun, you have to be willing to take a few chances.
16. Take your pleasure where and when you can get it.
17. You should get all that you can in this life to be happy.
18. I do not understand what old people have in their lives to get excited about.
19. I'm pretty wild.
20. My social life is extremely important to me.
21. Eat, drink, and be merry sums up my philosophy of life.
22. When people press the right buttons, I've been known to explode.
23. I sometimes find it exciting to do things for which I might get into trouble.
24. If things I do upset people, it's their problem not mine.
25. I don't have a lot of patience.
26. When I'm angry with someone, I usually feel more like yelling at them or hurting them than talking to them about why I'm mad.
27. I try to look out for myself first, even if it makes things difficult for other people.
28. Most of the people who know me would say I pay attention to details.
29. I get mad pretty easily.
30. If I start a book or a project and it turns out to be a drag, I usually drop it for something more exciting or interesting.
31. I get bored easily.
32. I do not care when others are having problems.
33. I try to avoid really hard courses that stretch me to the limit.
34. I will try to get the things I want even when I know it's causing problems for other people.
35. I often do whatever brings me pleasure here and now, even at the cost of some distant goal.
36. Excitement and adventure are more important to me than security.
37. I prefer doing things that pay off right away rather than in the future.
38. Often people make me so mad I'd like to hit them.
39. Sometimes I will take a risk just for the fun of it.
40. I often find that I get pretty irritated when things aren't going my way.

[19] The response category was a visual analog featuring a 10 centimeter response line anchored by the terms "Totally disagree" and "Totally agree." The possible range for the scale was 0 to 400. Cronbach's alpha = .92 which is considered excellent by DeVellis (1991). The greatest break in eigenvalues was between the first (10.0) and second (2.6) factors (a difference of 7.4) which indicate a unidimensional construct.

Table 1 (continued). *Self-Control Measures*

Higgins (2001)[20]

Conceptualization

These measures were designed to be a behavioral measure of self-control tapping several of its aspects: impulsivity, insensitivity, physicality, risk taking, shortsightedness, concentration, and attentiveness.

Operationalization

Behavioral Self-Control Scenario

It is Sunday evening, and you have gone to a convenience store to buy batteries for your portable CD player. The store is about to close when you realize you do not have enough money to buy the batteries. The batteries are small enough to hide on you without anyone noticing. However, you do have enough money to buy a soda so that no one will be suspicious of you not buying anything. You notice that you are out of sight of the clerk, who is reading the newspaper behind the counter. You know several people have taken small items from the store and have not gotten caught, and, in fact, there does not seem to be a video camera or other type of security devices in the store. Because you are alone, you know that your friends and parents have little chance of finding out whether you took the batteries. You decide to take the batteries.

1. I would probably get some excitement from taking the batteries.
2. I wouldn't consider it a crime to steal the batteries.
3. Taking the batteries was so easy, I think anybody would have to be a fool not to take them.
4. I think taking the batteries would be fun.
5. I would have taken the batteries without a second thought.
6. I would get a kick out of taking the batteries.
7. Thoughts about the loss to the owners of the store would not occur to me.
8. I do **NOT** think taking the batteries would hurt anyone.
9. How my parents would view me taking the batteries would never enter my mind while I was doing it.
10. I would have made up my mind to take the batteries quickly.
11. Taking the batteries was risky enough to be a real "rush' for me.
12. Taking the batteries was dangerous because I could have gotten into a lot of trouble.
13. I think taking the batteries would **NOT** be very exciting.
14. I would steal the batteries even if I had the money to buy them.
15. Taking the batteries was so easy I think I'd steal again.
16. I have too much self-control to steal the batteries.

[20] The response category was a visual analog featuring a 10 centimeter response line anchored by the terms "Totally disagree" and "Totally agree." The possible range for the scale was 0 to 160. Cronbach's alpha = .75 which is considered acceptable by DeVellis (1991).

Table 1 (continued). *Self-Control Measures*

Higgins (2001)[21]

Conceptualization

Self-control is conceptualized as a lack of concentration and attention.

Operationalization

1. When I was in 9th grade, my teachers would say I was a fidgety child.
2. When I was in 9th grade, my teachers would say I gave up easily.
3. When I was in 9th grade, my teachers would say I had poor concentration.
4. When I was in 9th grade, my teachers would say I was inattentive.
5. When I was in 9th grade, my teachers would say I got easily frustrated.
6. When I was in 9th grade, my teachers would say I had concentration problems.
7. When I was in 9th grade, my teachers would say paying attention was my best skill.
8. When I was in 9th grade, my teachers would say I was distracted easily.
9. When I was in 9th grade, my teachers would say I was impulsive.
10. When I was in 9th grade, my teachers would say I was restless or did not keep still.
11. When I was in 9th grade, my teachers would say I would daydream often.
12. When I was in 9th grade, my teachers would say I got excited easily.
13. When I was in 9th grade, my teachers would say I had trouble completing my work.
14. When I was in 9th grade, my teachers would say I was disruptive.
15. When I was in 9th grade, my teachers would say I got bored easily.
16. When I was in 9th grade, my teachers would say I "squirmed" during class.
17. When I was in 9th grade, my teachers would say I did not pay attention to them.
18. When I was in 9th grade, my teachers would say I was impatient.
19. When I was in 9th grade, my teachers would say I was a careful thinker.
20. When I was in 9th grade, my teachers would say I had trouble focusing.

[21] The response category was a visual analog featuring a 10 centimeter response line anchored by the terms "Very unlikely" and "Very likely." The possible range of the scale was 0 to 200. Cronbach's alpha = .94 which is considered excellent by DeVellis (1991). The greatest break in eigenvalues is between the first (9.4) and second (1.7) factors (a difference of 7.7) which indicate a unidimensional construct.

Keane et al. (1993)[22]

Conceptualization

Low self-control is conceptualized as an individual's failure to consider the consequences of their behavior and acting in an impulsive, short-sighted and risk-taking manner.

Operationalization

Behavioral Self-Control Measures

Risk-taking

1. Do you use your seat belt?
   (0) No (1) Yes
2. Out of 100 legally impaired drivers on the road tonight, how many do you think will be stopped by the police?
   Number of drivers _____
3. Do you think you are over the legal limit?
   (0) No (1) Don't know (2) Yes

Impulsiveness

4. Did anyone try to discourage you from driving tonight?
   (0) No (1) Yes

Pleasure seeking

5. How many alcoholic drinks have you consumed in the last 7 days?
   Number of drinks _____

[22] The items were used as separate indicators of self-control.

Table 1 (continued). *Self-Control Measures*

LaGrange and Silverman (1999)[23]

Conceptualization

Self-control refers to a distinctive, underlying characteristic or propensity that encompasses five primary traits: impulsivity, risk seeking, carelessness, temper, and present orientation.

Operationalization

Modified Grasmick et al.

Impulsivity

1. Sometimes I will take a risk just for the fun of it.
2. I might do something foolish for the fun of it.
3. I like to test myself every now and then by doing something a little risky.
4. I sometimes find it exciting to do things for which I might get caught.
5. I sometimes take unnecessary chances.
6. I find it exciting to ride in or drive a fast car.

Risk Seeking

7. The things I do best are dangerous.
8. I often behave in a reckless manner.
9. I'll try almost anything regardless of the consequences.
10. Excitement and adventure are more important to me than security.

Carelessness

11. I generally make careful plans.
12. I have a well thought-out reason for almost everything I undertake.
13. I am careful in most everything I do.
14. I can work for a pretty long amount of time without becoming bored.
15. I often leave jobs unfinished.

Temper

16. When I have a serious disagreement with someone, it's usually hard for me to talk about it without getting upset.
17. I lose my temper pretty easily.
18. Often when I am angry at people, I feel more like hurting them than talking to them about why I am angry.
19. I am often somewhat restless.
20. I am the type to be bored one minute and excited about something the next.

Present Oriented

21. I sometimes do silly things without thinking.
22. Many times I act without thinking.
23. I usually say the first thing that comes into my mind.
24. I often take risks without stopping to think about the results.

Paternoster & Brame (1997)[24]

Conceptualization

Self-control is conceptualized as imprudent behaviors that are consistent with Gottfredson and Hirschi's (1990) early indicators of low self-control: behaving badly, rejected by peers, being lazy, lacking the capacity to concentrate, and acting in a dangerous or adventurous manner. The indicators are conceptually distinct from criminal behavior.

Operationalization

1. Prone to act out (teacher and interviewer rated)
   (1) prone to act out (0) not prone to act out
2. Poor worker or lazy (teacher rated)
   (1) lazy (0) not lazy
3. Lacking concentration (teacher rated)
   (1) lacks concentration (0) does not lack concentration
4. Difficult to discipline (teacher rated)
   (1) difficult to discipline (0) not difficult to discipline
5. Daring/Risk-Taking/Adventurousness (interviewer rated)
   (1) acts impulsively (0) does not act impulsively

[23] A 5-point Likert response scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neither disagree nor agree, 4 = Agree, and 5 = Strongly agree. The possible range of the scale was 24 to 120. Cronbach's alpha = not reported. Scree indicates greatest break in eigenvalues is between the first (5.3) and second (1.8) factor a difference of 3.5 indicating the self-control scale is unidimensional.

[24] The response scale ranged from 0 to 5. Cronbach's alpha = .69 which is considered minimally acceptable by DeVellis (1991).

Table 1 (continued). *Self-Control Measures*

Marcus (2003)[25]

Conceptualization

Self-control refers to the tendency to resist momentary temptations and persist in the face of obstacles.

Operationalization

Retrospective Behavioral Self-Control Scale

Childhood (when you were between 8 and 13 years old)

1. I was well prepared for school exams.
2. I got involved in fights as a child.
3. Teachers criticized my behavior.
4. I kept things I had only borrowed.
5. I cheated when I played at games.
6. I asked my parents for more pocket money because I had already spent my regular allowance.
7. I took things in stores without paying for them.
8. I couldn't follow lessons in class because I was busy doing other things.
9. I did my homework on time.
10. I participated in playing dirty tricks on other children.
11. My teachers wrote to my parents complaining about my behavior at school.
12. I played with fireworks.
13. I gave teachers who couldn't keep control a hard time.
14. My friends and I pestered younger or weaker children.
15. I tried smoking cigarettes before I was 14.
16. I was in an accident and had to be treated by a doctor.
17. I got through my allowance long before the next was due.
18. I copied homework from classmates.
19. I took things away from other children that belonged to them.
20. When I was out with friends, things did occasionally get wrecked.
21. I annoyed animals on purpose.
22. I stayed away from school, pretending to be ill.
23. I got extra homework as punishment.
24. I tried drinking alcohol before I was 14.
25. I hit other children.
26. I took money belonging to my parents without their permission.

Youth (when you were between 14 and 18 years old)

27. I would have got on much better at school or in vocational training if I had only taken things more seriously.
28. As a teenager I got into trouble with the police.
29. I drove a car or motorbike without having a license.
30. I tried hashish or marijuana.
31. When the weather was good, I would take off and skip school or work.
32. I skipped my fare on public transportation.
33. I have been out and about with bad company.
34. I have wanted something so badly that I just took it.
35. Together with people of my own age we ended up [in] fist-fights.
36. There was something else when the time came to do my homework.
37. I tired of hobbies quickly.
38. I have drunk so much that I had a black out the next day.
39. At night, I'd be out at parties, a disco, or in a bar.
40. I have been late for school or work because I stayed out too late the night before.
41. I have made private dates or appointments and failed to show up.
42. I have stayed out much later than arranged with my parents.

[25] A 7-point Likert response scale: 1 = Never, 2 = Once, 3 = Two or three times, 4 = Fairly many times, 5 = Often, 6 = Very often, and 7 = Always. Cronbach's alphas = .91 (sample 1), .92 (sample 2), and .95 (sample 3) which are considered excellent by DeVellis (1991). Principle components analysis was not conducted on the RBS.

Table 1(continued). *Self-Control Measures*

Marcus (2003) continued

43. I have broken with a close friend because of a romance.
44. I tried “party drugs” (e.g., “ecstasy”) or hard drugs (like cocaine or heroin).
45. My friends and I have on occasion smashed things just because we felt like it.

Adult age (when you were between the 19 and 25 years old)

46. I have been late for important appointments.
47. I have passed on information to others although I had promised to keep it to myself.
48. I have been caught in a speed trap.
49. I have earned money on the side and not declared it fully in my income tax returns.
50. I could have saved myself a lot of trouble if I had watched what I said.
51. I’ve got physically rough when someone provoked me.
52. In the mood, I have drunk more than I could handle.
53. I have taken a higher dosage of medicine than recommended by the doctor or the package insert.
54. I have bought things on the spur of the moment, which I really did not need.
55. I have left a bar or restaurant without paying.
56. I was responsible for a road accident.
57. I have said things to my partner in an argument which hurt her or him badly.
58. On holiday, I have spent all my money before the vacation was over.
59. When filing an insurance claim, I have inflated the amount involved a little.
60. In a bad mood, I have insulted people without any particular cause.
61. I did no longer care for people who used to be my friends.
62. I have broken the speed limit.
63. I have not been exactly tactful in disagreements with my boss or other people in authority.
64. I have driven a car or motorbike after drinking alcohol.
65. I have switched price tags on merchandise in order to pay less for an article.
66. I have bought something of considerable value without comparing prices beforehand.
67. I have borrowed things and never returned them.

Table 1 (continued). *Self-Control Measures*

Piquero & Tibbetts (1996)[26]

Conceptualization

Self-control refers to a personality trait predisposing people to criminal acts.

Operationalization

Modified Grasmick et al. Scale

Impulsivity

1. I often act on the spur of the moment without stopping to think.
2. I devote much thought and effort to preparing for the future.
3. I often do what brings me pleasure here and now, even at the cost of some distant goal.
4. I am more concerned with what happens to me in the short run than the long run.

Simple Tasks

5. I frequently try to avoid projects that I know will be difficult.
6. When things get complicated, I tend to quit or withdraw.
7. The things in life that are easiest to do bring me the most pleasure.
8. I dislike really hard tasks that stretch my abilities to the limit.

Risk Seeking

9. I like to test myself every now and then by doing something a little risky.
10. Sometimes I will take a risk just for the fun of it.
11. I sometimes find it exciting to do things for which I might get in trouble.
12. Excitement and adventure are more important to me than security.

Physical Activities

13. If I had a choice, I would almost always rather do something physical than mental.
14. I almost always feel better when I am on the move rather than sitting and thinking.
15. I like to get out and do things more than I like read or contemplate ideas.
16. I seem to have more energy and greater need for activity than most other people my age.

Self-Centeredness

17. I try to look out for myself first, even if it means making things difficult for other people.
18. I'm not very sympathetic to other people when they are having problems.
19. If things I do upset people, it's there problem not mine.
20. I will try to get things I want even when it is causing problems for other people.

Temper

21. I lose my temper very easily.
22. Often when I'm angry at people, I feel more like hurting them than talking about why I am angry.
23. When I'm really angry, other people better stay away from me.
24. When I have a serious disagreement with someone, it's usually hard for me to talk about it without getting upset.

[26] A 5-point Likert response scale ranging from 1 = "Never" to 5 = "Very often." The possible range for the scale was 24 to 120. Cronbach's alpha = .84 which is considered very good by DeVellis (1991). Piquero and Tibbetts indicate that the principle components analysis was similar to that reported by Grasmick et al. (1993) but they do not report the actual findings.

Table 1 (continued). *Self-Control Measures*

Polakowski (1994)[27]

Conceptualization

Self-control is synonymous with several psychological concepts including hyperactivity, impulsivity, attention deficit, and conduct disorders.

Operationalization

Behavioral Self-Control Measures

1. Hyperactive, Impulsive, and Attention Deficit
    a Psychomotor clumsiness
    b Risk/daring (Mother, Peer report)
    c Lacks concentration (Teacher report)
2. Conduct Problems
    a Disruptive in class (Teacher report)
    b Bad home behavior (Mother report)
    c Troublesomeness (Peer report)
    d Grade achievements (Teacher report)
    e Attempts to be credit to parents (Teacher report)
    f Perceived as ideal (Peer report)
    g Perceived as honest (Peer report)
    h Perceived as clever (Peer report)
    i Perceived as popular (Peer report)
    j Self-perceptions of traits 9-12

[27] Behavioral measures gather primarily from outside sources (e.g., mothers, teachers, and peers). Cronbach's alpha was not reported for any of the measures. The actual questionnaire items were not reported.

Tibbetts (1999)[28]

Conceptualization

Self-control refers to a propensity toward risk-taking, short-term orientation, and an avoidance of difficult tasks.

Operationalization

Abbreviated Grasmick et al. Scale

Risk-Taking

1. I like to test myself every now and then by doing something a little risky.
2. Sometimes I will take a risk just for the fun of it.
3. I sometimes find it exciting to do things for which I might get in trouble.
4. Excitement and adventure are more important to me than security.

Short-Term Orientation

5. I often act on the spur of the moment without stopping to think.
6. I don't devote much thought and effort to preparing for the future.
7. I often do what brings me pleasure here and now, even at the cost of some distant goal.
8. I am more concerned with what happens to me in the short run than the long run.

Avoidance of Difficult Tasks

9. I frequently try to avoid projects that I know will be difficult.
10. When things get complicated, I tend to quit or withdraw.
11. The things in life that are easiest to do bring me the most pleasure.
12. I dislike really hard tasks that stretch my abilities to the limit.

[28] A 5-point Likert response scale ranging from 1 = "Never" to 5 = "Very often." The possible range of the scale was 12 to 60. Cronbach's alpha = .86 which is considered very good by DeVellis (1991).

Table 1 (continued). *Self-Control Measures*

Tittle et al. (2003)[29]

Conceptualization

Self-control is conceptualized as imprudent behaviors not involving actual force or fraud for personal gratification or behaviors not prohibited by the Oklahoma Criminal Code.

Operationalization

Imprudent Behaviors as Self-Control Measures

1. How often during the past year did you drink beer, wine, or hard liquor?
   Nearly Everyday ... Never
   1 2 3 4 5 6
2. Do you usually drink more than two or three alcoholic beverages over the span of a week?
   (0) No (1) Yes
3. On a typical day when you drank in the past year, how many drinks did you have? That is, how many beers, glasses of wine, mixed drinks, and shots of liquor did you have?
   Number of drinks _____
4. Have you ever had a blackout while drinking, that is, where you drank enough so that you couldn't remember the next day what you had said or done?
   (0) No (1) Yes
5. Have you ever had difficulty stopping drinking before you became intoxicated?
   (0) No (1) Yes
6. Do you smoke tobacco products?
   (0) No (1) Yes
7. Current marital status.
   (1) Presently married (2) Single, never married (3) Separated or divorced
8. When you are in an automobile, do you always use the seat belt?
   (0) No (1) Yes
9. Do you sometimes get so far in debt that it's hard to see how you will get out of it?
   (0) No (1) Yes
10. When you have a cold or some other minor ailment, do you usually take some kind of medication?
    (0) No (1) Yes

[29] The items were combined by multiplying the z score for each respondent by the regression factor score and summating across items. This procedure produced a scale ranging from 2.34 to 1.18 with a mean of zero and a standard deviation of one. Cronbach's alpha = .62 which is considered undesirable by DeVellis (1991).

Table 1 (continued). *Self-Control Measures*

White et al. (1994)[30]

Conceptualization

Impulsivity is conceptualized as neuropsychological deficiency i.e., an abnormal functioning of the frontal lobes of the brain. Impulsivity is also conceptualized as a form of behavioral disinhibition, resulting in a lack of behavioral control, and a tendency to translate wants and impulses directly into action as a lack of "ego control" or undercontrol.

Operationalization

Impulsivity

1. Time Perception
    a. Time estimation
        1. Cronbach's alpha = .67 (minimally acceptable)
    b. Time production
        1. Cronbach's alpha = .79 (respectable)
2. Stroop Color and Word Association Test
    a. 22 lines of 11 color names (e.g., red, blue, and green) subject is asked to say the color of the ink not the printed word.
        1. Cronbach's alpha = not reported
3. Trail Making Test
    a. Form A subjects must draw lines to connect consecutively numbered circles on a worksheet.
    b. Form B subjects must draw lines to connect consecutively numbered and lettered circles on a worksheet.
        1. Cronbach's alpha = not reported
4. Circle-Tracing Task
    a. Subjects are asked to trace a 9 inch circle as slowly as they can (timed).
5. Delay of Gratification
    a. Computer game (probability of winning a nickel)
        1. Cronbach's alpha = .88 (very good)
6. Card Playing Task
    a. Computer game (probability of drawing a face card)
7. Eysenck Impulsiveness Scale
    a. 23 items (e.g., Do you often do things without planning?)
        1. Cronbach's alpha = .97 (excellent)
8. Child Behavior Checklist
    a. Fails to finish things he starts
    b. Impulsive or acts without thinking
    c. Demands must be met immediately
    d. Talks out of turn
    e. Wants to have things right away
    f. Impatient
        1. Cronbach's alpha = .90 (excellent)
9. California Child Q-Set
    a. 100 statements describing a wide range of personality, cognitive, and social attributes which are sorted across nine categories ranging from 1 = "Extremely Uncharacteristic" to 9 = "Extremely Characteristic."
        1. Interparent reliability = .82
10. Videotaped observations
    a. Motor restlessness (e.g., leg jiggling, rocking in chair)
    b. Impatience-impersistence (e.g., quitting easily, refusal to guess or think more, looking at watch, reaching for the test materials before they are presented).
        1. Intraclass correlation coefficients = .81 and .82 indicating good interrater reliability.

[30] The Cronbach's alpha of each scale is rated according to DeVellis (1991).

Table 1 (continued). *Self-Control Measures*

Wood et al. (1993)[31]

Conceptualization

Self-control consists of six distinct traits: an appetite for risk taking, intellectual simplicity, poorly controlled anger, physicality, a desire for immediate gratification, and a sense of self-centeredness.

Operationalization

Grasmick et al. Scale

Risk-Taking

1. I like to test myself every now and then by doing something a little risky.
2. Sometimes I will take a risk just for the fun of it.
3. I sometimes find it exciting to do things for which I might get in trouble.
4. Excitement and adventure are more important to me than security.

Simplicity

5. I frequently try to avoid projects I know will be difficult.
6. When things get complicated, I tend to quit or withdraw.
7. The things in life that are easiest bring me the most pleasure.
8. I dislike really hard tasks that stretch my abilities to the limit.

Anger

9. I lose my temper pretty easily.
10. Often, when I'm angry at people I feel more like hurting them than talking to them about why I am angry.
11. When I am really angry, other people better stay away from me.
12. When I have a serious disagreement with someone, it's usually hard for me to talk calmly about it without getting upset.

Physicality

13. If I had a choice, I would almost always rather do something physical than something mental.
14. I almost always feel better when I am on the move than when I am sitting.
15. I like to get out and do things more than I like to read or contemplate ideas.
16. I seem to have more energy and a greater need for activity than most other people my age.

Immediate Gratification

17. I don't devote much thought and effort to preparing for the future.
18. I often do whatever brings me pleasure here and now, even at the cost of some distant goal.
19. I'm much more concerned with what happens in the short run than in the long run.
20. I much prefer doing things that pay off right away rather than in the future.

Self-Centeredness

21. I try to look out for myself first, even if it means making things difficult for other people.
22. I'm not very sympathetic to other people when they are having problems.
23. If the things I do upset people, it's their problem not mine.
24. I will try to get the things I want even when I know it's causing problems for other people.

[31] A 4-point Likert response scale: 1 = Strongly disagree, 2 = Disagree somewhat, 3 = Agree somewhat, and 4 = Strongly agree. The possible range of the scale was 24 to 96. Cronbach's alpha = .88 which is considered very good by DeVellis (1991). Scree indicates greatest break in eigenvalues is between the first (6.6) and second (2.3) factor (a difference of 4.3) indicating the self-control scale is unidimensional.

Table 1 (continued). *Self-Control Measures*

Wright et al. (1999)[32]

Conceptualization

Self-control is conceptualized as impulsivity, a lack of persistence, high activity levels, risk taking, and responding to conflict physically.

Operationalization

Childhood Self-Control Measures

1. Dunedin Behavioral Ratings (Observer, 10 items, Range 0-9))
   Emotionally labile, extremely overactive, impulsive, undercontrolled, withdraws from difficult tasks , requires constant attention, brief attention to tasks, lacks persistence in reaching goals, resists directions, and lacks confidence in tasks.
2. Impulsivity I (Diagnostic and Statistical Manual III) (DSM-III) (Parent, Teacher 16 items, Range 0-2)
   Acts before thinking, shifts excessively between activities, needs lots of supervision, and has difficulty awaiting turn.
3. Impulsivity II (Diagnostic Interview Schedule for Children) (DISC) (Self-report, 8 items, Range 0-16)
4. Lack of Persistence (DSM-III) (Parent, Teacher, 24 items, Range 0-1.9)
   Fails to finish tasks, difficulty sticking to an activity, easily distracted, and difficulty concentrating.
5. Inattention I (DISC) (Self-report, 7 items, Range 0-14)
6. Hyperactivity I (Rutter Behavior Scale, RBS) (Parent, Teacher, 25 items, Range 0-5.2)
   Runs and jumps about, squirmy, fussy, cannot settle, and has short attention span.
7. Hyperactivity II (DSM-III) (Parent, Teacher, 8 items, Range 0-2)
   Runs and climbs about excessively, difficulty sitting still, and "on the go" as if "driven by a motor."
8. Hyperactivity III (DISC) (Self-report, 8 items, Range 0-16)
9. Antisocial behavior (RBS) (Parent, Teacher, 61 items, Range 0-7.6)
   Flies off the handle, destroys belongings, fights, disobedient, tells lies, bullies other children, and steals things.

[32] Cronbach's alpha = .86 which is considered very good by DeVellis (1991).

Conceptualization[33]

Self-control is conceptualized as impulsivity, a lack of persistence, high activity levels, risk taking, and responding to conflict physically.

Operationalization

Adolescent Self-Control Measures

1. Impulsivity III (Multidimensional Personality Questionnaire) (MPQ) (Self-report, 18 items, Range 0-100)
   Not planful, reflective, careful, and rational.
2. Impulsivity IV (Dunedin Multidisciplinary Child Development Study Survey Instrument) (DMCDS) (Informant, 1 item, Range 0-2)
   Impulsive, and rushes into things without thinking what might happen.
3. Hyperactivity IV (DISC) ((Self-report, 15 items, Range 1-30)
   Restless, unable to sit still, hyperactive, and always on the go.
4. Inattention II (Peterson and Quay Behavior Problem Checklist, PQBPC) (Parent, 14 items, Range 0-27)
   Short attention span, does not finish things, lacks perseverance, and easily diverted from the task at hand.
5. Inattention III (DMCDS) (Informant, 1 item, Range 0-2)
   Problems in keeping mind on work and other things, and problems with concentration.
6. Physical Response to Conflict (MPQ) (Self-report, 3 items, Range 0-2)
   Responds to conflict physically, ready to fight when taken advantage of, ready to hit someone when angry, and does not "turn the other cheek" when treated badly.
7. Risk Taking (MPQ) (Self-report, 22 items, Range 0-100)
   Prefers exciting and dangerous activities.

[33] Cronbach's alpha = .64 which is considered undesirable by DeVellis (1991).

The Grasmick Self-Control Measure

Following Gottfredson and Hirschi's (1990) discussion of the 'elements of self-control,' Grasmick et al. (1993) develop a 24-item scale (four items for each of the six components) designed to capture the latent trait of self-control (see Table 1 for a more complete description of the Grasmick et al. scale). They argue that their measure of the elements of self-control adheres "as closely as possible to Gottfredson and Hirschi's descriptions of them" (Grasmick et al., 1993, p. 13). The Grasmick et al. (1993) self-control scale is the most widely accepted measure of self-control within criminology (DeLisi et al., 2003; Marcus, 2003; 2004; Pratt & Cullen, 2000; Tittle et al., 2003).

Nevertheless, Marcus (2004) points out that the primary problem with Grasmick et al.'s (1993) measure is that they use Gottfredson and Hirschi's (1990) section entitled the 'elements of self-control' like a "cookbook for the development of a self-control measure" (pp. 37-38). Marcus (2004) views "…this as *the* fundamental misunderstanding in current operationalizations of the theory [because] self-control has no elements at all" (p. 36 emphasis in the original). Instead what Gottfredson and Hirschi intended was a much broader conceptualization and, ultimately, operationalization of self-control (Hirschi & Gottfredson, 1993; Hirschi, 2004).

In a follow-up article to Grasmick et al. (1993), Gottfredson and Hirschi express considerable dissatisfaction with Grasmick et al.'s conceptualization of self-control (Hirschi & Gottfredson, 1993). As Gottfredson and Hirschi see it, Grasmick and his colleagues make a crucial mistake when they translate the self-control concept into a "personality concept or an enduring criminal predisposition" (Hirschi & Gottfredson, 1993, p. 49). In fact, they find "this feature of the Grasmick et al. work [to be] the most

disappointing tendency in response to [their] theory [because] there is no personality trait predisposing people toward crime" (Hirschi & Gottfredson, 1993, p. 49). To claim otherwise would be in direct opposition to the fundamental premise of control theories which deny the existence of personality traits that require crime. Therefore, self-control should be thought of as a "barrier that stands between the actor and the obvious momentary benefits crime provides" and not a propensity to commit criminal and deviant acts (Hirschi & Gottfredson, 1993, p. 53).

Hirschi and Gottfredson (1993) also take issue with the way in which Grasmick and his colleagues operationalize self-control. As noted earlier, Grasmick et al. (1993) identify six components of self-control and develop a set of self-report items designed to tap each. Hirschi (2004, p. 548) argues that several of Grasmick et al.'s items overlap conceptually with deviance or are actually "confessions of delinquency." For example, he indicates that the following items taken from Grasmick's scale are tantamount to deviant behavior: "I lose my temper easily", "I sometimes take risks for the fun of it", and "I try to get things I want even when I know it's causing problems for other people" (Hirschi, 2004, p. 548).[34] In essence, Hirschi (2004) argues, that at least some of the Grasmick items constitute a case of using deviant behavior to predict deviant behavior when the correlation between the Grasmick control scores and self-reported deviance scores are computed.

Hirschi and Gottfredson (1993) also argue that Grasmick et al.'s (1993) approach to scale construction is not the most desirable because one's level of self-control

[34] Contrary to Hirschi's (2004) view, I would not characterize temper, risk taking, and selfishness as criminal or deviant acts. I agree with Gottfredson and Hirschi's (1990) assertion that these factors represent characteristics indicative of low self-control in their original definition of the concept.

influences self-report survey response. The findings of at least one study support their contention that one's level of self-control does indeed affect survey response (see Piquero, MacIntosh, & Hickman, 2000). Namely, those with low self-control, by definition, will lack the tenacity to complete surveys and/or provide reliable estimates of their behavior. As a result, Hirschi and Gottfredson (1993, p. 48) claim that, "the general unwillingness or inability of those low on self-control to participate in surveys [restricts] the range of both independent [self-control] and dependent [crime] variables," which may seriously attenuate their true relationship. Thus, self-control theory "predicts only modest validity for survey methods" (Hirschi & Gottfredson, 1993, p. 48). For this reason, Hirschi and Gottfredson (1990) express a clear preference for behavioral measures of self-control over those of self-report measures.

Although Hirschi and Gottfredson (1993) raise some concerns about the validity of survey methods, they do not question the fact that Grasmick et al.'s (1993) scale is a reliable indicator of self-control. In Grasmick et al.'s study, the self-control measure was found to have a very respectable level of internal consistency (Cronbach's alpha = .80) (DeVellis, 1991), which has been replicated in other studies (see e.g., Arneklev et al., 1993; Forde & Kennedy, 1997; Hay, 2001; LaGrange & Silverman, 1999; Longshore, 1998; Nagin & Paternoster, 1993; Piquero & Tibbetts, 1996; Tibbetts, 1999; Unnever et al., 2003; Vazsonyi et al., 2001; Wood et al., 1993). DeVellis (1991) claims that one of the most important indicators of a scale's quality is its reliability coefficient, alpha. He recommends a value of .70 as the lower acceptable bound for alpha (see also Nunnally, 1978). Carmines and Zeller (1979) propose, as a general rule, that the reliabilities for

widely used scales, such as Grasmick et al.'s, should not fall below .80. Grasmick's scale is well within the bounds of these recommended scale reliabilities.

Even though the empirical evidence suggest the Grasmick et al. (1993) measure is a reliable indicator of self-control, some argue that there is an over-reliance on it and a need for alternative measures (see e.g., Arneklev, Grasmick, & Bursik, 1999; Cochran et al., 1998; Longshore, 1998; Marcus, 2004; Polakowski, 1994; Sorensen & Brownfield, 1995). Cochran et al. (1998), for instance, argues that it is time for some "risk-taking" on the part of researchers who need to "break new ground and develop alternative measures of low self-control" (p. 253). In addition, Grasmick and his colleagues indicate that "the creation of the most valid and reliable measure of low self-control should be a high priority" among criminologists because "our scale should be seen as an initial step toward this ultimate goal" (Arneklev et al., 1993, p. 236).

In the next section, several of the alternative measures developed by other researchers are presented. An assessment of both the conceptualization and operationalization of the measures is included.

Alternative Self-Control Measures

Like Grasmick et al. (1993), most scholars use Gottfredson and Hirschi's (1990) 'elements of self-control' as a template for the development of a self-control measure (Marcus, 2004). The upside of such a strategy is that these measures, strictly speaking, have content validity, while the downside seems to be that these measures stem from a rather narrow conceptualization of self-control. What Gottfredson and Hirschi (1990) actually intended is a concept of self-control that reflects a "broad disposition that has to

do with individual assessments of the consequences of [ones] actions and interpretations of situations" (Gibbs et al., 1998, p. 56). Gottfredson and Hirschi have continued to stand by their conceptualization and have restated their definition of self-control throughout the years. For example, they have defined self-control as:

- factors affecting calculation of the consequences of one's acts (Gottfredson & Hirschi, 1990, p. 95);
- an enduring predisposition to consider the long-term consequences of one's acts (Hirschi & Gottfredson, 1993, p. 49);
- the tendency to avoid acts whose long-term costs exceed their momentary advantages (Hirschi & Gottfredson, 1994, p. 3);
- the relatively stable tendency to engage in (and avoid) a wide range of criminal, deviant, or reckless acts (Hirschi & Gottfredson, 1994, pp. 51-52);
- the ability to resist temptations of the moment in favor of long-term projects or prospects (Hirschi, 1995, p. 122);
- the tendency to consider the full range of potential costs of a particular act (Hirschi, 2004, p. 543); and
- the ability to consider the costs or negative consequences of crime (Hirschi & Gottfredson, 2006, p. 20).

Despite their efforts to clarify their conceptualization of self-control, researchers continue to develop measures guided by a literal interpretation of Gottfredson and Hirschi's (1990) discussion on the elements of self-control. For instance, Burton and his associates (see e.g., Burton, Cullen, Evans, & Dunaway, 1994; Burton et al., 1998; Evans

et al., 1997) state that their conceptualization of self-control is based on Gottfredson and Hirschi's (1990) list of elements. They indicate that those with low self-control have a desire for immediate gratification, tend to become easily frustrated, have a preference for physical versus mental activities, lack the ability to verbalize feelings, lack patience, and have a preference for risk taking. They operationalize self-control by constructing a 12-item self-report scale that includes both attitudinal and behavioral measures of self-control (see Table1).

Similarly, Bichler-Robertson et al. (2003) created a 6-item self-report scale that represents the various elements of self-control (see Table 1). They indicate that those with low self-control tend to engage in risky behaviors as an easier means of completing difficult tasks, tend to be self-centered, and lack the ability to consider the long-term consequences of their deviant behavior. The Bichler-Robertson et al. (2003) and the Burton et al. (1998) measures, for the most part, appear to have content validity. However, both the Bichler-Robertson et al. (2003) and Burton et al. (1998) scales have marginal internal consistencies (Cronbach's alpha = .68 and .64 respectively). Neither offers any insight as to why their scale reliabilities are so low although one possible explanation is that they have too few questionnaire items. Ideally, researchers should seek to optimize the length of the scale without sacrificing reliability. Although shorter scales reduce respondent fatigue and increase response rate, longer scales, generally speaking, are more reliable because reliability is related to scale length. Developing a questionnaire that is "too brief is a bad idea no matter how much the respondents prefer its brevity" (DeVellis, 1991, p. 11). DeVellis (1991, p. 86), advises "if a scale's reliability is too low, brevity is no virtue."

Wright, Caspi, Moffitt, and Silva (1999) develop self-control measures, which they claim, "fit squarely with Gottfredson and Hirschi's specification of self-control" (p. 489). They include behavioral measures of impulsivity, a lack of persistence, hyperactivity, risk taking, and antisocial behavior (see Table 1). At first glance, their measures seem to be consistent with Gottfredson and Hirschi's (1990) description of self-control. But on closer inspection, one of Wright et al.'s (1999) measures, antisocial behavior, is contrary to Gottfredson and Hirschi's conceptualization of self-control. Specifically, Gottfredson and Hirschi (1990, p. 110) argue that the primary problem with measures of antisocial behavior is that they are "conceptually indistinguishable" from crime or delinquency. This is true of several of the antisocial behavior measures Wright and his associates use as indicators of self-control (e.g., assault, vandalism, and theft). Essentially, Wright et al. (1999) use measures of crime to predict crime, which is empirically tautological. Gottfredson and Hirschi (1990) are unimpressed by such measures because, as they rightly point out, the finding that "measures of delinquency tend to correlate with one another [is an] unremarkable conclusion [and] is not particularly instructive" (p. 110).

Wright et al.'s (1999) self-control measure does represent an improvement over other measures in at least one respect; namely, their measure is gathered from multiple sources. For example, the childhood self-control items were obtained from eight different sources—respondents, parents, two trained observers, and four teachers. The adolescent items were gathered from three different sources—respondents, parents, and peers. Gottfredson and Hirschi (1990), and most other social scientists, see this kind of data collection as a superior method to self-reports alone because self-report

"questionnaires and interviews appear to have differential validity depending on the criminality of the respondent" (p. 249). To be more precise, those with low self-control are less likely to accurately respond and/or complete surveys because they "…lack diligence, tenacity, or persistence in a course of action" (Gottfredson & Hirschi, 1990, p. 89). As result, when possible, researchers should use independent sources to gather behavioral information because such sources do not suffer from the same sources of bias (Gottfredson & Hirschi, 1990; Hirschi & Gottfredson, 1993).

Wright et al. (1999) report that, while the reliability of the childhood self-control measure is good (Cronbach's alpha = .86), the reliability of the adolescent self-control measure is poor (Cronbach's alpha = .64). They do not offer any reason as to why the reliability of the adolescent self-control measure is so low, but argue that reliability is comparable to those used in other studies. For example, they cite the reliability of the Evans et al. (1997) measure (Cronbach's alpha = .61) as evidence. Although Wright et al.'s (1999) adolescent self-control scale reliability is comparable to that of Evans et al. (1997), it falls far below the reliabilities of other self-control scales (see e.g., DeLisi et al., 2003; Gibbs & Giever, 1995; Gibbs et al., 1998; Hay, 2001; Nagin & Paternoster, 1993; Piquero et al., 2002). And their adolescent self-control scale certainly falls below the reliability recommendations set forth by Carmines and Zeller (1979), DeVellis (1991), and Nunnally (1978).

There have been other researchers who have limited their conceptualization of self-control to fewer dimensions than the six outlined by Gottfredson and Hirschi (1990). For instance, Driscoll (1992), who was the first to empirically test Gottfredson and Hirschi's (1990) general theory, focused on three dimensions of self-control: impulsivity,

sensation seeking, and empathy. He used Barratt's (1959) Impulsivity Scale (BIS) (34 items) to measure impulsivity or what Gottfredson and Hirschi (1990) describe as an inability to defer gratification. Zuckerman's (1979) Sensation Seeking Scale-V (SSS-V) (40 items) was used to measure risk taking and Hogan's (1969) Empathy Scale (HES) (38 items) was used to measure insensitivity to the wants and needs of others (see Table 1). While Driscoll (1992) reported that the reliability of the BIS (Cronbach's alpha = .71) and the SSS-V (Cronbach's alpha = .81) were within acceptable bounds, the HES (Cronbach's alpha = .54) was unexpectedly low.

It should be noted that several of the items in SSS-V represent criminal acts (e.g., "I have tried cannabis or would like to", "I would like to try some of the drugs that produce hallucinations", "I often get high (drinking alcohol or smoking marijuana)", and "I would like to try some of the drugs that produce hallucinations"). Although it could certainly be argued that these behaviors fall outside Gottfredson and Hirschi's (1990) definition of crime (i.e., acts of force or fraud in pursuit of self-interest), it is difficult to deny that such behaviors are indeed criminal. Driscoll (1992, pp. 31-32) ultimately concedes that his measures are somewhat problematic indicating that

> …using scales that contain acts of crimes within their items or that have an underlying theme similar to crime, is confusing and does not contribute to our understanding of crime and criminality. At best, such measures produce the 'unremarkable conclusion' that crime correlates with crime.

Although the measures of self-control used by Driscoll (1992) are conceptually distinct, the measures overlap operationally or from a factor analysis perspective the items load on both scales. This does not indicate a conceptual problem unless the inter-

scale correlation is strong e.g., .8 and there is no known reason for the scales to be correlated. Of course, it may cause problems of multicollinearity at the analytical level.

Others have limited their conceptualization of self-control to one aspect. For example, White, Moffitt, Caspi, Bartusch, Needles, and Stouthamer-Loeber (1994) conceptualized a lack of self-control (impulsivity) as a form of behavioral disinhibition as well as a tendency to translate wants and desires into action. They operationalized impulsivity to include 10 different measures. Five of the measures were behavioral-based (time perception, color and word association test, trail making test, circle tracing test, and delay of gratification) and five measures were cognitively-based (card playing test, Eysenck Impulsiveness Scale, child behavior checklist, California Child Q-set, and videotaped observations) (see Table 1). However, White et al.'s (1994) measure of self-control lacks content validity because impulsivity alone does not capture the full range of Gottfredson and Hirschi's (1990) self-control concept.

Gottfredson and Hirschi (1990), in their discussion of the nature of criminality, also reject several of White et al.'s (1994) measures of self-control outright (e.g., trail making test, Eysenck's measures, and the California Child Q-set). In addition, White et al.'s (1994) findings indicate that the internal consistency of the behavioral measures is, generally speaking, much lower in comparison to the cognitive measures (Cronbach's alpha ranging between .67-.88 and .90-.97 respectively). This latter finding is inconsistent with Gottfredson and Hirschi's (1990) prediction that behavioral measures are better indicators of self-control than cognitive ones although the reliabilities are certainly within acceptable bounds for research purposes (see also Hirschi & Gottfredson, 1993) .

While most scholars have developed self-control measure that are guided by Gottfredson and Hirschi's (1990) discussion of the elements of self-control, there are those who have deviated somewhat from this conceptualization of self-control. Polakowski (1994), for instance, claims that self-control is synonymous with several psychological concepts including hyperactivity, impulsivity, attention deficit, and conduct disorders. He constructed a 13-item scale that includes both attitudinal and behavioral indicators of self-control (the actual items are not reported). Although Polakowski (1994) did not report the internal consistency of his scale, it is likely a more valid measure of self-control because, by Gottfredson and Hirschi's (1990) standards, it moves beyond self-reports by using assessments of others including parents, teachers, peers, and therapists. And as noted earlier, outside sources are more desirable because they help reduce the likelihood of self-report response bias.

There are others who do not specifically use Gottfredson and Hirschi's (1990) conceptualization of self-control as a guide but, nevertheless, define it in a similar manner. Feldman and Weinberger (1994, p. 196), for example, define self-control (self-restraint) as "tendencies…to inhibit immediate, self-focused desires in the interest of promoting long-term goals and positive relations with others." They develop a 30-item self-report measure (i.e., Weinberger Adjustment Inventory; Cronbach's alpha = .85) that includes four components: suppression of aggression, impulse control, consideration of others, and responsibility. Some of the items are also very similar to those used to operationalize self-control in other studies (e.g., "I can remember a time when I was so angry at someone that I felt like hurting them", "I like to do new and different things that many people would consider weird or not really safe", "I make sure that doing what I

want will not cause problems for other people", and "People can depend on me to do what I know I should do"). However, Feldman and Weinberger's (1994) self-control measure does not completely cover the content domain outlined by Gottfredson and Hirschi (1990). Specifically, Feldman and Weinberger (1994) do not include "physical activities" or "simple tasks" as part of their definition or measure of self-control but their self-control measure does achieve a very good level of internal consistency (Cronbach's alpha = .85).

Marcus (2003) suggests that the self-control instrument developed by Gibbs and Giever (1995) comes closer to what Gottfredson and Hirschi (1990) intended as a measure of self-control. Gibbs and Giever (1995, p. 245) indicate that their measure is designed to tap the "broad domain of self-control" because such an approach reflects "…our agreement with Nunnally (1978) and Peterson (1965) that in measuring personality traits it is more productive to concentrate on the broader or more general constructs than on more numerous, narrowly defined, potentially unstable factors."

Gibbs and Giever (1995) also point out that in developing their self-control measure they took into consideration the population being sample, which in this instance was college students. In doing so, they created items that were more relevant to the sample being studied (e.g., "Most classes are boring", "When I consider all the things in life that are really important to me, my performance in school rates right up near the top", "Keeping up with my studies is my first priority", and "I've given college my best effort"). They argue that "such a strategy elicits more reliable responses and, at the same time, improves the response rate by keeping the respondents interested in the survey" (Gibbs & Giever, 1995, p. 245).

Gibbs and Giever's (1995, p. 244) created a 40 item self-report questionnaire that includes cognitive, affective, and behavioral indicators of self-control that "attempt to capture the respondent's concern for the consequences of his or her actions." Similar to other scholars, Gibbs and Giever's (1995) questionnaire includes items designed to tap most of the elements of self-control (see Table 1). Still, in comparison, the internal consistency of Gibbs and Giever's (1995) scale is much greater than the internal consistency of scales developed by others (e.g., Burton et al., 1998; Evans et al., 1997; Grasmick et al., 1993; Tittle et al., 2003). And in a slightly revised scale, Gibbs et al. (1998) achieved an even greater level of reliability (Cronbach's alpha = .92) than that of Gibbs and Giever (1995) (Cronbach's alpha = .88) (see Table 1).

Nevertheless, Marcus (2003) claims that although Gibbs and Giever (1995) do a better job of conceptualizing and operationalizing self-control than other researchers, their measure still falls short of what Gottfredson and Hirschi (1990) intended. Similar to Gibbs and Giever (1995), Marcus (2003) broadly defines self-control as "the tendency to resist momentary temptations and persist in the face of obstacles" (pp. 684-686). Marcus (2003) developed the Retrospective Behavioral Self-Control Scale (RBS) to measure self-control. The RBS consist of a 67-item questionnaire that focuses on "behavioral statements assessing the frequency of prior conduct with long-term consequences" (Marcus, 2003, p. 675).

Marcus (2003, pp. 675-676) has identified what he calls the "seven requirements for the adequate measurement of self-control" that includes:

> (1) replicability and comparability of research (realized via completely standardized testing), (2) behavioral basis (only volitional acts included),

(3) match with definition of self-control (acts can have negative consequences in the long run), (4) consideration of the versatility and stability issues (the RBS contains eight behavioral categories of highly diverse content and is organized into three life periods covering childhood, adolescence, and adulthood), (5) a means for the elimination of systematic influences (opportunity, age) beyond self-control (the diversity of content and the long time frame should cancel opportunity effects out; age is held constant via scale format), (6) logical independence of crime (with few exceptions, the acts are not criminal in a legal sense), and (7) broad coverage across different populations (widespread acts most people in the Western culture have access to).

A close examination of Marcus' (2003) scale reveals that he does not meet his own requirements for the adequate measurement of self-control. That is, several of the items are not logically independent of crime. For example, there are items that are indicative of assault ("I got involved in fights as a child", "Together with people of my own age we ended up [in] fist-fights", and "I've got physically rough when someone provoked me"), shoplifting and theft ("I took things in stores without paying for them", "I kept things I had only borrowed", "I took things away from other children that belonged to them", "I skipped my fare on public transportation", "I have wanted something so badly that I just took it", "I have left a bar or restaurant without paying", and "I have switched price tags on merchandise in order to pay less for an article"), and drug or alcohol use ("I tried drinking alcohol before I was 14", "I tried hashish or marijuana", and "I have tried "party drugs" (e.g., "ecstasy") or "hard drugs (like cocaine or heroin)"

(Marcus, 2003, pp. 701-703). Therefore, Marcus'(2003) scale suffers from the same limitation as previously noted with other measures of self-control, namely his measures are "direct indicators of crime" or are "conceptually indistinguishable" from delinquency (Gottfredson & Hirschi, 1990, p. 110).

Nevertheless, it should be noted that Marcus (2003) administered the RBS to three different samples (the first and second samples were undergraduate students in a southern German University and the third sample was employees of a small industrial company in southern Germany) and achieved a very good level of internal consistency across samples (Sample 1 Cronbach's alpha = .91; Sample 2 Cronbach's alpha = .92; and Sample 3 Cronbach's alpha = .95).

Although a number of the self-control measures reviewed here appear to be fairly reliable indicators of self-control (see e.g., Arneklev et al., 1993; DeLisi et al., 2003; Gibbs & Giever, 1995; Gibbs et al., 1998; Grasmick et al., 1993; Tibbetts, 1999; Wood et al., 1993), others remain, at best, questionable (see e.g., Polakowski, 1994; LaGrange & Silverman, 1999; Tibbetts, 1999; White et al., 1994; Wright et al., 1999). In addition, contrary to Gottfredson and Hirschi's (1990) specifications, the majority of tests of self-control theory have used self-report, cognitively-based measures of self-control. Hirschi and Gottfredson (1993, p. 48) indicate that although multiple measures are certainly desirable, such as those used by Grasmick et al. (1993), "behavioral measures of self-control seem preferable to self-reports." However, Hirschi and Gottfredson (1993) seem willing to reach a methodological compromise with those who would test their theory. That is, researchers may continue to use self-report survey methods as long as they include behavioral measures of self-control. A number of researchers have included

behavioral measures of self-control in the form of imprudent behaviors or what Gottfredson and Hirschi (1990) have identified as behaviors analogous to crime.

Imprudent Behavior as Self-Control

As previously noted, those who lack self-control tend to engage in noncriminal acts theoretically equivalent to crime (e.g., accidents, skipping school, smoking, drinking, and unwanted pregnancies). Most researchers who include imprudent behavior conceptualize it as a dependent variable (see e.g., Arneklev et al., 1993; Burton et al., 1998; Forde & Kennedy, 1997; Wood et al., 1993) although Hirschi and Gottfredson (1993) indicate that such behavior can be used as an independent variable (i.e., indicator of self-control) as well. For example, Hirschi and Gottfredson (1993) make the case that "'temper' and 'cautiousness' are caused by self-control, [but] they too may be used as indicators of it" (p. 49).

Following Hirschi and Gottfredson's (1993) recommendation, Evans et al. (1997) used an 18-item self-report imprudent behavior scale as a dependent variable in tests of the theory, and they used it as an independent variable in subsequent tests. While their methodology is consistent with Hirschi and Gottfredson's (1993) specifications, their measure is problematic when used as an independent variable or indicator of self-control. To be more precise, Evans et al. (1997) include several measures of imprudent behaviors that are synonymous with criminal behaviors (e.g., drove your car while drunk, been drunk in public places, had marijuana or hashish, and had hallucinogens) (see Table 1). Imprudent behaviors used as indicators of self-control must be independent of crime (Gottfredson & Hirschi, 1990). The content of Evans et al.'s (1997) measures of self-

control are not conceptually distinguishable from crime and crime equivalents. This means that they are using criminal behavior to predict criminal behavior, which is, as previously indicated, empirically tautological. Hirschi and Gottfredson (1993) claim that tautology can be avoided by using easily identified independent indicators of self-control. For example, they suggest the following acts or behaviors as likely indicators of self-control:

> …whining, pushing, and shoving (as a child); smoking and drinking and excessive television watching and accident frequency (as a teenager); difficulties in interpersonal relationships, employment instability, automobile accidents, and drinking, and smoking (as an adult) (Hirschi & Gottfredson, 1993, p. 53).

One final problem with the Evans et al. (1997) measure is that the internal consistency is rather low (Cronbach's alpha = .65). And it clearly falls below the minimally acceptable alpha level of .70 recommended by DeVellis (1991) and Nunnally (1978). The low reliability of the scale would seem to contradict Gottfredson and Hirschi's (1990) prediction that behavioral measures are more reliable indicators of self-control.

Similar to Evans et al. (1997), Tittle et al. (2003) used a 10-item self-report imprudent behavior scale as an indicator of self-control. Unlike the measures used by Evans and his associates, the measures used by Tittle et al. (2003) are independent of crime (e.g., "How often during the past year did you drink beer, wine, or hard liquor?", "Do you smoke tobacco products?", and "When you are in an automobile, do you always wear your seat belt?") (see Table 1). Although Tittle et al.'s (2003) measure appears to

be more valid than the measure proposed by Evans et al. (1997), the internal consistency is also somewhat disappointing (Cronbach's alpha = .62). Tittle and his colleagues (2003); however, do note that the items used as "imprudent behaviors are not highly interrelated, making it difficult to develop reliable behavioral indicators" of self-control (p. 333). This finding would not be predicted because, according to Gottfredson and Hirschi (1990, p. 94), there is "…great variability in the kinds of criminal acts [and analogous acts] offenders engage in." Put differently, if there is great variability within offenders in the types of criminal and deviant acts that they commit, the items should be highly intercorrelated. The low reliability may be the result of including too few items in the measure (DeVellis, 1991).

Paternoster and Brame (1998) also indicate that their conceptualization of self-control (imprudent behavior) is based on Gottfredson and Hirschi's (1990) discussion of self-control. They see individuals who lack self-control as impulsive, desiring immediate and easy gratification, and being insensitive to the long-term consequences of their actions. Although they, too, use behavioral-based indicators of low self-control, their measure is different than the measures used by most researchers because it is obtained in childhood (boys ages 8-9). Hirschi and Gottfredson (1993, p. 53) claim some of the best independent indicators of self-control are childhood behaviors that include "…whining, pushing, and shoving (as a child)." Therefore, Paternoster and Brame (1998) used a 5-item measure of imprudent behavior similar to Gottfredson and Hirschi's (1990) description of childhood deviant behaviors (e.g., acting out and difficult to discipline) while being careful to also use indicators of self-control that are independent of crime.

Paternoster and Brame's (1998) measure represents an improvement over other measures because it is based on the reports of others including teachers and interviewers. Hirschi and Gottfredson (1993, p. 48) maintain that the "differences among potential respondents [should] be taken into account in research design and measurement [because] some subjects are more suitable than others for questionnaire surveys" (see also Gottfredson & Hirschi, 1990, p. 251). As stated earlier, those with low self-control lack the ability to accurately report their behavior; therefore, they should be considered a less reliable source. As a result, whenever possible researchers should gather behavioral information from independent sources (Gottfredson & Hirschi, 1990; Hirschi & Gottfredson, 1993).

Like other behavioral-based measures of self-control, the internal consistency of Paternoster and Brame's (1998) scale does not meet standard reliability recommendations for research purposes (Cronbach's alpha = .69). On the other hand, its internal consistency is just short of DeVellis' (1991) recommended alpha value of .70, and it is comparatively greater than both the Evans et al. (1997) (Cronbach's alpha = .65) and Tittle et al. (2003) (Cronbach's alpha = .62) scales.

Keane and his colleagues (1993) were among the first researchers to use imprudent behaviors as measures of self-control (see Table 1). Consistent with Gottfredson and Hirschi's (1990) conceptualization of self-control Keane et al. (1993) define those with low self-control as lacking the ability to consider the consequences of their actions exhibiting impulsiveness, shortsightedness, and risk-taking behavior. In their operationalization of self-control, they used three items as indicators of risk-taking and shortsightedness: "Do you wear your seat belt?", "Out of 100 legally impaired

drivers on the road tonight, how many do you think will be stopped by the police?", and "Do you think you are over the legal limit?" They used one item as an indicator of impulsiveness: "Did anyone try to discourage you from driving tonight?" One item also was used to capture pleasure seeking: "How many alcoholic drinks have you consumed in the last 7 days?"

Unlike others, Keane et al. (1993) did not use a composite measure of self-control but instead used the measures as separate indicators of self-control. This is contrary to Gottfredson and Hirschi's (1990) specification that the elements of self-control come together to form a unidimensional construct. Because the items were not used as a composite measure of self-control there is no way to assess the reliability of Keane et al.'s (1993) measure. In addition, Keane et al. (1993), in some instances, use single-item indicators to capture the elements of self-control (e.g., impulsiveness and pleasure seeking). As previously stated, single-item indicators are considered insufficient for capturing the full content domain of a concept (DeVellis, 1991).

Generally speaking, the imprudent behaviors used in the preceding studies do not appear to have anymore desirable qualities than the cognitive measures of self-control used by others. In fact, in comparing the scale reliabilities, imprudent behaviors do not perform as well as cognitive measures (see Table 1). The finding that cognitive indicators of self-control are more reliable than behavioral indicators is partly a function of the number of items included in the scales. That is, the reliability coefficient increases as the number of items in the scale increases (DeVellis, 1991) and, in general, the behavioral scales presented here have fewer items than the cognitive scales.

According to Carmines and Zeller (1979, p. 20), the first responsibility of any researcher is to "specify the full domain of content that is relevant to the particular measurement situation." Although Paternoster and Brame (1998) include items that are salient to their sample, Tittle et al. (2003) and Evans et al. (1997) items seem to fall short of specifying the full content domain. Recall that Gottfredson and Hirschi (1990) indicate that those who participate in analogous acts are more likely to "smoke, drink, skip school [and be involved in] most types of accidents including household fires, auto crashes, and unwanted pregnancies" (p. 92). In addition, they also identify the following behaviors as acts analogous to crime: "difficulty persisting in a job, difficulty acquiring and retaining friends, and difficulty meeting the demands of long-term financial commitments (such as mortgages or car payments)" (Gottfredson & Hirschi, 1990, p. 94). Many of these categories of behavior seem salient to the populations being sample but are not included in the measures developed by Tittle et al. (2003) and Evans et al. (1997). For example, both Tittle et al. (2003) and Evans et al. (1997) used adult samples but did not include measures of relationship instability, long-term financial commitments, household fires, or unwanted pregnancies. The inclusion of these items could help to make the measure of imprudent behavior more reliable and valid. However, as operationalized in these studies, imprudent behaviors do not appear to be as reliable or valid as other indicators of self-control (see e.g., Arneklev et al., 1993; DeLisi et al., 2003; Gibbs & Giever, 1995, Gibbs et al., 1998; Grasmick et al., 1993; Hay, 2001; Higgins, 2001; 2002; LaGrange & Silverman, 1999; Marcus, 2003; Piquero & Tibbetts, 1996; Piquero et al., 2000; Tibbetts, 1999; Tibbetts & Herz, 1996; Tibbetts & Whittimore, 2002; Unnever et al., 2003; Vazsonyi et al., 2001; Wood et al., 1993).

Summary of the Self-Control Measures

Since self-control is the central theoretical construct of Gottfredson and Hirsch's (1990) general theory, it is of the utmost importance to

> …be as precise as possible about the meaning of [the] trait in discussing the GTC theoretically, and…to measure this trait adequately [before] testing the theory empirically. Both objectives require a rigorous translation of the theoretical concept into an operationally defined…construct and further transmission into a measure that taps into the trait and not into something else (Marcus, 2004, p. 34).

But Marcus (2004) argues that, to date, most translations of the self-control construct do not meet these standards. He places the blame primarily on Gottfredson and Hirschi because their "imprecise construct definition led to inadequate measurement" (Marcus, 2004, p. 34). More recently, Hirschi (2004) agreed that his and Gottfredson's definition of self-control, although well intended, was "ill considered" (p. 548). Hirschi (2004) is especially disappointed with the tendency of researchers to use the 'elements of self-control' "…as a set of directions for constructing measures of self-control" (p. 542). He indicates that what he and Gottfredson intended was a much broader conceptualization and, ultimately, operationalization of self-control (Hirschi, 2004; Hirschi & Gottfredson, 1993).

Although Gottfredson and Hirschi have continued to clarify the self-control concept (see e.g., Gottfredson, 1995; Hirschi, 1994; 1995; Hirschi & Gottfredson, 1993; 1994; 2000) it seems that, from the studies reviewed here, a great deal of confusion over the conceptualization and operationalization of self-control persists. Recently, Hirschi

(2004) revised his and Gottfredson's conceptualization and operationalization of the self-control construct. This effort will be discussed in the next section of this dissertation.

Reconceptualization of Self-Control

Hirschi (2004) admits much of his and Gottfredson's conceptualization of self-control is taken from psychology (i.e., the Big Five personality traits; see e.g., Costa & McCrae, 1988). In retrospect, he regrets their "excursion into psychology" and the development of "the measures of self-control stemming from it" (Hirschi, 2004, p. 542). He confesses that their efforts were ill-conceived because "…the Big Five (plus one), introduced a language I did not understand, championed ideas contradicting our theory, and otherwise muddies the waters. But this state of affairs was not immediately recognized" (Hirschi, 2004, p. 541).

According to Hirschi (2004), the use of the psychological literature and current measures of self-control create four major problems. First, "Both suggest differences among offenders in motives for crime, contrary to explicit assumptions of the theory that offenders do not specialize and that motives are irrelevant" (Hirschi, 2004, p. 542). Gottfredson and Hirschi (1990) present an elaborate discussion refuting various explanations of criminal and deviant behavior because many endorse the view that criminals are differentially motivated to commit certain crimes (see e.g., Merton, 1938; Parsons, 1957; Ehrlich, 1974). Gottfredson and Hirschi (1990) argue "…the motive to crime is inherent in or limited to immediate gains provided by the act itself. There is no larger purpose behind rape, or robbery, or murder, or theft, or embezzlement, or insider trading" (p. 256). Additionally, Hirschi (2004) reemphasizes his and Gottfredson's

original assertion that "…criminals do not specialize in particular crimes. Those committing any one crime are more likely to commit all other crimes—given opportunities to do so" (p. 537).

The second problem Hirschi (2004) attributes to a personality approach and the trait-based scales of self-control that measure it is that "Both contradict our explicit assertion (and firm belief) that personality traits (other than self-control) have proved to be of little value in the explanation of crime" (p. 542). In fact, Gottfredson and Hirschi (1990) argue that "…self-control is the only enduring personal characteristic predictive of criminal (and related) behavior" (p. 111).

According to Hirschi (2004), the third shortcoming of the current conceptualization of self-control and corresponding measures is both fail to explain how self-control operates:

> Instead both suggest offenders act as they do because they are what they are (impulsive, hot-headed, selfish, physical risk takers), whereas nonoffenders are, well, none of these. When measures based on this exercise are interpreted in a manner consistent with self-control theory, they suggest that potential offenders (a) calculate a factor score based on a linear combination of numerous self-characterizations gleaned from a variety of sources and (b) act accordingly (Hirschi, 2004, p. 542)

The final problem Hirschi (2004) observes, as have others, is "…single traits (impulsivity, risk taking) predict criminal behavior as effectively as does an all-inclusive self-control scale (see e.g., Longshore et al., 1998; Piquero & Rosay, 1998)" (p. 542).

These problems led Hirschi (2004) to clarify and broaden the conceptual definition of self-control describing it as "*the tendency to consider the full range of potential costs of a particular act"* (p. 543 italics in original). This new definition has in common with previous definitions a focus on an actor's ability to calculate the likely costs of their actions. Consider the following precursors to the revised definition:

- factors affecting calculation of the consequences of one's acts (Gottfredson & Hirschi, 1990, p. 95).
- an enduring predisposition to consider the long-term consequences of one's acts (Hirschi & Gottfredson, 1993, p. 49);
- the tendency to avoid acts whose long-term costs exceed their momentary advantages (Hirschi & Gottfredson, 1994, p. 3);
- the relatively stable tendency to engage in (and avoid) a wide range of criminal, deviant, or reckless acts (Hirschi & Gottfredson, 1994, pp. 51-52); and
- the ability to resist temptations of the moment in favor of long-term projects or prospects (Hirschi, 1995, p. 122).

These quotes extracted from the various works of Gottfredson and Hirschi and Hirschi demonstrate that previous definitions of self-control incorporate one central notion; namely, that all human behavior, including deviance, is influenced by the consideration of its potential consequences.

But this new definition moves beyond previous definitions by acknowledging that there is a much wider range of factors affecting an actor's decision making process than in Gottfredson and Hirschi's (1990) initial definition of self-control. Hirschi's (2004)

reconceptualization clearly moves the focus of the theory away from the personality trait of self-control back to the rational choice component. This "shift" in focus is necessary because it is more consistent with the original intent of the theory, that is, "the dimensions of self-control…are factors affecting the calculation of the consequences of one's acts" (Hirschi, 2004, p. 543). From this perspective, self-control refers to an internal "set of inhibitions" that influence the choices people make (Hirschi, 2004, p. 543). These inhibitions are best described in the elements of the bond because, according to Hirschi (2004), self-control and social control (bond) are, essentially, one and the same. Brownfield and Sorenson (1993), Sorenson and Brownfield (1995), and Stylianou (2002) previously suggested that social control or bond measures could be used as indicators of self-control.

In the next section, Hirschi's (2004) reconceptualization and operationalization of self-control will be presented. The next section will also include a discussion of Sorenson and Brownfield's (1995) and Stylianou's (2002) conceptualization and operationalization of social bond as self-control. In addition, a revised self-control measure proposed by Piquero and Bouffard (2007) based on Hirschi's (2004) reconceptualization will be reviewed.

Social Bond as Self-Control

For Hirschi (2004, p. 545), self-control refers to a set of "inhibitions…[or] factors that one takes into account in deciding whether to commit a criminal act—factors that may vary in number and salience." In redefining self-control, he indicates that the elements of the bond act as inhibiting factors all of which reduce the likelihood of

choosing to engage in criminal or deviant behavior. Put another way, the elements of the bond represent an internalized value system that guides behavioral choices.

The social bond is comprised of four elements: attachment, commitment, involvement, and belief (Hirschi, 1969; 2004). Attachment is primarily concerned with the emotional bond or the degree of love, affection, and/or respect for conventional people such as, "parents, teachers, friends, institutions or even non-human objects outside oneself" (Hirschi, 2004, p. 539). Individuals who are sufficiently attached are less likely to commit criminal or deviant acts because such acts could potentially sever emotional bonds with those they love or the things they value. As Hirschi (2004) points out, "crimes are, by definition, contrary to the wishes and expectations of conventional others, and their consequences may be incompatible with continued contact with them" (p. 539).

Commitment "refers to the individual's aspirations and expectations, to investments in a line of activity [or one's] 'stake in conformity'" (Hirschi, 2004, p. 539; see also Toby, 1957). Hirschi (2004) argues that commitment means "…we are controlled by what we are, and by what we wish to be" (p. 539). Specifically, crime and deviant behavior is, by definition, incompatible with higher ambitions such as educational or occupational aspirations. Therefore, people who are committed to such goals are more likely to avoid behaviors that could potentially jeopardize their realization.

Perhaps more controversial is Hirschi's (2004) decision to include the assessment of peers on the nondelinquency-delinquency measure. He views peer associations as a potential indicator of self-control (i.e., commitment to a conventional lifestyle). His decision is surprising because as he points out, "traditionally…bond measures compete

with measures of exposure to delinquent peers" (Hirschi, 2004, p. 547). But he argues that this state of affairs is unnecessary because all one needs to do is to "make them [the measures of peer delinquency] bond-equivalent and add them to [the] self-control measures" (Hirschi, 2004, p. 548). For instance, most measures of peer delinquency contained in data sets are "respondent-generated"; therefore, they can be treated as "another potentially inhibiting factor" (Hirschi, 2004, p. 547). To be more precise, Hirschi (2004) claims that the relative absence of delinquency among friends can be thought of as a restraint or inhibitor because "…respondents reporting no delinquent friends have (1) defined themselves as nondelinquent and/or (2) tied themselves to the mast, greatly limiting their opportunities for delinquent behavior" (p. 547).

The concept of involvement refers to participation in conventional activities and the investment one has in conventional lines of action (i.e., time and energy spent in pursuit of conventional activities) (Hirschi, 2004). Involvement may take the form of recreational activities, school athletics, or spending time with family. At one time, Hirschi (1969) argued that individuals who are involved in conventional activities are less likely to deviate from societal norms because they are left little time to deviate. Hirschi (2004, p. 544) now claims that "rather than making one too busy to commit criminal acts, in this context, it is closely analogous to the idea of self-control as self-imposed physical restraint."

Belief is the acceptance of the validity of the moral rules of the dominant social-value system (Hirschi, 2004). Acceptance of social rules is a central component of social bond theory (Hirschi, 1969; 2004) because conventional beliefs act as inhibitors. It

captures the perennial idea of sociology that "if we know what a person believes, we know how he or she will behave" (Hirschi, 2004, p. 539).

Hirschi (2004) argues, as stated earlier, that the elements of the bond are the best indicators of the inhibitory factors because these are factors that one takes into account in deciding whether to engage in criminal or delinquent behavior. This reconceptualization suggests that inhibitory factors "cannot be latent, hidden, or unknown to the actor; nor can they be prior criminal or delinquent acts" (Hirschi, 2004, p. 545). On the other hand, Hirschi (2004) is careful to point out that

> this new definition [of self-control]…need not impute knowledge of distant outcomes to persons in no position to possess such information. Children need not know the health implications of smoking or the income implications of truancy, if these implications are known to those whose opinion they value (p. 543).

As a result, Hirschi (2004) claims that "*the* principal source of control is concern for the opinions of others" (p. 545 emphasis in the original). Put differently, one's attachment or emotional bond to others holds *the* greatest potential for reducing or preventing criminal or deviant behavior. Hirschi's (2004) assertion is reminiscent of his earlier work in which he argues that, "the essence of internalization of norms…lies in the attachment of individuals to others" (see Hirschi, 1969, p. 18). And as he argues elsewhere, "we honor [others] we admire not by imitation but adherence to conventional standards" (Hirschi, 2002, p. 152).

"Others," according to Hirschi (2004), include significant relationships, for example, one's attachment to parents, teachers, friends, and institutions. Hirschi (2004)

suggest the following items as possible indicators of attachment: "Do I care what X thinks of me?" and "Will X know what I have done?" (p. 545). If one answers "yes" to these questions, then one will most likely take these factors into account (exercise self-control) during the decision making process, and will most likely refrain from criminal or deviant behavior.

Hirschi's (2004) new definition of self-control is much broader in that it recognizes a wider range of factors that affect an actor's decision making process. Gottfredson and Hirschi (1990) originally identified the long-term negative consequences of deviant behavior as most relevant to the decision making process without due regard for the impact of the short-term negative consequences of deviant behavior. Hirschi (2004) sees this as one of the major improvements over his and Gottfredson's previous definition. Table 2 presents Hirschi's (2004) reconceptualization and revised operationalization of the self-control construct.

Table 2. *Hirschi's Revised Conceptualization and Operationalization of Self-Control*

Hirschi (2004)
Conceptualization
Self-control is the tendency to consider the full range of potential costs of a particular act.
Operationalization
The measure of self-control (social bond) taps attachment to parents (mother) and school (teachers), commitment (homework and importance of grades), and parental supervision.
Social Bond as Self-Control (self-control responses in parentheses)
1. Do you like or dislike school? (Like it)
2. How important is getting good grades to you personally? (Very important)
3. Do you finish your homework? (Always)
4. Do you care what teachers think of you? (I care a lot.)
5. It is none of the school's business if a student wants to smoke outside the classroom. (Strongly disagree)
6. Does your mother know where you are when you are away from home? (Usually)
7. Does your mother know who you are with when you are away from home? (Usually)
8. Do you share your thoughts and feelings with your mother? (Often)
9. Would you like to be the kind of person your mother is? (In everyway. In most ways.)
Cronbach's alpha = not reported.

In his original exposition of social bond, Hirschi (1969) indicates that attachment is causally prior to the other elements of the bond (involvement, commitment, and belief).

However, in his revised version of self-control, Hirschi (2004) makes no such assertion. On the contrary, he conceptualizes the elements of the bond as representing one global concept—self-control. His self-control measure includes all but one of the bonds (involvement). But Hirschi (2004) states that others need not preclude involvement as part of a self-control measure.

Empirical Measures of Self-Control

Table 3 presents items drawn from Hirschi's (1969) seminal study of social bond and delinquency. Hirschi (2004) refers to these bond-based measures of self-control as "inhibiting factors" (p. 545) and as the results in Tables 3 and 4 suggest, there is a solid statistical connection between inhibiting factors and self-reported delinquency.

Table 3 shows that as the number of inhibiting factors (self-control responses) increases, the percent of respondents reporting delinquent acts decreases. For example, of the 136 respondents reporting no inhibiting factors, 73 percent reported committing at least two delinquent acts. At the opposite end of the table, of the 45 respondents reporting all nine inhibiting factors, only 2 percent reported committing two or more delinquent acts. Hirschi (2004) reports similar findings using a more recent set of data.

Table 3. *Percent Reporting Two or More Delinquent Acts by Number of Self-Reported Inhibiting Factor, Richmond, California, 1965*[35]

Number of Self-Reported Inhibiting Factors										
0	1	2	3	4	5	6	7	8	9	Total
73	62	50	40	34	25	23	15	8	2	34
(136)	(249)	(399)	(523)	(557)	(565)	(420)	(293)	(152)	(45)	(3, 339)

[35] Data are from the Richmond Youth Project, a study of junior and senior high school students conducted in Western Contra Costa County, California in 1969. A description of the sample and details of the data collection may be found in Hirschi (1969; 2002).

Table 4 also shows that as the number of inhibiting factors increases, the number of self-reported delinquent acts decreases. Of the 152 respondents without inhibitions, 66 percent reported at least two delinquent acts, while none of the 11 respondents with all seven inhibitions reported two or more delinquent acts. Based on his analyses, Hirschi (2004) concludes that "differences in rates of delinquency are impressive, and they belie arguments about the weak power of control theory" (p. 546).

Table 4. *Percent Reporting Two or More Delinquent Acts by Number of Self-Reported Inhibiting Factor, Fayetteville, Arkansas, 1997*[36]

Number of Self-Reported Inhibiting Factors								
0	1	2	3	4	5	6	7	Total
66	57	41	36	28	27	10	0	37
(152)	(201)	(145)	(118)	(65)	(41)	(21)	(11)	(754)

While Hirschi's results are encouraging, it may be more instructive to compare the correlation of these two studies with the correlation typically found across self-control studies using the Grasmick et al. (1993) scale and behavioral measures of self-control. To conduct such a comparison, the correlation coefficient (r) of each study is standardized using Fisher's z transformation (see Rosenthal, 1984).[37] After performing Fisher's z transformation, the correlation of Hirschi's (1969) data is z = -.347 (r = -.334) while the correlation of Schreck's (2002) data is z = -.322 (r = -.311). The z scores are then used to compute a mean z score and a weighted mean z score (based on sample size).[38] Table 5 shows the unweighted and weighted effects size estimates for

[36] Data are from a sample of 9th, 10th, and 11th grade students described in Schreck (2002).
[37] The equation for the transformation of the r values to z values is: $z(r) = 1/2 \log_e [1 + r / 1 - r]$.
[38] The equation for computing the mean z score is: $z_{r1} + z_{r2} / 2 = \bar{z}$ and the weighted mean z score is: $z_r = w_1z_1 + w_2z_2 / w_1 + w_2$.

Grasmick's (1993) measures, behavioral measures (both taken from Pratt and Cullen, 2000), and Hirschi's (2004) revised self-control measures.

Table 5. *Unweighted and Weighted Effect Size Estimates of Self-Control Measures*

Variable	Mz	Wz
Self-Control Theory		
Grasmick (n = 82)	.257**	.223**
Behavioral (n = 12)	.277**	.288**
Hirschi (n = 2)	.335**	.342**

**Statistically significant at the $p < .01$ level

The findings in Table 5 show that Hirschi's (2004) revised measure of self-control has a greater mean *z* score and weighted mean *z* score than Grasmick's self-control measures and the behavioral measures of self-control. Although these findings should be interpreted with caution, they suggest that Hirschi's (2004) revised measures of self-control may prove to be better predictor of criminal and deviant behavior.

Hirschi (2004) is not the first to suggest that the elements of the social bond can be conceptualized as self-control. More than a decade ago, Sorensen and Brownfield's (1995) conceptualization of self-control substituted Gottfredson and Hirschi's (1990) elements of self-control with the elements of Hirschi's (1969) social bond (see Table 6).

Sorensen and Brownfield (1995, p. 22) argue that attachment is essentially the same as self-control's "indifference to the feelings and needs of others." Parental attachment is measured by a single item: "Would you like to be the kind of person your father is?" Attachment to teachers also is measured by a single item: "Do you care what teachers think of you?" Sorensen and Brownfield's (1995) measures are consistent with Hirschi's (2004) most recent conceptualization and operationalization of self-control

theory. Indeed both of the attachment measures are recommended by Hirschi's (2004) as indicators of self-control.

Table 6. *Sorensen and Brownfield's Conceptualization and Operationalization of Self-Control*

Sorenson and Brownfield (1995)

Conceptualization

Self-control refers to an individual's internal and external control of behavior or the degree to which he or she may succumb to tempting situations e.g.., the ability to defer gratification.

Operationalization

Social Bond as Self-Control

Parental attachment is the concern for the opinions of parents.

1. Would you like to be the kind of person your father is?

In every way	In most ways	Some ways	In just a few ways	Not at all
1	2	3	4	5

Teacher attachment is the concern for the opinions of teachers.

2. Do you care what your teachers think of you?

Care a lot	Care some	Don't care much
1	2	3

Academic effort refers to diligence in academic pursuits.

3. I try hard in school.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	2	3	4	5

Evaluation of academics refers to valuing academics.

4. Such things as books, school, and education don't interest me very much.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1	2	3	4	5

School Performance

5. Putting them all together, how would your grades average out?

1 = A 2 = A- 3 = B+ 4 = B 5 = B- 6 = C+ 7 = C 8 = C- 9 = D or below

Time Spent on Homework

6. How many hours per week do you spend doing homework?

1 = 0 hours 2 = 1-3 hours 3 = 4 -6 hours 4 = 7-10 hours 5 = 11-14 hours 6 = 15 or more hours

Long Term Commitments

7. How much schooling do you actually expect to get eventually?

1 = Some high school	2 = High school	3 = On the job apprenticeship
4 = Trade or vocational school	5 = Some college or junior college	6 = College graduation

Cronbach's alpha = not reported.

Sorensen and Brownfield (1995, p. 21) also maintain that commitment can be conceptualized as self-control because commitment is just another way to represent "the ability to delay gratification." Commitment is measured by two items: "I try hard in school", and "Putting them altogether, how would your grades average out?" Hirschi

(2004, pp. 546-547) agrees with these measures of commitment because he claims that "an element of commitment [is] found in homework and importance of grades." Therefore, these items are also good indicators of self-control.

The major limitation of Sorensen and Brownfield's (1995) operationalization of self-control (bond) is the use of single item indicators for certain categories meant to represent self-control (e.g., religiosity and planning for the future). As previously noted, single item measures are rarely, if ever, sufficient for capturing the content domain of a concept (DeVellis, 1991).

Like Sorensen and Brownfield (1995), Stylianou (2002) argues that the elements of the bond may be conceptualized as the elements of self-control (see Table 7). For example, Stylianou (2002) claims that the "belief" component of social bond can be thought of as an indicator of self-control. To be more precise, one's beliefs represent positive or negative attitudes which can be used as indicators of self-control. Stylianou (2002) uses positive attitudes toward school and schoolwork as indicators of self-control (i.e., school and schoolwork are proxies for future orientation, preference for simple tasks, and a lack of long-term commitment). He also uses positive attitudes toward religion, community, work, family, and friends as indicators of self-control (i.e., these are proxies for future orientation, long-term commitment, and self-centeredness).

Stylianou's (2002) measure of self-control is an improvement over Sorensen and Brownfield's (1995) because he uses multiple indicators (14 items) to represent self-control. In addition, his scale achieves a relatively fair level of internal consistency (Cronbach's alpha = .74) (Carmines & Zeller, 1979; DeVellis, 1991; Nunnally, 1978).

Table 7. *Stylianou's Conceptualization and Operationalization of Self-Control*

Stylianou (2002)

Conceptualization

Those with low self-control have a 'here and now' orientation, a preference for simple tasks, lack long-term commitment, self-centered, a disinterest in conventional family life, and lack tolerance for frustration.

Operationalization

Positive Attitudes toward School

1. Going to school has been an enjoyable experience for me.

Disagree				Agree
1	2	3	4	5

2. Some people like going to school. Others don't. How do you feel about going to school?

I don't like school at all				I like school very much
1	2	3	4	5

3. How often do you feel the school work assigned is meaningful and important?

Never				Almost always
1	2	3	4	5

4. How interesting are most of your courses to you?

Very dull				Very exciting and stimulating
1	2	3	4	5

5. How important do you think the things you are learning in school are going to be for you later in life?

Not at all Important				Very important
1	2	3	4	5

Community Orientation

6. How important is making a contribution to society?
7. How important is being a leader in my community?
8. How important is working to correct social and economic inequalities?

Not important				Extremely important
1	2	3	4	5

Religiosity

9. How important is religion?

Not important			Very important
1	2	3	4

Positive Attitudes toward Work, Friendships, and Family

10. How important is being able to find steady work?
11. How important is being successful in my life of work?
12. How important is having strong friendships?
13. How important is it to have a good marriage and family life?

Not important			Very important
1	2	3	4

Planning for the Future

14. The nation needs much more long-range planning and coordination to be prepared for the future.

Disagree				Agree
1	2	3	4	5

Cronbach's alpha = .74 which is considered respectable by DeVellis (1991). The unidimensionality of the scale was not assessed but Stylianou (2002) treated it as such.

Sorensen and Brownfield's (1995) and Stylianou's (2002) conceptualizations of self-control have a common theme, that is, they retain Gottfredson and Hirschi's (1990) original definition of self-control while using the elements of social bond as measures of self-control. Hirschi (2004), on the other hand, revises his and Gottfredson's original definition of self-control to include a broader range of factors that one considers before choosing a course of action. However, similar to Sorensen and Brownfield (1995) and Stylianou (2002), Hirschi (2004) uses the elements of the social bond as proxies for self-control.

More recently, Piquero and Bouffard (2007) claim to be the first to develop a self-control measure based on Hirschi's (2004) revised conceptualization of self-control. They accurately identify the new definition of self-control as presented by Hirschi (2004) i.e., self-control is "the tendency to consider the full range of potential costs of a particular act" (Piquero & Bouffard, 2007, p. 3). Piquero and Bouffard (2007) argue that Hirschi's (2004) redefinition of self-control is a significant improvement over previous definitions of self-control. First, the revised definition of self-control provides a way to think about the variability in crime from situation to situation. In other words, Piquero and Bouffard (2007) state that

> …not all individuals with low self-control will commit crime in every situation, the new measurement strategy allows researchers the ability to understand this between-situation variation by examining the costs identified by respondents in any given situation (p. 7).

Second, the new definition moves away from defining self-control as a personality characteristic. Hirschi and Gottfredson (1993) have been attempting for some time to

distance the self-control concept from the personality literature. In fact, Hirschi and Gottfredson (1993) claim the most disappointing tendency in response to their theory is that most criminologist translate the self-control concept into a "personality concept or an enduring criminal predisposition" (p. 49). They go on to argue that "there is no personality trait predisposing people toward crime" (Hirschi & Gottfredson, 1993, p. 49). To claim otherwise would be in direct opposition to the fundamental premise of control theories which deny the existence of personality traits that require crime. Third, the revised self-control concept avoids the charge of tautology. That is, the revised definition allows researchers to identify indicators that are independent of self-control. Fourth, Hirschi (2004) explicitly links self-control and social control. Over the years a number of researchers have urged Hirschi to make a more direct linkage between these two theories (Akers, 1991; Sorensen & Brownfield, 1995; Stylianou, 2002; Taylor, 2001). Fifth, the new definition is broader than previous definitions of self-control. Hirschi (2004) identifies a broader number of factors that affect the decision making process than he and Gottfredson originally identified. Sixth, the revised self-control concept includes contemporaneous factors that are present at the point of the decision making process. This means the new definition includes not only the long-term negative consequences of a behavior, but the short-term negative consequences as well. Finally, self-control includes the salience of potential inhibiting factors. Hirschi (2004) argues that various inhibiting factors will be differentially salient to each individual.

As previously noted, Hirschi's (2004) conceptualization of self-control refers to a "set of inhibitions" that are best described in the elements of the social bond (p. 543). Although Piquero and Bouffard (2007) claim a measure of self-control should include the

elements of the bond, they fail to follow their own advice.[39] Instead they use hypothetical first person scenarios about drunk driving and sexual coercion (see Table 8). In their study, respondents were asked to read the scenarios and to indicate the likelihood of engaging in drunk driving and sexual coercion. Participants were asked to develop a list of up to seven "bad things" that might occur if they engaged in the offending behavior depicted in each scenario. Respondents also were asked to rate how important (0 percent = "Not Important" to 100 percent = "Very Important") each of these things would be when making their decision whether to commit the offense as described in each scenario.

Table 8. *Piquero and Bouffard Hypothetical Scenarios*

Drunk Driving Scenario
It is about 2 o'clock Thursday morning. You have spent most of the night drinking with friends at a party and have had a lot to drink. You decide to leave and go back to your house, which is about 5 miles away from where the party is. You feel drunk and are sure that you are over the legal limit, and wonder whether you should drive yourself home. You remember that you need your car early the next morning for an important appointment. You also know that your roommate is home and would be able to give you a ride back to the house to get your car the next morning.
Sexual Aggression Scenario (for Male Subjects Only)
You and Susan have just returned to her apartment after spending the night drinking at a party bar. It is 2 o'clock in the morning. You picked Susan up at this party because, through some friends, you know she has slept with a number of guys, and has a reputation for being "loose." Both of you have been drinking throughout the night and are pretty drunk when you get to her place. After you get to Susan's apartment, where she lives alone, you have a few beers, sit down on her couch, and begin to listen to some music. After listening to music for a few minutes, Susan turns down the lights and begins to kiss you and rub your penis through your pants. In response, you begin to kiss and fondle Susan's breasts. You then reach under her skirt and begin to attempt to remove Susan's clothes. Susan tells you that she thinks she is not interested in having sex but does not try to physically stop you.

Cronbach's alpha = .93 for the drunk driving scenario and Cronbach's alpha = .90 for the sexual aggression both of which are considered excellent according to DeVellis (1991). Cronbach's alpha was computed using the inter-item reliability of the salience scores for the total number of costs items identified by the respondents.

[39] Piquero and Bouffard (2007) make the decision to use measures of social bond as a control variable. They indicate that they made this choice for two reasons: (1) according to their interpretation of Hirschi's (2004) revised conceptualization of self-control, they argue that their hypothetical scenario measurement strategy is best way to capture the rational choice component of the theory and (2) when they correlated Grasmick et al.'s (1993) self-control measures with the social bond measures, the two were not highly intercorrelated. Piquero and Bouffard (2007) offer this finding as evidence that self-control and social are not the same thing as asserted by Hirschi (2004).

The primary advantage of the hypothetical scenario design (HSD) is that it "allows subjects to simultaneously (or nearly so) consider the consequences of their behavior and the likelihood of engaging in a specific type of misconduct" (Bouffard, 2002, p. 748). In addition, the use of self-generated items has been viewed as an improvement over items generated "artificially" by researchers because the latter may not accurately reflect the "real world" decision making process of respondents. Specifically, Bouffard (2002, p. 749) argues that

> If subjects are made aware of the potential costs that they would not have normally considered on their own, the resulting deterrent effect of this perceived cost could be an artifact of the research design, not necessarily evidence in support of those items related to…decisions in reality.

The most obvious limitation of Piquero and Bouffard's (2007) study is that they do not report the actual items that affect the respondents' decision making process. Before we can understand why respondents' engage in or refrain from criminal or deviant behavior, it seems important to know what factors contribute to their decisions. Hirschi (2004, p. 550) indicates that he and Gottfredson view "'natural sanctions' (the risks to life and limb inherent in many deviant acts) a greater role" in an actor's decision making process. He goes on to claim that because "differences in self-control are observed so early, 'legal sanctions' appear to be irrelevant" (Hirschi, 2004, p.550). However, Piquero (personal communication, September 10, 2007) indicated that legal sanctions were the most cited reason respondents refrained from drunk driving (93.9 percent) and sexual aggression (75.5 percent). Piquero (personal communication, September 10, 2007) also found, as predicted by Hirschi (2004), that natural sanctions did play a prominent role in

respondents' decisions to refrain from criminal behavior. For example, killing or injuring someone else (68.4 percent) or oneself (64.2 percent) were the third and fourth most frequently cited reasons for refraining from drunk driving respectively. The likelihood of contracting a sexually transmitted disease (54.5 percent) and unwanted pregnancy (43.4 percent) were cited as the second and third reasons respectively for refraining from sexual aggression (A. Piquero, personal communication, October 16, 2007).

An additional limitation of Piquero and Bouffard's (2007) study is that they intentionally exclude female respondents. Specifically, their sexual coercion scenario is limited to male respondents only. While the exclusion of female respondents seems valid given the nature of the scenario, Piquero and Bouffard could have selected a scenario that was applicable to all respondents. For instance, Piquero and Tibbetts (1996) previously used drunk driving and shoplifting scenarios both of which seem salient across gender.

Hirschi's Conclusions on the Revised Self-Control Concept

Hirschi (2004) argues that the "tinkering" he has done to the theory does not "detract from the value of the original theory" (p. 548). On the contrary, he maintains that the most important thing to keep in mind is that the

> …change in the conceptualization of the sources of self-control and the cognitive processes it involves should have little effect on the empirical predictions derived from the theory. For example, a central assertion of the theory is that deviant and reckless acts are…explained by (low) self-control…Self-control as measured here consistently *predicts behavior analogous to crime*: truancy, cheating on exams, being sent out of the

classroom, driving while drinking, auto accidents, bike—skateboard—rollerblade accidents, broken bones, shooting dice for money, drinking alcohol, smoking tobacco, and smoking marijuana (Hirschi, 2004, p. 548).

CHAPTER III

RESEARCH METHODS

This chapter presents the research methods used to empirically assess a measure of self-control based on Hirschi's (2004) revised conceptualization. Of course, the preliminary results of using a social bond-based measure of social control to explain delinquency are encouraging, but to date, there has not been a detailed assessment of the psychometric qualities of a bond-based measure of self-control. The development, testing, and evaluation of such a measure is the central purpose of this dissertation. A component of the study also will be to use the measure to test the main proposition of Gottfredson and Hirschi's theory (1990) i.e., a lack of self-control is related to crime and crime equivalents. This chapter presents the sample measures, theoretical models, and method of data analysis that will be used in this study.

Sample

The survey instrument (see Appendix C) was administered to an availability (n = 257) sample of undergraduate students who were enrolled in introductory criminology courses at Indiana University of Pennsylvania. It should be noted that there are some potential limitations to this sampling technique.

The most serious potential problem is that the sample may not be representative of the population and, therefore, will limit the generalizability of the findings. Although the current sampling strategy is not optimal, it has yielded fairly representative samples in previous studies (see e.g., Bichler & Tibbetts, 2003; Gibbs et al., 2003; Tibbetts, 1999; Tibbetts & Whittimore; 2002).

Another potential problem is there may be restricted variation in the central concepts of the model, particularly self-control and deviance. For example, as a group, university students would most likely be characterized by relatively high levels of self-control because being involved in academic pursuits presupposes a certain level of task persistence as well as the ability to delay gratification and work toward a future goal. By Gottfredson and Hirschi's (1990) original definition these characteristics are indicative of self-control. College enrollment reflects commitment, and thus, college students would be expected to have relatively high levels of self-control given Hirsch's (2004) revised definition of self-control. Despite the elevated levels of self-control, the use of college samples in previous studies has found sufficient variation in levels of self-control (see e.g., Giever, 1995; Gibbs et al., 1998; Higgins, 2002; 2004; Piquero & Tibbetts; 1996; Tibbetts & Herz, 1996; Tibbetts, 1999). We might also expect that because college students have relatively high levels of self-control they would have relatively limited deviance involvement. But previous research indicates there is also sufficient variation in deviance among college students (see e.g., Gibbs & Giever, 1995; Gibbs et al., 1998; Higgins, 2002; 2004; Piquero & Tibbetts; 1996; Tibbetts & Herz, 1996; Tibbetts, 1999).

Despite these potential limitations there are some associated benefits to using a college sample. For instance, Gottfredson and Hirschi (1990) note that, "some subjects are more suitable than others for questionnaire surveys" (p. 251). College students certainly meet this criterion. They are literate and frequently called upon to complete surveys. In addition, they possess characteristics that increase the likelihood of item response accuracy. Sampling college students is also more cost-effective and less time consuming than other sampling techniques as well (Gibbs & Giever, 1995; Gibbs et al.,

2003; Gibbs et al., 1998). That is, it enables administration of the survey instrument to relatively large groups at one time.

Procedures

The dissertation and survey instrument was reviewed by Indiana University of Pennsylvania's (IUP) Institutional Review Board (IRB) for the Protection of Human Subjects, which is the regulatory body of IUP responsible for the review of research that involves human participants. After receiving IRB approval, the survey instrument was administered to groups of students in classes in which the instructors agree to participate in the study.

Respondents were advised that participation in the study was completely voluntary, and they would not be penalized in any way for non-participation. Respondents were also informed that they could discontinue participation in the study at any time and that their choice to discontinue would not have any adverse consequences. They were advised that there were no anticipated risks associated with participation in the study. Participants were told that their responses would remain anonymous and confidential. A traditional signed consent form was not used. Instead, each questionnaire included an attached cover letter that contained the key aspects of informed consent (see Appendix C). Completion of the survey indicated consent. In addition, respondents were advised not to place their names or any other personal identifiers (e.g., student identification numbers or social security numbers) on the survey.

Pretest of the Self-Control Measure

The bond-equivalent self-control measure developed and used for this dissertation was pretested. Gibbs et al. (2008) administered a self-report survey instrument to an availability sample (n = 404) of undergraduate students who were enrolled in criminology courses to gather data to assess the psychometric properties of a self-control measure based on Hirschi's (2004) reconceptualization. The self-control measure was evaluated for reliability, validity, and dimensionality. The results of the pretest are presented later in this chapter.

Cronbach's alpha was used as a measure of reliability. Alpha depends on the average inter-item correlation and the number of items in the scale. That is, when the average correlation among items increases and the number of items increases, the value of alpha also increases (Carmines & Zeller, 1979). The reliability of the self-control scale should achieve a good level of internal consistency if the item-total correlations are adequate ($\geq$ .30) and the scale length is optimal (DeVellis, 1991). An internal consistency of .70 is adequate for research purposes although scores above .80 are more desirable (Carmines & Zeller, 1979; DeVellis, 1991).

Cronbach's alpha is also commonly used as an indicator of the content validity of a scale. The square root of coefficient alpha is the correlation between the sum of the items in a particular scale and all the items represented in the domain of content represented in the concept. The higher the correlation, the better the scale represents the content domain (Carmines & Zeller, 1979).

Cattell's (1966) scree test which uses principal components factor analysis will be performed on the bond-equivalent self-control measures to assess its dimensionality.

Principal component analysis generates the amount of variance explained by successive components as measured by eigenvalues. The scree plot presents these eigenvalues and visual inspection is used to locate an obvious "break" or "elbow" where the eigenvalues trail off. The components above the break are retained and the number of components below the break are disregarded. When the most obvious break in the eigenvalues is between the first and second factors, it suggests that the items form a unidimensional measure. The results of the principal components analysis will provide data for a second measure of reliability, theta, which requires less restrictive assumptions than the classical test theory assumptions required by Cronbach's alpha.

Measures

This section presents the measures that make up the survey instrument for this study. A deviance measure based on Gottfredson and Hirschi's (1990) discussion on crime and crime equivalents is presented. Two measures of self-control also will be presented. The first self-control measure presented was developed based on Hirschi's (2004) revised conceptualization and operationalization of self-control (sometimes referred to as bond-based self-control). The second self-control measure was developed to capture the rational choice component of the revised self-control measure proposed by Hirschi (2004).

Deviance

Gottfredson and Hirschi (1990) define crime as potentially pleasurable acts of "force or fraud undertaken in pursuit of self-interest" (p. 15). They argue the majority of

crimes share several common features i.e., “criminal acts tend to be short lived, immediately gratifying, easy, simple, and exciting” (Gottfredson & Hirschi, 1990, p. 14). Gottfredson and Hirschi also claim those lacking self-control are highly versatile showing no inclination to pursue a specific criminal act or a pattern of criminal acts to the exclusion of others. As a result, those who lack self-control will not only be more likely to be involved in criminal behavior they “tend to pursue immediate pleasures that are not criminal: they will tend to smoke, drink, use drugs, gamble, have children out of wedlock, and engage in illicit sex” (Gottfredson & Hirschi, 1990, p. 90).

The items used to construct the deviance index were chosen because they were consistent with Gottfredson and Hirschi’s (1990) definition of crime and represent a wide variety of criminal and analogous acts. Part I of the survey instrument (see Appendix C) includes items about respondents’ participation in crimes against persons (simple assault and aggravated assault), crimes against property (vandalism and injury to animals), fraud (theft, theft of services, worthless checks, and joyriding), and analogous behaviors (academic dishonesty, class cutting, alcohol, drug, and tobacco use, auto accidents, employment instability, and sexual permissiveness). Many of these items were previously used by Giever (1995) and Higgins (2001). Giever (1995) reported an alpha reliability of .75 for the deviance index, which is considered adequate for research purposes (DeVellis, 1991; Nunnally, 1978). Higgins (2001), using Giever’s deviance index, reported a higher alpha reliability (.81), which is considered very good (DeVellis, 1991; Nunnally, 1978). The deviance measure used for this study was pretested by Gibbs et al. (2008). The results of the pretest are reported later in this chapter.

In this study, two items were used to measure respondents' involvement in crimes against persons. Respondents were asked how many times they had beaten up someone or hurt someone on purpose not counting fights with a brother or sister or in sports like hockey and how many times they used a weapon with the intention to threaten or hurt someone. Two items were designed to measure crimes against property. Respondents were asked to estimate how many times they had damaged someone else's property on purpose and other than hunting and fishing, how many times they had intentionally injured an animal.

Seven items were used to measures respondents' involvement in acts of theft and fraud. Three questions were used to measure theft. Respondents were asked to estimate how many times in their life they had stolen cash, goods, or property worth less than $50 and how many times that had stolen cash, goods, or property worth $50 or more. A single item asked respondents whether they had failed to pay for services they received. They were asked to estimate how many times they had avoided paying for small things such as food or an admission fee for entertainment. Three items asked respondents about acts of fraud. Respondents were asked how many times, not counting immediate family members, had they borrowed money from someone when they knew they would probably never repay them, and how many times, not counting immediate family members, had they used someone else's credit card, debit card, or checkbook without permission, and how many times they had written a bad check on purpose. A final question asked about respondent's about joyriding. They were asked how many times, not counting immediate family members, they had taken a car or other motor vehicle without their prior knowledge or permission.

Three items were included to measure respondents' involvement in deviant use of computers and the Internet. They were asked to estimate how many times they made copies of copyright protected materials such as computer software programs (not shareware), music compact discs, movies, or video games. Respondents were asked to estimate the number of times they had read someone's e-mails or instant messages, or cell texts without permission. They also were asked to estimate the number of times they had used the identity of another person or a false identity in e-mails, blogs, chatrooms, or elsewhere on the Internet.

Gottfredson and Hirschi (1990) claim that participation in criminal and analogous acts are the result of the same underlying trait, low self-control. Therefore, several questions were included to measure respondents' participation in analogous behaviors. One question was used to measure class cutting. Respondents were asked to indicate how many times in the last two weeks they had cut or skipped class.

Two items were included to measure participant's alcohol consumption. One question asked respondents how many times in the last two weeks they drank to the point that they didn't remember some part of the night. Respondents also were asked to estimate the number of times in the past two weeks they consumed four or more drinks within 2 hours if they were female and five or more drinks within 2 hours if they were male. Five items were designed to measure drug use. Respondents were asked how many times they smoked marijuana, how many times they used cocaine, crack, or methamphetamines, how many times they had used heroin, how many times they had used hallucinogens like LSD, mescaline, or ecstasy, and how many times they had

purposely gotten high using more than the recommended amount of prescription painkillers (e.g., Tylenol with Codeine, Percocet, Vicodin, and/or OxyContin).

Several single-items were used to measure other various crime equivalent acts. A single item was used to determine tobacco use. The question asked respondents how often they used tobacco products (e.g., smoke, dip, or chew). A single item asked respondents how many times they had been involved in a car accident while they were driving. Three items asked respondents about their employment history. Respondents were asked to indicate the number of jobs they had since they were 16 years old, the number of jobs they had quit without giving two weeks notice, and how many jobs they had been fired from or asked to resign. These last four items were included in the survey to test construct validity. Specifically, these items were included because Gottfredson and Hirschi (1990) indicate that individuals with low self-control are more likely to be involved in accidents and have unstable employment histories.

Six items were included to measure respondent's involvement in academic dishonesty in high school and college. They were asked to indicate how many times they had cheated on exams, quizzes, and other assignments when they were in grades 9 through 12. Respondents also were asked five questions about academic dishonesty in college. They were asked how many times they had copied answers from another student during an exam, used notes to cheat on an exam or quiz, had someone text them answers on their cell or used a similar method, submitted a paper as their own that was written by someone else, including papers bought from term paper services, and copied material directly from an Internet website and submitted the work as their own.

Three items asked respondents about their sexual behaviors. Respondents were asked how many sexual partners they have had in their life, how many times they have had unprotected sex, and many times they had casual sex or what some people call a "one-night stand" or "weekend fling." These questions also were included to test construct validity. Namely, Gottfredson and Hirschi (1990) suggest that individuals with low self-control are more likely to be involved in risky sex (i.e., have multiple sexual partners, unprotected and casual sex).

Development of Self-Control Measures

Bond-based self-control. The process that was used to develop the first self-control measure was guided by the recommendations of DeVellis (1991). The first step in the process is to determine clearly what concept or construct is to be measured. Researchers should begin with a "well formulated definition of the phenomenon they seek to measure" (DeVellis, 1991, p. 52). According to Hirschi (2004), self-control is defined as "the tendency to consider the full range of potential costs of a particular act" (p. 543). This revised definition of self-control shifts the focus of the theory back to the "choice component." Hirschi (2004) claims that

> [t]his new definition is consistent with, and gives meaning to, the assertion that the dimensions of self-control are…factors affecting the calculation of the consequences of one's acts. Put another way, self-control is the set of inhibitions one carries with one wherever one happens to go (p. 543).

Self-control reconceptualized refers to a set of "inhibitions…[or] factors that one takes into account in deciding whether to commit a criminal act—factors that may vary in number and salience" (Hirschi, 2004, p. 545). Unlike Gottfredson and Hirschi's (1990) previous definitions of self-control that focus on the "long-term consequences of one's acts," Hirschi (2004) redefines self-control to include a much broader range of factors that one considers before choosing a course of action. These factors or inhibitions are described in the elements of the social bond that Hirschi (1969) first identified in social control theory: attachment, commitment, involvement, and belief.

The proposed self-control scale is intended to measure the current level of social-bond relevant self-control of college students (see Tables 9-12). In developing the self-control items, it was important to make sure they were relevant to the population being sampled. Such a strategy "elicits more reliable responses and, at the same time, improves the response rate by keeping the respondents interested in the survey" (Gibbs & Giever, 1995, p. 245). Although the measure developed contains some items that would be salient to any group of respondents, many are of specific relevance to college students.

The response format for the bond-based self-control measure is a visual analog with a 10 centimeter response line anchored by the terms "Strongly Disagree" to "Strongly Agree." This format is an established method of measuring respondents' subjective opinions (DeVellis, 1991) and has been used successfully by a number of criminologists (see e.g., Giever, 1995; Gibbs & Giever, 1995; Gibbs et al., 1998; Gibbs et al., 2003; Higgins, 2001; 2002). Although the bond-equivalent items of the self-control measure are presented separately in tables 9-12, they will be summated and used as a

composite measure of self-control. Items are coded so that higher scores indicate greater self-control.

According to Hirschi (2004), attachment is the emotional bond or the degree of love and respect between an individual and conventional people such as, their parents, teachers, and peers. As a matter of fact, he indicates that "*the* principal source of control is concern for the opinion of others" (Hirschi, 2004, p. 545, emphasis in the original). The attachment measures include items designed to capture the degree to which respondents care about the opinions of significant others (e.g., parents, professors, and peers) as indicated by Hirschi (2004). Table 9 presents the items designed to tap the attachment component of the self-control measure.

Table 9. *Self-Control Attachment Measures*

Survey Questions/Items
I care a lot about what my parents think of me.
If I lost the respect of my parents, I would be very upset.
What my professors think of me matters a lot to me.
It is very important to me to be respected by friends whose values I respect.
I feel I can talk to my parents about most things.
Generally, I have a lot of respect for my professors.
I value the opinions of my parents about most things.
In most cases, if I hurt the feelings of a friend, it would bother me a great deal.
I would be very upset if I did something to let down my parents.
If a professor expressed disappointment in me, I would be disappointed in myself.
My parents' respect means a great deal to me.
The opinion of me held by friends I respect matters a lot to me.
I have such a close relationship with my parents that I wouldn't want to do anything to jeopardize it.
I like most of my professors.
My parents are pretty well informed about what is happening in my life.
I have a great deal of admiration for my parents.
My parents consider me trustworthy.

Hirschi's (1969) attachment items were used as a basis for the development of self-control attachment measure. Hirschi (1969) has previously suggested the following items as indicators of parental, teacher, and peer attachment: "Do I care what my parents will think?", "Do you care what your teachers think of you?", "Do you respect your best

friends' opinions about the important things in life?", and "Would you like to be the kind of person your best friends are?" (pp. 251-283). Most recently, Hirschi (2004) suggests the following items as a starting point for developing a measure of bond-based self-control: "Do I care what X thinks of me?" and Will X know what I have done?" With these measures in mind, the items designed to tap the attachment component of bond-based self-control were developed.

Commitment "refers to the individual's aspirations and expectations, to investments in a line of activity" (Hirschi, 2004, p. 539). Hirschi (2004) argues that commitment captures the "…idea is that we are controlled by what we are, and by what we wish to be" (p. 539). The commitment concept includes both individual and group identity components. College students who see themselves as "good students" are more likely to be committed to educational and occupational goals. In addition, college students who associate with prosocial peers are more likely to identify themselves as prosocial. The commitment measures include items that are designed to assess respondents' commitment to college and prosocial peers (see Table 10).

Several of the commitment items were developed using Hirschi's (2004) operationalization of commitment. To be more precise, Hirschi suggest the following items as possible measure of commitment: "Do you like or dislike school?", "How important is getting good grades to you personally?", and "Do you finish your homework?" However, many of the commitment items used by Hirschi (2004) were adapted to have specific relevance to college students.

Table 10. *Self-Control Commitment Measures*

Survey Questions/Items
Grades are important to me.
Most of my friends place great importance on graduating from college.
Graduating from college is a very high priority for me.
Most of my friends plan adequate time to complete course assignments.
I can honestly say that I've tried to do my best in college.
I've taken steps to find out about careers and/or further education in fields that interest me.
Doing well in school is important to most of my friends.
Right now, most of my energy is focused on getting my education.
I usually schedule enough time to prepare well for exams.
I take school seriously.
School is **not** very important to most of my friends.
Most of my close friends are ready to party 24/7.
I consider college mostly a waste of my time.
A lot of my friends plan on dropping out of college or already have dropped out.
I go out or spend time hanging out with friends even when I have an exam the next day.
Most of my friends think frequent absences from class are okay.
Most of my friends think it's okay to cheat on an exam or class assignment.

The self-control commitment measures also include items designed to evaluate respondents' attachment to prosocial peers. Namely, the respondents are asked to report on their peers' commitment to college. Traditionally, criminologist have used measures of delinquency to capture respondents' attachment to anti-social peers (see e.g., Agnew, 1995; Akers & Cochran, 1985; De Li, 1999; Dodson, 2001; Esbensen & Osgood, 1999; Esbensen, Osgood, Taylor, Peterson, & Freng, 2001; Hirschi, 1969; Jenkins, 1997; Matsueda, 1982; Paetsch, Betrand, & Betrand 1997; Tittle, Burke, & Jackson, 1986; Warr & Stafford, 1991). The current measure avoids this pitfall by measuring respondents' perceptions of their peers prosocial behavior i.e., commitment to college. Hirschi (2004) indicates that respondent-generated reports of peer behavior can be used as indicators of bond-equivalent self-control (see p. 547).

Hirschi's (2004) concept of involvement refers to participation in conventional activities that may include employment, recreational activities, school organizational activities, school athletics, or spending time with family. Previously, Hirschi (1969)

argued that individuals who were involved in conventional activities were less likely to deviate from societal norms because they are left little time to do so. Hirschi's (2004) recent view is that "rather than making one too busy to commit criminal acts, in this context, it is closely analogous to the idea of self-control as self-imposed physical restraint" (p. 544). Table 11 presents the items designed to capture respondents' involvement in conventional activities.

Table 11. *Self-Control Involvement Measures*

Survey Questions/Items
Are you registered to vote?
Are you a regular member of a service association or organization whose central purpose is to help people in the local community (e.g., Big Brothers and Sisters)?
Are you a member of a campus club, association, society, or other organization that focuses on career interest and/or an academic discipline?
Do you participate in student government e.g., student senate, or a student political organization e.g., Young Republicans, Student Democrats, or Student Green Party?
Are you actively involved in a faith-based student organization such as Student Christian Organization (SCO), Student Jewish Organization (SJO), or Muslim Student Association (MSA)?

A number of researchers have use the amount of time (number of hours) respondents report spending in various activities such as television watching, playing sports, studying or doing homework, engaging in faith-based activities, spending time with family or friends, working, and dating (Esbensen & Osgood, 1999; Hirschi, 1969; Jenkins, 1997; Wong, 2005). For the current study, the involvement measures include items about the types of activities that respondents report participating in and the amount of time they spend participating in various activities. It should be noted that the majority of researchers have measured involvement in conventional activities using high school samples and reported unacceptable reliabilities. For instance, Gottfredson et al. (1994) used a 12-item involvement scale that asked respondents about a wide variety of in-school activities (e.g., clubs and sports) which yielded a poor reliability (Cronbach's

alpha = .56). Jenkins (1997) also reported a low reliability (Cronbach's alpha = .58) using a similar involvement scale. Even though involvement measures have yielded fairly low reliabilities in the past, it is included in the pretest because Hirschi (2004) indicates a "true" test of his revised self-control measure should include all four of the elements of the social bond (see p. 544). The items used for the pretest asked respondents to report their participation in various types of conventional activities many of which are particularly relevant to college students.

Table 12. *Self-Control Belief Measures*

Survey Questions/Items
Copying something from the Internet for a paper and presenting it as your own words and ideas is not a big deal.
Rules restricting alcohol use on campus should **not** be strictly enforced.
There are some circumstances in which it is okay to cheat on an exam.
Dishonesty is frequently the best policy in dealing with professors.
There are a number of situations in which it is okay to lie.
Even though it is technically illegal, underage drinking when you are a college student should not be considered serious.
Marijuana possession and use is against the law, but authorities should let it go when a few friends get together to smoke.
Law enforcement officers should look the other way when people exceed a posted speed limit of 55 mph by 10 mph.
Although it's a violation of the law to drink and drive, the police should let you off when you're just a little over the legal limit.
You should be able to do what you want to do without restrictions in the apartment, house, or room you rent.
If you have a chance to get around the rules and regulations, you should take it.
You should look out for yourself before you worry about anyone else.
I believe rules were made to be broken.
Doing the right thing is always more important than getting what you want.

According to Hirschi (2004), those who hold beliefs that are similar to those of the conventional society are less likely to engage in criminal or deviant behavior. Hirschi (2004) also claims that the "acceptance of the moral validity of rules…vary at the individual level. Some people believe more than others. Some believe fully; others, not at all" (p. 539). Therefore, Hirschi (2004) goes on to argue that "beliefs matter" because

some beliefs restrain individuals from engaging in criminal and deviant acts while others free individuals to commit criminal and deviant acts (p. 539). The belief measures include items that are designed to tap respondents' beliefs about various violations of university policies and minor law violations (see Table 12).

Self-control hypothetical scenario. The second measure of self-control used in this study is based on a hypothetical scenario design (HSD) (see Table 13). The choice of a HSD was influenced by the work of Piquero and Bouffard (2007) and Higgins (2001). As stated earlier, the primary advantage of the HSD is that it "allows subjects to simultaneously (or nearly so) consider the consequences of their behavior and the likelihood of engaging in a specific type of misconduct" (Bouffard, 2002, p. 748). Hirschi (2004) would likely agree with this type of measurement strategy because it allows respondents to identify the number of factors that affect their decision making process and the salience of each factor (see p. 545). This measurement strategy allows respondents to identify both the potential long-term consequences of a particular act and the "contemporaneous implications" as well (Hirschi, 2004, p. 543). In other words, the HSD comes closest to replicating "real world" decision making better than other types of measurement approaches (e.g., researcher generated response categories) (Bouffard, 2002; Piquero & Bouffard, 2007).

After reading the hypothetical scenario, respondents were asked to indicate how likely it is that they would take the batteries as described in the scenario. The respondents were asked to indicate the likelihood of taking the batteries ranging from 0 percent = "Very Unlikely" to 100 percent = "Very Likely." Respondents also were asked

to "list in order of importance the factors, concerns, and/or things that they would think about or consider in deciding whether or not to take the batteries" (see Appendix B). This measure was believed to be an improvement over the measure employed by Piquero and Bouffard (2007) because it did not direct respondents to list the potential "bad things" that could happen as a result of their decision. Instead, respondents were free to list any factors ("bad" or "good") that they identify as salient.

Table 13. *Self-Control Hypothetical Shoplifting Scenario*

Shoplifting Scenario
It is late Sunday night. After checking with everyone you know for the kind of batteries you need for a recording device to complete an important assignment due Monday morning, you go to a convenience store. You get to the store just about closing time, and you discover that you do not have enough cash to pay for the batteries. You know you've reached the limit on your credit card, your debit card balance is zero, and the store doesn't accept checks. The clerk is busy getting ready to close, and you don't see any video cameras or other security devices. You've heard that a number of students have taken small items from the store, and they didn't get caught. You can easily slip the batteries into your pocket and buy a candy bar with the little cash you have to avoid suspicion. You have to quickly decide whether or not to take the batteries.

Data Analysis

The final section of this chapter outlines the two-stage analysis plan. The first stage of the analysis plan is to explore the reliability, validity, and dimensionality of the bond-equivalent self-control measure. The dimensionality of the deviance measure also is assessed. The second stage of the analysis includes a test of Gottfredson and Hirschi's (1990) versatility of offending hypothesis and test two theoretical models based on Gottfredson and Hirschi's (1990) discussion on gender and crime using path analysis. A more detailed discussion of the analysis plan is presented in the following sections.

Stage I: Quality of the Measures

Reliability, validity, and dimensionality. The first stage of the analysis is to examine the reliability, validity, and dimensionality of the bond-based self-control scale following the same procedure used in analyzing the pretest of the scale. A scale is internally consistent or reliable to the extent that the items are highly intercorrelated. High item-total correlations indicate that the items are all measuring the same thing. As noted previously, item-total correlations should not fall below .30 (Carmines & Zeller, 1979).

DeVellis (1991) claims that one of the most important indicators of a scale's quality is its reliability coefficient, alpha. Alpha is defined as "the proportion of a scale's total variance that is attributable to a common source, presumably the true score of a latent variable underlying the items" (DeVellis, 1991, p. 27). Cronbach's alpha is used as a measure of reliability. DeVellis' (1991) recommendations for scale reliabilities are used to evaluate internal consistency of the self-control measure. Theoretically, alpha can take on values from 0.0 to 1.0, although it is rather unlikely that either extreme value will be attained. DeVellis (1991) suggests that an alpha below .60 is unacceptable while an alpha above .70 is considered adequate for research purposes. However, he also indicates that an alpha of .80 is more desirable while an alpha above 90 is outstanding. DeVellis' (1991) scale reliability recommendations are consistent with the reliability recommendations of other researchers (see e.g., Carmines & Zeller, 1979; Converse & Presser, 1986; Nunnally, 1978).

The content validity of the bond-based self-control scale also is evaluated. Content validity refers to the "extent to which an empirical measurement reflects the specific intended domain of content" (Carmines & Zeller, 1979, p. 20). Coefficient alpha is commonly used as an indicator of the content validity of a scale. When viewed from a domain sampling model perspective, the square root of coefficient alpha is the correlation between the sum of the items in a particular scale and all the items represented in the domain. The higher the correlation, the better the scale represents the content domain (Nunnally, 1978).

An indication of construct validity is to see if a measure of a concept, i.e., self-control, is behaving empirically in ways consistent with predictions based on the theory. Several hypotheses derived from self-control theory will be tested. Specifically, Gottfredson and Hirschi (1990) predictions that those with low self-control are frequently involved in auto accidents, have unstable job profiles or histories, and participate in risky sexual behaviors (e.g., have a greater number of sexual partners and unprotected and casual sex) than those with high self-control will be tested.

Gottfredson and Hirschi (1990) claim that the elements of self-control come together to form a single unidimensional construct. Hirschi (2004) similarly implies a single dimension for his revised conceptualization of self-control. Specifically, he indicates that "…self-control is the set of inhibitions one carries with one wherever one happens to go" (Hirschi, 2004, p. 543). A scree plot will be generated using principal components analysis to determine the number of hypothetical constructs represented by the set of variables or items (Kim & Mueller, 1978). The method is based on the successive components' amount of variance explained as measured by eigenvalues and it

constructs a plot of the eigenvalues. The scree plot is examined using visual inspection for an obvious "break" or "elbow" where the eigenvalues trail off. The components above the break are retained and the number of components below the break are disregarded. When the most obvious break in the eigenvalues is between the first and second components and the first component extracted explains a substantial proportion of item variance, it suggests that the items form a unidimensional measure. As noted in the description of the pretest, principal components results can be used to compute theta, a measure of reliability. In addition, the loadings of items on components can be used to assess the strength of the association between individual items and components.

Gottfredson and Hirschi (1990) maintain

> Because both crime and analogous behaviors stem from low self-control (that is, both are manifestations of low self-control), they will all be engaged in at a relatively high rate by people with low self-control. Within the domain of crime, then, there will be much versatility among offenders in criminal acts in which they engage (p. 91).

As observed earlier in this study, by versatility Gottfredson and Hirschi (1990) mean that individuals with low self-control will commit a wide variety of criminal and equivalent acts "…with no strong inclination to pursue a specific criminal act or pattern of criminal acts to the exclusion of others" (p. 91). In addition, individuals lower in self-control are likely to commit more serious acts of deviance than individuals higher in self-control (Gottfredson & Hirschi, 1990).

Cronbach's alpha is used as a measure of reliability for the deviance scale. DeVellis' (1991) recommendations for scale reliabilities are used for the current study.

DeVellis (1991) suggests that an alpha below .60 is unacceptable while an alpha above .70 is considered adequate for research purposes. However, he also indicates that an alpha of .80 is more desirable while an alpha above 90 is outstanding.

Stage 2: Testing Hypotheses from Self-Control Theory

Versatility. Gottfredson and Hirschi (1990) indicate that offenders are extremely versatile in the types of criminal behavior in which they will engage. That is, individuals with low self-control will commit a wide variety of criminal and equivalent acts "…with no strong inclination to pursue a specific criminal act or pattern of criminal acts to the exclusion of others" (Gottfredson & Hirschi, 1990, p. 91). If Gottfredson and Hirschi's (1990) view based on the interpretation of existing data is correct, we would expect to see a strong relationship among the different deviance items. To test this hypothesis, Cronbach's alpha will be computed and interpreted as a measure of average inter-item correlation.

Gender and deviance. In this study, two theoretical models relevant to Gottfredson and Hirschi's (1990) theory that incorporate gender will be tested. Gender is the independent variable that generally shows the strongest and most consistent statistical association with most forms of crime and deviance (Adler, 1975; Cain, 1989; Campbell, 2002; Cernkovich & Giordano, 1979; Mocan & Rees, 1999; O'Brien, 1999). Any broad-dimension or general theory of criminal or deviant behavior should be able to accommodate, integrate, and explain this commonly known empirical fact.

In previous tests of Gottfredson and Hirschi's (1990) theory using samples of college students, gender has been found to be the only potential control variable with sufficient variation to be specified as part of regression and path models (see e.g., Burton et al., 1998; Gibbs et al., 1998; Giever, 1995; Higgins, 2004; Higgins & Tewksbury, 2004; LaGrange & Silverman, 1999; Nakhaie et al., 2000b; Lynskey-Peterson et al., 2000; Piquero et al., 2002; Tittle et al., 2003). The current study will use path analysis to test two theoretical models that include gender.

Most of the empirical tests of Gottfredson and Hirschi's (1990) general theory have featured the standard multiple regression model in which the independent effects of self-control and several control variables, sometimes including gender, are examined (see e.g., Burton et al., 1998; Keane et al., 1993; LaGrange & Silverman, 1999; Lynskey-Peterson et al., 2000; Nakhaie et al., 2000b; Tittle et al., 2003). Although these tests of Gottfredson and Hirschi's (1990) theory have contributed to our understanding of the gender-crime relationship, this test is a departure from most previous tests because it specifies the place of gender in the models as more than just a covariate. In addition, the current project extends previous research because the models are the first to include Hirschi's (2004) revised measure of self-control.

For the current analysis, two different models implied by Gottfredson and Hirschi's (1990) discussion on gender and crime and indicated in other research will be assessed. Gottfredson and Hirschi (1990) claim that there is "a substantial self-control difference between the sexes" (p. 147). Specifically, females have greater self-control than males. Gottfredson and Hirschi (1990) also claim that these gender differences in self-control may explain gender differences in deviance.

The influence of gender on deviance and crime controlling for self-control are equivocal. The hypothesis that females have lower crime rates than males (i.e., the gender gap) because they have greater self-control has not been found consistently in empirical tests of Gottfredson and Hirschi's (1990) theory. Burton et al. (1998), for example, finds that self-control eliminates the effects of gender on crime. Conversely, the findings of Wood et al. (1993) indicate that self-control does not eliminate the gender effects on delinquency or imprudent behaviors. LaGrange and Silverman (1999) conclude the association between gender and several categories of crime (i.e., general delinquency, property offenses, and violent offenses) are substantially reduced with the introduction of self-control, but are not completely eliminated.

Nagin and Paternoster (1993) report while controlling for self-control, gender remains a significant predictor of intentions to drink and drive but is nonsignificant in predicting intentions to commit theft. Similarly, Gibbs and Giever (1995) find self-control eliminates the gender effects on class cutting but does not eliminate the gender effects for alcohol consumption. Finally, Piquero et al. (2002) conclude self-control eliminates the gender effects on binge drinking but does not do so for alcohol-related behaviors. The path model of the indirect effects of gender via self-control on deviance is presented in Figure 2.

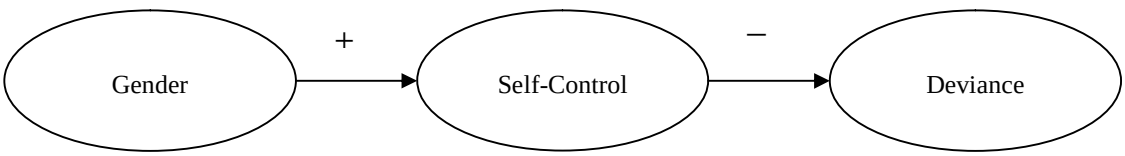

Figure 2. Path model of indirect effects of gender on deviance via self-control.

Gottfredson and Hirschi (1990) also predict that gender has significant direct effects on both self-control and deviance. That is, they claim gender is related to the

development of self-control (females have more or it) and that gender is related to deviance (females are less deviant). This model is similar to a model that was tested by Gibbs et al. (1998) although their model included a parental management measure. Gibbs et al. (1998) found that gender had significant direct effect on self-control and deviance. Figure 3 presents the path model of the indirect and direct effects of gender on deviance.

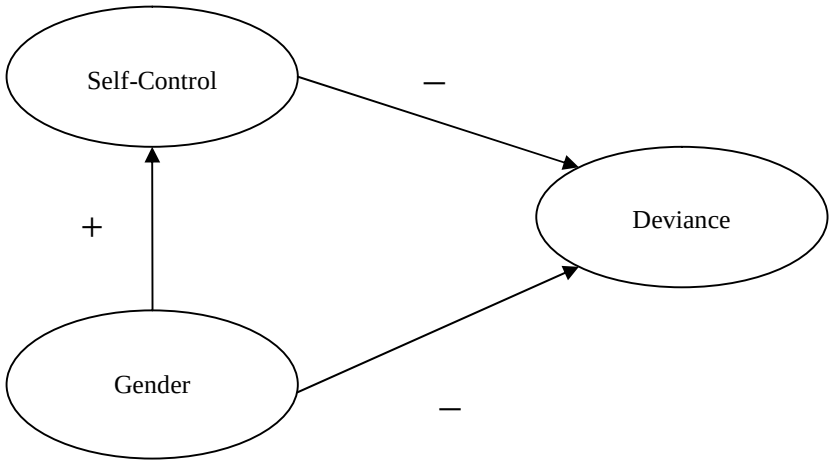

Figure 3. Path model of direct & indirect effects of gender.

Summary of the Analytical Plan

The first part of the analysis is designed to assess the quality of the deviance and revised self-control measures. This includes an assessment of the reliability, validity, and dimensionality of the measures. The second part of the analysis tests specific hypotheses derived from Gottfredson and Hirschi's (1990) general theory. Specifically, it includes a test of the versatility hypothesis and test two theoretical models based on Gottfredson and Hirschi's (1990) discussion of gender and deviance.

Pretest of the Deviance Measure

Gibbs et al. (2008) pretested the deviance measure used in this study. Table 14 presents the 24 items that make up the deviance measure along with their item-total correlations and alpha coefficient. Respondents were asked to indicate how many times or how often they participated in a variety of deviant behavior ranging from "0 = None (or Never)" to "3 = Many (or Very Often)." The items were recoded into dichotomous participation categories: "0 = Nonparticipation" and "1 = Participation." The possible range for the deviance scale is 0 to 24. The mean deviance score for this sample is 8.92, with a standard deviation of 4.21, skewness of .229, and kurtosis of -.474. The deviance scale is within the appropriate levels for skew (3.0) and kurtosis (10.0) to indicate normality (Kline, 1998).

The majority (54%) of the item-total correlations are above the recommended .30 level. The remaining 46% are below .30. The items that performed the poorest (< .20) include the respondents' participation in high school cheating, college cutting class, credit fraud, passing bad checks, failure to repay borrowed money, joyriding, animal abuse, heroin use, email privacy violations, and using a false identity on the Internet.

The Cronbach's alpha for the deviance scale is .79. The alpha approaches .80, which is considered "good" internal consistency reliability (DeVellis, 1991). When you consider that this is a participation index with binary response categories for its item components, which limit item variance and result in lower reliability coefficients, a measure of internal consistency that approaches the standard that is generally considered good (.80) is noteworthy (Gibbs et al., 2008). As previously noted, alpha is often used an indicator of the content validity of the scale. The square root is .894, which is substantial,

and indicates that the scale is highly representative of the domain of content representing the deviance construct.

Table 14. *Item-Total Correlations for the Deviance Measure & Alpha*

Item	Item-Total Correlation
1. How many times in the last two (2) weeks did you drink to the point that you don't remember some part of the night?	.403
2. How many times in the last two (2) weeks did you consume 4 or more drinks within 2 hours if you are a female and 5 or more drinks within 2 hours if you are a male?	.381
3. How many times did you cheat on exams, quizzes, and other assignments when you were in grades 9 through 12?	.265
4. How many times have you copied answers from another student during an exam, used notes to cheat on an exam or quiz, had someone text you answers on your cell or used a similar method, submitted a paper as your own that was written by someone else, and/or copied material directly from an Internet website and submitted the work as your own, since you have been in college?	.381
5. How many times in the last two (2) weeks have you cut or skipped class?	.184
6. How many times have you intentionally not paid for something, such as food in a restaurant or an admission fee for entertainment?	.429
7. How many times, not counting immediate family members, have you used someone else's credit card, debit card, or checkbook without their permission?	.072
8. How many times have you stolen cash, goods, or property worth less than $50?	.438
9. How many times have you stolen cash, goods, or property worth $50 or more?	.427
10. How many times have you written a bad check on purpose?	.111
11. How many times, not counting immediate family, have you borrowed money from someone when you knew you would probably never repay them?	.249
12. How many times, not counting immediate family members, have you taken someone's car or other motor vehicle without their prior knowledge and permission?	.268

13. How many times have you damaged someone else's property on purpose?	.482
14. Not counting fights you may have had with a brother or sister when you were a child, how many times have you beaten up someone or tired to physically hurt someone on purpose?	.328
15. How many times have you used a weapon with the intention to threaten or hurt someone?	.268
16. Other than hunting or fishing, how many times have you intentionally injured an animal?	.281
17. How many times have you smoked marijuana?	.447
18. How many times have you used cocaine, crack, or methamphetamines?	.411
19. How many times have you used heroin?	.154
20. How many times have you used hallucinogens like LSD, mescaline, or ecstasy?	.396
21. How many times have you purposely gotten high using more than the recommended amount of prescription painkillers (e.g., Tylenol with Codeine, Percocet, Vicodin, and/or OxyContin)?	.445
22. How many times have you read someone else's e-mails, electronic messages or cell texts without their permission?	.226
23. How many times have you intentionally copied and sent to others copyright protected materials like computer software programs (not shareware), movies, and/or video games?	.331
24. How many times have you used the identity of another person or a made-up identity in e-mails, blogs, chat rooms, or elsewhere on the Internet?	.237

Cronbach's Alpha = .79

Table 15. *Principle Components Analysis of Deviance Items*

Factor	Eigenvalue	% of Variance
1	4.32	18.00
2	1.91	7.98
3	1.67	6.97
4	1.41	5.87
5	1.22	5.07
6	1.06	4.42
7	1.06	4.41

Theta = .80

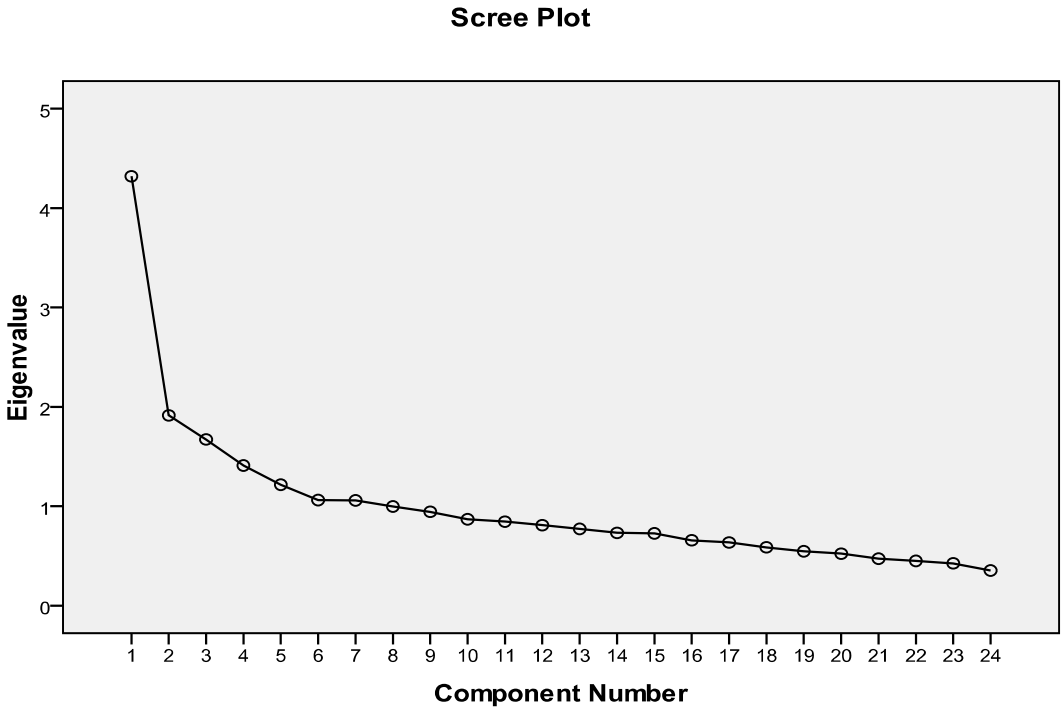

Figure 4. Factor scree plot for deviance.

A scree test was performed on the deviance measure to assess its dimensionality. The PCA is presented in Table 15 and the scree test in Figure 4. The first component accounts for approximately 18 percent of item variance. The percentage of variance explained declines and levels off following component 1. These findings indicate that deviance is a unidimensional construct.[40] A second measure of reliability was computed on the basis on the magnitude of the eigenvalue of the first component extracted (see Table 15) and the number of items in the scale. The theta = .80, which is considered good (Armor, 1974).

[40] The component matrix (not shown here) indicates that the factor loadings on the first component tell the same story as the corrected item-total correlations for deviance in the item analysis.

Pretest of the Self-Control Measures

Gibbs et al. (2008) pretested the bond-relevant self-control measures used in the present study.[41] The results of the pretest self-control measures are presented in the following sections. The reliability, validity, and dimensionality of the bond-based self-control measure are presented in Tables 16 and 17 and Figure 5. A discussion of the hypothetical scenario self-control measure is presented in a subsequent section. The reliability, validity, and dimensionality of the deviance measure also are presented in Tables 18 and 19 and Figure 6.

Bond-Based Self-Control

Table 16 presents the 53 items that make up the bond-based self-control measure along with their item-total correlations and alpha coefficient. Respondents were asked to indicate on a 10 centimeter line the extent of agreement or disagreement with each statement (items 1-48). The response line was anchored by the terms "Strongly Disagree" at the lower limit and "Strongly Agree" at the upper limit. Respondents were asked to indicate their involvement in a variety of activities (items 49-53). The response categories were "0 = No" and "1 = Yes." The possible range for the bond-based self-control scale is between 0 and 485. The mean bond-based self-control score for this sample is 343.16, with a standard deviation of 57.20, skewness of -.154, and kurtosis of -.534. The bond-based self-control scale is below appropriate levels for skew (3.0) and kurtosis (10.0) (Kline, 1998). The skew and kurtosis levels suggest that the data are normally distributed.

[41] The Gibbs et al. (2008) study was supported by an Indiana University of Pennsylvania Research Grant. It was proposed and funded as a study to develop and assess measures of bond-equivalent self-control as described by Hirschi (2004).

The majority (81%) of the bond-based self-control item-total correlations is very respectable and is well above the .30 level. This means that approximately 19% of the item-total correlations fall below the recommended .30 level. The items that perform the poorest are the involvement items. Not only do all five items fall below .30, the majority (three items) falls below .10. Hirschi (1969) admits that the involvement items tend to perform poorly. In addition, researchers have found that, although involvement in conventional activities should be related to a decrease in deviant behavior, it is actually related to an increase in deviant behavior (Hirschi, 1969, Wright, Cullen & Williams, 1997). As a result of this pretest finding, the involvement items were dropped from the subsequent bond-equivalent self-control scale used for this dissertation.

It also should be noted that some of the items designed to tap the belief component of bond-equivalent self-control had low item-total correlations. That is, five of the 14 belief items fall below .30. The items that performed the poorest include "Law enforcement officers should look the other way when people exceed a posted speed limit of 55 mph by 10 mph", "Although it's a violation of the law to drink and drive, the police should let you off when you're just a little over the legal limit", "You should be able to do what you want to do without restrictions in the apartment, house, or room you rent", "You should look out for yourself before you worry about anyone else", and "Doing the right thing is always more important than getting what you want." As a result of the poor performance of these items, they also were dropped from the revised self-control measure.

The Cronbach's alpha of .92 is considered excellent for research purposes (DeVellis, 1991). Alpha also can be used an indicator of the content validity of the scale.

That is, the square root of coefficient alpha is a measure of the correlation between the sum of the items in the scale and all the items represented in the domain of bond-based self-control (Nunnally, 1978). The square root is .959, which is substantial, and indicates that the scale is highly representative of the domain of content representing the bond-based self-control construct.

Table 16. *Item-Total Correlations for Bond-Based Self-Control Measure & Alpha*

Item	Item-Total Correlation
1. I care a lot about what my parents think of me.	.480
2. If I lost the respect of my parents, I would be very upset.	.472
3. What my professors think of me matters a lot to me.	.547
4. It is very important to me to be respected by friends whose values I respect.	.408
5. I feel I can talk to my parents about most things.	.388
6. Generally, I have a lot of respect for my professors.	.581
7. I value the opinions of my parents about most things.	.517
8. In most cases, if I hurt the feelings of a friend, it would bother me a great deal.	.404
9. I would be very upset if I did something to let down my parents.	.520
10. If a professor expressed disappointment in me, I would be disappointed in myself.	.541
11. My parents' respect means a great deal to me.	.509
12. The opinion of me held by my friends I respect matters a lot to me.	.440
13. I have such a close relationship with my parents that I wouldn't want to do anything to jeopardize it.	.561
14. I like most of my professors.	.475

15. My parents are pretty well informed about what is happening in my life. .539

16. I have a great deal of admiration for my parents. .515

17. My parents consider me trustworthy. .520

18. Grades are important to me. .506

19. Most of my friends place great importance on graduating from college. .459

20. Graduating from college is a very high priority for me. .443

21. Most of my friends plan adequate time to complete course assignments. .464

22. I can honestly say that I've tried to do my best in college. .499

23. I've taken steps to find out about careers and/or further education in fields that interest me. .458

24. Doing well in school is important to most of my friends. .504

25. Right now, most of my energy is focused on getting my education. .520

26. I usually schedule enough time to prepare well for exams. .399

27. I take school seriously. .572

28. School is not very important to most of my friends. .409

29. Most of my close friends are ready to party 24/7. .354

30. I consider college mostly a waste of my time. .455

31. A lot of my friends plan on dropping out of college or already have dropped out. .361

32. I go out or spend time hanging out with friends even when I have an exam the next day. .468

33. Most of my friends think frequent absences from class are okay. .424

34. Most of my friends think it's okay to cheat on an exam or class assignment. .473

35. Copying something from the Internet for a paper and presenting it as your own words and ideas is not a big deal. .409

36. Rules restricting alcohol use on campus should not be strictly enforced. .342

37. There are some circumstances in which it is okay to cheat on an exam.	.400
38. Dishonesty is frequently the best policy in dealing with professors.	.436
39. There are a number of situations in which it is okay to lie.	.466
40. Even though it is technically illegal, underage drinking when you are a college student should not be considered serious.	.335
41. Marijuana possession and use is against the law, but authorities should let it go when a few friends get together to smoke.	.404
42. Law enforcement officers should look the other way when people exceed a posted speed limit of 55 mph by 10 mph.	.236
43. Although it's a violation of the law to drink and drive, the police should let you off when you're just a little over the legal limit.	.219
44. You should be able to do what you want to do without restrictions in the apartment, house, or room you rent.	.288
45. If you have a chance to get around the rules and regulations, you should take it.	.539
46. You should look out for yourself before you worry about anyone else.	.163
47. I believe rules were made to be broken.	.427
48. Doing the right thing is always more important than getting what you want.	.206
49. Are you registered to vote?	.004
50. Are you a regular member of a service association or organization whose central purpose is to help people in the local community (e.g., Big Brothers and Sisters)?	.146
51. Are you a member of a campus club, association, society, or other organization that focuses on career interest and/or an academic discipline?	.190
52. Do you participate in student government e.g., student senate, or student political organization e.g., Young Republicans, Student Democrats, or Student Green Party?	.017
53. Are you actively involved in a faith-based student organization such as Student Christian Organization (SCO), Student Jewish Organization (SJO), or Muslim Student Association (MSA)?	.097

Cronbach's Alpha = .92

Table 17. *Principle Components Analysis of Bond-Based Self-Control Items*

Factor	Eigenvalue	% of Variance
1	11.73	22.12
2	5.14	9.70
3	2.74	4.18
4	2.40	4.53
5	1.84	3.50
6	1.54	2.90
7	1.49	2.81
8	1.45	2.74
9	1.38	2.61
10	1.21	2.27
11	1.16	2.20
12	1.03	1.94

Theta = .93

Cattell's scree test was performed on the bond-equivalent self-control measure to assess its dimensionality. The eigenvalues for the principal components analysis (PCA) for the bond-based self-control measure are presented in Table 17. The first component accounts for 22 percent of the item variance. The scree test in Figure 5 shows that although there are two general components before the "elbow", the magnitude of the eigenvalue for the first component and the distance between the first (11.73) and second (5.14) component (a difference 6.59) indicate that it is reasonable to assume the bond-based self-control measure is a unidimensional construct (for a similar conclusion see Gibbs et al., 1998) as suggested by Hirschi (2004). The results of the PCA provide data for a second measure of reliability, theta[42]. The theta = .93 which is substantial and considered very good (Armor, 1974).

[42] Theta is computed using the formula developed by Armor (1974), which is $\theta = [p / (p - 1)* [1 – (1 / \lambda_1)]$, where p = the number of items in the scale and where λ_1 denotes the first and largest eigenvalue from the PCA.

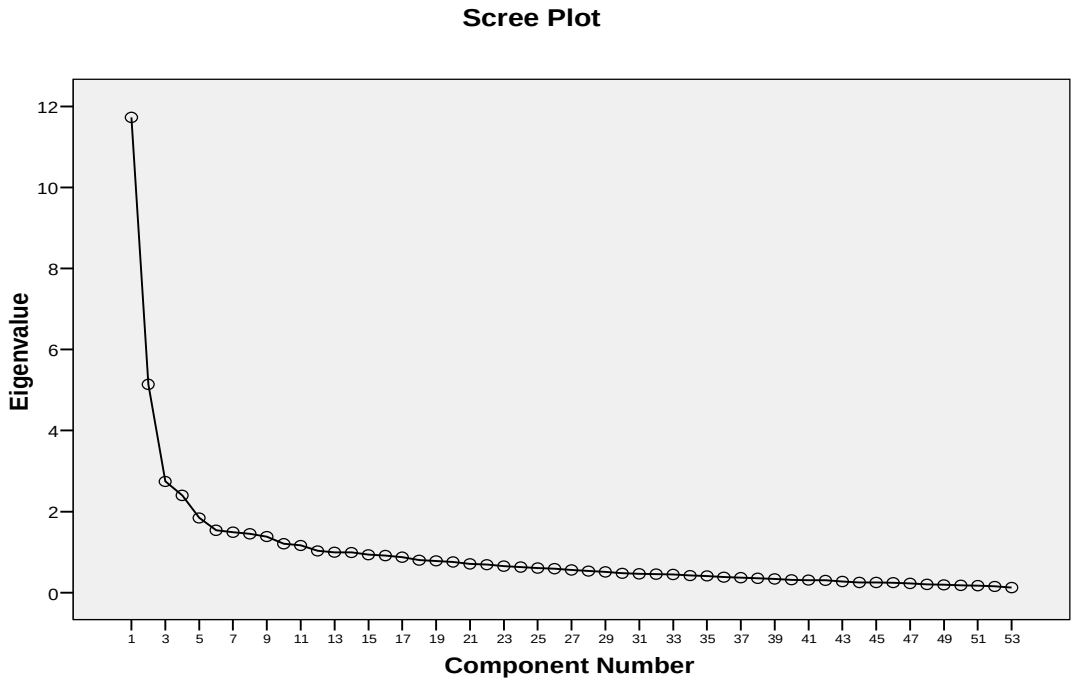

Figure 5. Factor scree plot for bond-based self-control.[43]

Self-Control Hypothetical Scenario

A second measure of self-control was developed for the pretest that was conducted by Gibbs et al. (2008) using a hypothetical misdemeanor theft scenario. The choice of a hypothetical scenario to measure self-control was influenced by the work of Higgins (2001) and Piquero and Bouffard (2007). Hypothetical scenario designs (HSD) come closest to approximating the "real world" decision making process of respondents (Bouffard, 2002). Respondents were asked to indicate the likelihood they would take the batteries as described in the scenario. The response categories ranged from "0 percent = Very Unlikely" to "100 percent = Very Likely." For the subsequent HSD self-control

[43] The component matrix (not shown here) indicates that the first component, which accounts for 22 percent of the item variance, is comprised of items representing attachment and commitment. The second component accounting for approximately 10 percent of the residual variance reflects mostly items intended to tap belief.

measure, the response was revised and respondents were asked to indicate their level of agreement with the phrase "I would definitely take the batteries" (see Appendix C). The 10 centimeter response line was anchored by the terms "Strongly Disagree" to "Strongly Agree."

Unlike Piquero and Bouffard (2007) who directed respondents to list up to seven "bad things" that could happen if they were to participate in the behavior described in the scenario, respondents in the Gibbs et al. (2008) sample were asked to list in order of importance "the factors, concerns, and/or things that they would think about or consider in deciding whether or not to take the batteries" (see Appendix B). In other words, respondents were free to list not only the potential costs of their decision but the potential benefits as well. The self-generated responses to the Gibbs et al. (2008) scenario have not yet been fully and systematically analyzed, an unsystematic review of the self-generated responses in Gibbs et al. (2008) indicated, however, that many responses were difficult, if not impossible, to code.[44] That is, it is unclear if the respondents were referring to the costs or benefits of the act. For example, respondents listed concerns like "Is it worth it?" or "Do I really need them?" The ambiguity in responses may be the result of using a measure that is less specific than that employed by Piquero and Bouffard (2007). As a result, the HSD self-control measure used by Gibbs et al. (2008) elicited less precise responses.

To address the measurement ambiguity identified in the pretest, Piquero and Bouffard (2007) measurement strategy will be used in the revised measure. That is, respondents will be asked to list up to seven "bad things" that could happen if they were

[44] Gibbs et al. (2008) presented half of their sample with the same version of the scenario followed by a short situation-specific self-control bond and trait scales. The results were difficult to interpret due to the low reliability of the bond scale (see Gibbs et al., 2008).

to steal the batteries. After reviewing the findings of Gibbs et al. (2008) and reconsidering Gottfredson and Hirschi's (1990) rational choice argument, this measure is believed to be a closer approximation of what they intended. Specifically, Gottfredson and Hirschi (1990) indicate that the "motive to crime is inherent in or limited to immediate gains provided by the act itself" (p. 256). Therefore, it is not necessary to ask respondents to identify the possible benefits of committing the theft as described in the hypothetical scenario. The primary advantage of the revised HSD strategy is that it increases the likelihood that respondents will focus on identifying the potential costs of committing the theft. The revised HSD self-control measure was used in the subsequent test reported in Chapter IV of this study.

CHAPTER IV

ANALYSIS AND RESULTS

Sample Characteristics

Table 18 shows the comparison between the sample and the population from which it was drawn. A total of 263 respondents took the survey, with six turning in blank or incomplete surveys for a usable sample of 257 surveys. As can been seen in Table 18, the sample differs from the population in each category. In comparison to the university population, the sample is younger, with an underrepresentation of females. Blacks and Hispanics are overrepresented in the sample, while Asians and other minorities are underrepresented. Freshmen are significantly overrepresented, while juniors and seniors are underrepresented. One reason for the overrepresentation of freshmen is likely due to obtaining the sample from an introductory criminology survey course, which is required for all incoming freshmen criminology majors and taken by non-majors as a liberal studies elective.

Table 18. *Comparison of the Sample & Population Demographic Characteristics*

Demographic Characteristics	IUP Student Population[45] (N = 14,081) Percent	Study Sample (n = 257) Percent
Age		
<18	1.00	0.00
18	16.70	54.50
19-20	38.40	33.50
21-24	35.70	10.90
25-39	6.20	0.40
≥39	2.00	0.00

[45] For further information, see IUP's Office of Academic Affairs report (IUP Trends for Students) for the academic year 2005-2006, which is the most recent year of reporting.

Missing		0.70
Gender		
Female	57.00	45.00
Male	43.00	55.00
Race		
Black	6.80	14.40
Asian	0.90	0.40
Hispanic	1.10	3.50
White	76.40	78.60
Other	14.80	2.30
Class		
Freshman	33.90	63.00
Sophomore	21.90	21.80
Junior	23.10	8.90
Senior	21.10	5.40

In sum, the sample is not representative of the IUP undergraduate population. This means that the generalizability of the findings to the general population will be limited.

Stage 1: Assessing the Measures

Deviance

Table 19 presents the 25 items that make up the deviance scale along with the item-total correlations and Cronbach's alpha. Respondents were asked to indicate how many times (or how often) they were involved in a variety of criminal and analogous behaviors. The response categories ranged from "0 = None (or Never)" to "3 = Many (or Very Often)." The items were recoded into dichotomous participation categories: "0 = Nonparticipation" and "1 = Participation." The possible range for the deviance scale is 0

to 25. The mean deviance score for this sample is 8.52, with a standard deviation of 4.14, skewness of .447, and kurtosis of .124. The skew and kurtosis of the deviance scores suggest that the data are normally distributed (Kline, 1998).

As with the pretest, Table 19 shows that the majority (56%) of the items are above .30 level, while 44% of the items fall below .30. The items that performed the poorest include the respondents' participation in high school cheating, college class cutting, credit fraud, passing bad checks, failure to repay borrowed money, vandalism, joyriding, aggravated assault, heroin use, email privacy violations, piracy, and using a false identity on the Internet.

The Cronbach's alpha of .77 is considered good (DeVellis, 1991). The internal consistency of this scale is slightly lower than the pretest (Cronbach's alpha = .79) but still within acceptable bounds for research. As previously noted, alpha is often used an indicator of the content validity of the scale. The square root is .877, which is substantial, and indicates that the scale is highly representative of a domain of content representing the deviance construct.

Table 19. *Item-Total Correlations for Deviance Measure & Alpha*

Item	Item-Total Correlation
1. How many times in the last two (2) weeks did you drink to the point that you don't remember some part of the night?	.422
2. How many times in the last two (2) weeks did you consume 4 or more drinks within 2 hours if you are a female and 5 or more drinks within 2 hours if you are a male?	.528
3. How many times did you cheat on exams, quizzes, and other assignments when you were in grades 9 through 12?	.263

4.	How many times have you copied answers from another student during an exam, used notes to cheat on an exam or quiz, had someone text you answers on your cell or used a similar method, submitted a paper as your own that was written by someone else, and/or copied material directly from an Internet website and submitted the work as your own, since you have been in college?	.210
5.	How many times in the last two (2) weeks have you cut or skipped class?	.283
6.	How often do you use tobacco (smoke, dip, or chew)?	.353
7.	How many times have you intentionally not paid for something, such as food in a restaurant or an admission fee for entertainment?	.440
8.	How many times, not counting immediate family members, have you used someone else's credit card, debit card, or checkbook without their permission?	.187
9.	How many times have you stolen cash, goods, or property worth less than $50?	.397
10.	How many times have you stolen cash, goods, or property worth $50 or more?	.322
11.	How many times have you written a bad check on purpose?	.066
12.	How many times, not counting immediate family, have you borrowed money from someone when you knew you would probably never repay them?	.220
13.	How many times, not counting immediate family members, have you taken someone's car or other motor vehicle without their prior knowledge and permission?	.290
14.	How many times have you damaged someone else's property on purpose?	.434
15.	Not counting fights you may have had with a brother or sister when you were a child, how many times have you beaten up someone or tired to physically hurt someone on purpose?	.379
16.	How many times have you used a weapon with the intention to threaten or hurt someone?	.220
17.	Other than hunting or fishing, how many times have you intentionally injured an animal?	.302
18.	How many times have you smoked marijuana?	.482
19.	How many times have you used cocaine, crack, or methamphetamines?	.412
20.	How many times have you used heroin?	.175

21. How many times have you used hallucinogens like LSD, mescaline, or ecstasy?	.337
22. How many times have you purposely gotten high using more than the recommended amount of prescription painkillers (e.g., Tylenol with Codeine, Percocet, Vicodin, and/or OxyContin)?	.357
23. How many times have you read someone else's e-mails, electronic messages or cell texts without their permission?	.123
24. How many times have you intentionally copied and sent to others copyright protected materials like computer software programs (not shareware), movies, and/or video games?	.213
25. How many times have you used the identity of another person or a made-up identity in e-mails, blogs, chat rooms, or elsewhere on the Internet?	.116

Cronbach's Alpha = .77

A scree test was performed on the deviance measure to assess its dimensionality. The PCA is presented in Table 20 and the scree test in Figure 6. An examination of the PCA and scree reveals that the most obvious break in eigenvalues is between the first (4.29) and second (1.93) factors (a difference of 2.36). Consistent with the pretest, these findings indicate that deviance is a unidimensional construct. Theta = .80, which is considered good (Armor, 1974).

Table 20. *Principle Components Analysis of Deviance Items*

Factor	Eigenvalue	% of Variance
1	4.29	17.18
2	1.93	7.72
3	1.56	6.23
4	1.39	5.57
5	1.35	5.39
6	1.21	4.83
7	1.13	4.51
8	1.05	4.18

Theta = .80

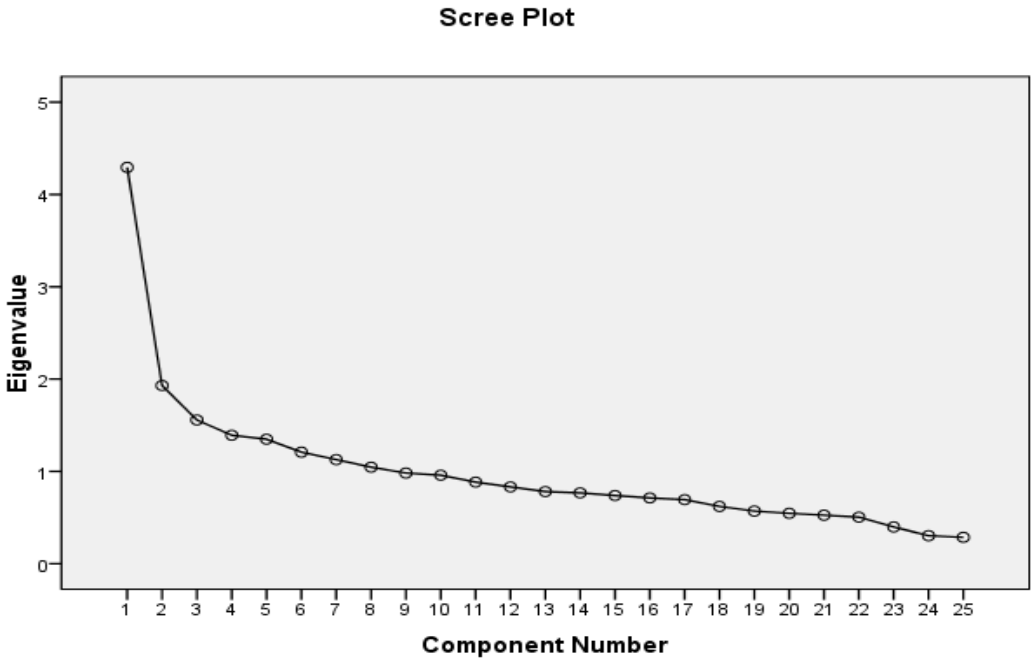

Figure 6. Factor scree plot for deviance.

Bond-Based Self-Control

Table 21 presents the 43 items that make up the revised bond-based self-control measure along with their item-total correlations and alpha coefficient. As with the pretest measure, respondents were asked to indicate on a 10 centimeter line the extent of agreement or disagreement with each of the statements. The response line was anchored by the terms “Strongly Disagree” at the lower limit and “Strongly Agree” at the upper limit. The possible range for the bond-based self-control scale is between 0 and 430. The mean bond-equivalent self-control score for this sample is 353.35, with a standard deviation of 54.17, skewness of .156, and kurtosis .388. The bond-based self-control scale skew (3.0) and kurtosis (10.0) indicate the variable is normally distributed in the population (Kline, 1998).

The findings that appear in Table 21 show that 95% (41 items) of the item-total correlations for bond-based self-control are above .30. Only two (5%) item-total correlations fell below the recommended .30 level. The Cronbach's alpha of .90 is considered excellent for research purposes. For this study, alpha is also used an indicator of content validity. The square root of alpha is .949, which is substantial, and indicates that the scale is highly representative of the domain of content representing the bond-based self-control construct.

Table 21. *Item-Total Correlations for Bond-Based Self-Control Measure & Alpha*

Item	Item-Total Correlation
1. I care a lot about what my parents think of me.	.365
2. If I lost the respect of my parents, I would be very upset.	.441
3. What my professors think of me matters a lot to me.	.413
4. It is very important to me to be respected by friends whose values I respect.	.430
5. I feel I can talk to my parents about most things.	.279
6. Generally, I have a lot of respect for my professors.	.362
7. I value the opinions of my parents about most things.	.442
8. In most cases, if I hurt the feelings of a friend, it would bother me a great deal.	.351
9. I would be very upset if I did something to let down my parents.	.513
10. If a professor expressed disappointment in me, I would be disappointed in myself.	.436
11. My parents' respect means a great deal to me.	.365
12. The opinion of me held by my friends I respect matters a lot to me.	.300

13. I have such a close relationship with my parents that I wouldn't want to do anything to jeopardize it. .405

14. I like most of my professors. .348

15. My parents are pretty well informed about what is happening in my life. .494

16. I have a great deal of admiration for my parents. .494

17. My parents consider me trustworthy. .534

18. Grades are important to me. .515

19. Most of my friends place great importance on graduating from college. .318

20. Graduating from college is a very high priority for me. .370

21. Most of my friends plan adequate time to complete course assignments. .296

22. I can honestly say that I've tried to do my best in college. .305

23. I've taken steps to find out about careers and/or further education in fields that interest me. .373

24. Doing well in school is important to most of my friends. .388

25. Right now, most of my energy is focused on getting my education. .536

26. I usually schedule enough time to prepare well for exams. .450

27. I take school seriously. .547

28. School is not very important to most of my friends. .323

29. Most of my close friends are ready to party 24/7. .345

30. I consider college mostly a waste of my time. .386

31. A lot of my friends plan on dropping out of college or already have dropped out. .361

32. I go out or spend time hanging out with friends even when I have an exam the next day. .312

33. Most of my friends think frequent absences from class are okay. .413

34. Most of my friends think it's okay to cheat on an exam or class assignment. .468

35. Copying something from the Internet for a paper and presenting it as your own words and ideas is not a big deal. .498

36. Rules restricting alcohol use on campus should not be strictly enforced.	.423
37. There are some circumstances in which it is okay to cheat on an exam.	.510
38. Dishonesty is frequently the best policy in dealing with professors.	.373
39. There are a number of situations in which it is okay to lie.	.356
40. Even though it is technically illegal, underage drinking when you are a college student should not be considered serious.	.402
41. Marijuana possession and use is against the law, but authorities should let it go when a few friends get together to smoke.	.437
42. If you have a chance to get around the rules and regulations, you should take it.	.508
43. I believe rules were made to be broken.	.472

Cronbach's Alpha = .90

Table 22. *Principle Components Analysis of Bond-Based Self-Control Items*

Factor	Eigenvalue	% of Variance
1	9.60	20.01
2	4.92	10.24
3	2.72	5.66
4	2.48	5.17
5	1.79	3.73
6	1.72	3.59
7	1.50	3.13
8	1.39	2.90
9	1.31	2.72
10	1.17	2.43
11	1.13	2.36
12	1.05	2.19

Theta = .92

A scree test was performed on the bond-equivalent self-control measure to assess its dimensionality. Table 22 presents the eigenvalues for the PCA for the bond-based self-control measure and Figure 7 present the factor scree plot. The first component accounts for 20 percent of the item variance. The magnitude of the eigenvalue for the first component and the distance between the first (9.60) and second (4.92) component (a

difference of 4.68) indicate that it is reasonable to consider the bond-based self-control measure is a unidimensional construct as suggested by Hirschi (2004). The theta = .92, which is substantial and considered very good (Armor, 1974).

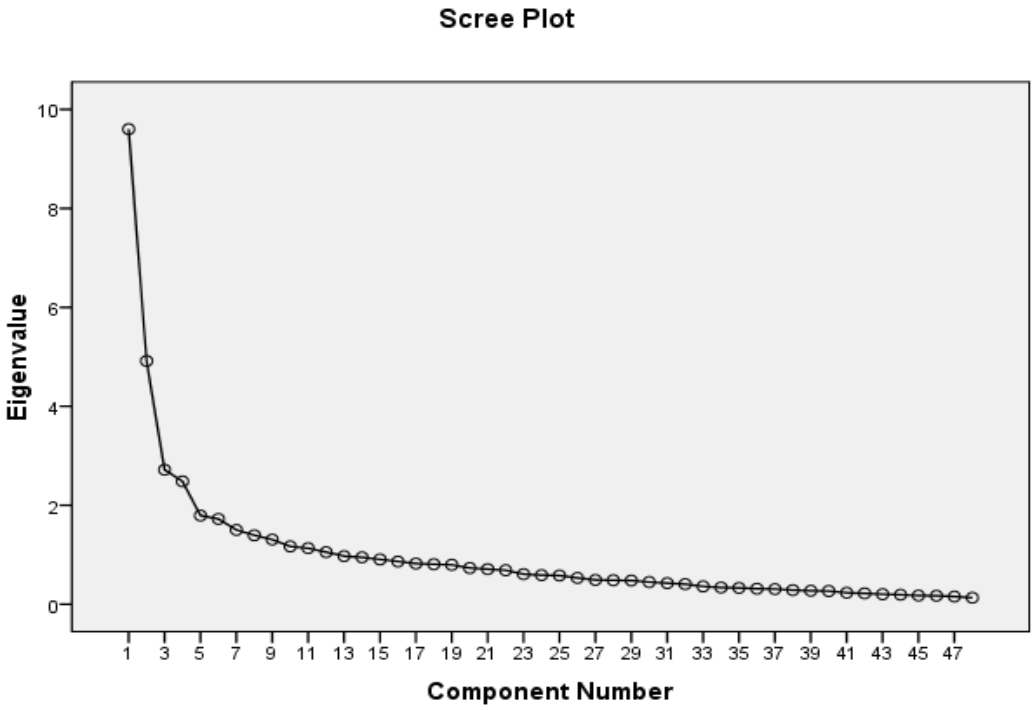

Figure 7. Factor scree plot for bond-based self-control.[46]

Construct Validity of Bond-Based Self-Control

Construct validity refers to "…the extent to which a particular measure relates to other measures consistent with theoretically derived hypotheses concerning the concepts (or constructs) that are being measured (Carmines & Zeller, 1979, p. 23). Stated differently, construct validity is concerned with how a "…scale correlates with measures

[46] Similar to the findings of Gibbs et al. (2008) the first component, which accounts for 20 percent of the item variance, is comprised of items representing attachment and commitment. The second component accounting for approximately 10 percent of the residual variance reflects mostly items intended to tap belief.

of other variables in ways that are predicted by, or make sense according to the theory" (Vogt, 1999, p. 53). Gottfredson and Hirschi (1990) indicate that individuals with low self-control are more likely to be involved in auto accidents, have unstable job profiles or histories, and participate in risky sexual behavior than those with high self-control. The relationship between bond-based self-control and these factors was examined as a measure of construct validity.

The bond-based self-control measure was coded so that high scores indicated higher levels of self-control. Auto accidents were measured using one item: "How many times have you been involved in a car accident while you were driving?" Job instability was measured using three items: "How many jobs have you had since you were 16?", "How many jobs have you quit without giving at least 2 weeks notice?", and "How many jobs have you been fired from or asked to resign?" Risky sex also was measured using three items: "How many sexual partners have you had in your life?", "How many times have you had unprotected sex?", and "How many times have you had casual sex or what some people would call a 'one-night stand' or 'weekend fling'?" The response categories ranged from "0 = None" to "3 = Many." These measures were summated to form an analogous acts scale. The reliability of the scale was unexpectedly low (Cronbach's alpha = 67). Part of the reason for the low reliability is that the item total-correlations were low for four of the items measuring car accidents and job instability (ranging from .071 to .283). However, the item-total correlations were well above the recommended .30 level for the three risky sex measures (ranging from .511 to .637).

The zero-order correlation of bond-based self-control and analogous acts that is presented in Figure 8 is statistically significant and in the predicted direction. This result

supports the findings of others who have found a statistically significant relationship between self-control and analogous behaviors (see e.g., Arneklev et al., 1993; Burton et al., 1998; Evans et al., 1997; Forde & Kennedy, 1997; Giever, 1995; Keane et al., 1993; Paternoster & Brame, 1998; Tittle et al., 2003; Wood et al., 1993). According to the frequency distributions (not shown here), the majority of respondents report that they have never quit a job (72%) or been fired or forced to resign (87%), been involved in auto accidents (59%), or had casual sex i.e., a "one night stand" or "weekend fling" (52%). However, the majority of respondents report they have had more than one job since they were 16 (98%), and had more than one sexual partner (79%) and unprotected sex on more than one occasion (55%).[47]

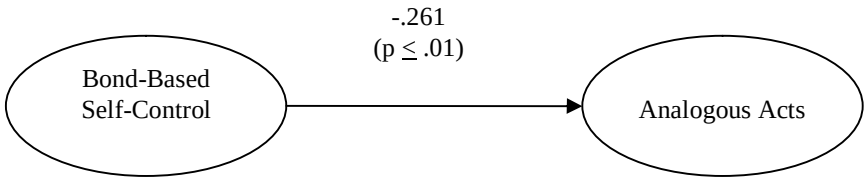

Figure 8. Zero-order correlation of bond-based self-control & analogous acts.

To further analyze the relationship between bond-based self-control and analogous acts, each act was examined separately. The zero-order correlations for four of the analogous acts are statistically significant (see Table 23). Generally speaking these correlations are between bond-based self-control and those acts that showed the greatest amount of variation. The correlations between bond-based self-control and number of sexual partners and unprotected sex are in the predicted direction and statistically significant at the .01. The correlation between bond-based self-control and casual sex is also statistically significant at the .001 level and in the predicted direction. The

[47] Admittedly, the variation of some of these acts is quite substantial e.g., auto accidents, one night stand or weekend fling, and unprotected sex.

correlation between bond-based self-control and auto accidents is in the predicted direction and statistically significant at the .10 level. These findings give some empirical indication that the measure of bond-based self-control used in this study is behaving as it should, according to Gottfredson and Hirschi's (1990) theory.

Table 23. *Zero Order Correlations of Selected Variables*

Variable	Zero-Order Correlation	Significance Level
Auto Accidents	-.106	.099*
Jobs Since 16	-.030	.646
Quit Without Notice	-.090	.160
Fired or Resigned	-.016	.807
Sexual Partners	-.201	.002**
Unprotected Sex	-.220	.001**
Casual Sex	-.277	.000***

* Significant at the .10 level **Significant at the .01 level ***Significant at the .001 level

Testing Self-Control's Central Hypothesis

According to Hirschi (2004), his reconceptualization of the concept of self-control does not change the central proposition of his and Gottfredson's general theory. That is, "a central assertion of the theory is that deviant behavior and reckless acts are…explained by (low) self-control" (Hirschi, 2004, p. 548). Figure 9 presents the zero-order correlation between bond-based self-control and deviance.

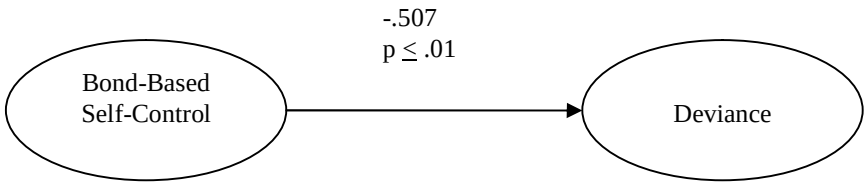

Figure 9. Zero-order correlation of bond-based self-control & deviance.

The results show that bond-based self-control is statistically (and substantially) related to deviance. In other words, those higher in self-control are less likely to be involved in deviant behavior ($r = -.507$, $p \leq .01$) as suggested by Hirschi (2004) and Gottfredson and Hirschi (1990).

A test of this hypothesis also was conducted using the Gibbs et al. (2008) pretest data. Figure 10 presents the zero-order correlation of pretest bond-based self-control and deviance measures.

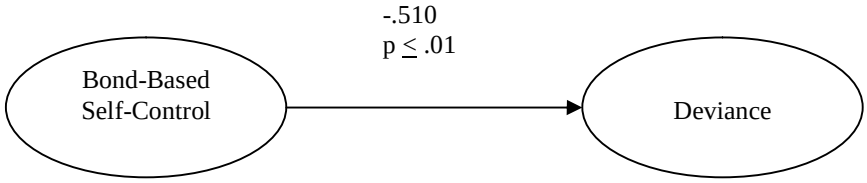

Figure 10. Zero-order correlation of pretest bond-based self-control & deviance.

The results from the pretest data tell the same story as the data used in this analysis. Those with greater self-control are less likely to participate in deviance (-.510, $p \leq .01$), which, once again, is consistent with Gottfredson and Hirschi's (1990) theory.

Self-Control Hypothetical Scenario

As previously noted, the choice of a hypothetical scenario to measure self-control was influenced by the work of Higgins (2001) and Piquero and Bouffard (2007). Hypothetical scenario designs (HSD) come closest to approximating the "real world"

decision making process of respondents (Bouffard, 2002). Hirschi (2004) indicates that this measurement strategy is acceptable because it allows respondents to identify the factors that affect their decision whether to offend and the salience of those factors. Consistent with Hirschi's (2004, p. 543) reconceptualization, this measurement strategy allows respondents to identify both the potential long-term consequences of a particular act and its "contemporaneous implications" as well (see also Piquero & Bouffard, 2007).

After reading the hypothetical theft scenario, respondents were asked to indicate their level of agreement or disagreement with the following statement: "I would definitely take the batteries." A 10 centimeter line was anchored with the response categories ranging from "0 = Strongly Disagree" to "10 = Strongly Agree." The likelihood of taking the batteries is used as the dependent variable in the current analysis. Respondents also were asked to list up to seven "bad things" that might happen if they were to take the batteries and to rate the importance of each "bad thing" from "0 = Lowest Importance" to "10 = Highest Importance." As Piquero and Bouffard (2007) rightly argue, this measurement strategy allows "individuals to provide data on the salience of potentially inhibiting factors associated with criminal activity" (p. 10).

Four raters reviewed the responses, developed their own cost themes, and classified all the responses according to the cost themes they identified. In all, the raters identified roughly fifteen themes or cost categories (approximately 90% concordance). Table 24 presents the costs items or inhibitors identified by respondents.

Table 24. *Percentage of Respondents Self-Reported Inhibitors*

Cost Item/Inhibitor	Percentage of Respondents[48]
1. Legal Consequences	72%
2. Discovery	63%
3. Emotional Consequences	35%
4. Parental Attachment	34%
5. Academic/Professional Consequences	18%
6. Banned from Store	15%
7. Attachment to Others (Non-Family or Friend)	14%
8. Peer Attachment	12%
9. Faulty/Wrong Batteries	9%
10. Physical Injury	8%
11. Increased Retail Costs	7%
12. Lose Self-Respect	5%
13. Future Criminal Behavior	5%
14. Moral Consequences	4%
15. Prior Criminal History Enhance Punishment	1%

The average reported number of costs items or inhibitors was 4.79 for the hypothetical theft scenario. Legal consequences (arrest, incarceration, probation, community service, and fines) and fear of discovery (getting caught, getting caught by the store clerk, being observed by a hidden surveillance camera, and getting caught by another customer) were the first (72%) and second (63%) most cited cost items

[48] The column will total to more than 100% because most respondents identified more than one cost item.

respectively. Emotional costs (feelings of guilt, shame, or embarrassment) was the third (35%) most cited cost item.

Three of the themes or cost items listed by respondents represent the attachment component of bond-equivalent self-control. Specifically, respondents identify the following attachment items: (1) parental attachment (parents would find out, parents would be angry, upset, hurt, or disappointed, and parents would administer some type of punishment) (34%), (2) attachment to others (non-family or friend) (lose respect of others, not be trusted by others, getting a bad reputation, and public humiliation) (14%), and (3) peer attachment (friends find out, and friends would be upset, disappointed, or would think badly of you or look down on you) (12%). Hirschi (2004, p. 545) argues that two questions are of primary importance to individuals who are deciding whether to offend: "Do I care what *X* thinks of me?" and "Will *X* know what I have done?" The cost items identified by respondents in this sample reflect concern for what significant others will think of the individual (e.g., parents would be angry, upset, hurt, or disappointed) and whether the offending behavior will be discovered (e.g., parents or friends find out and school or professor will be notified). This findings is consistent with Hirschi's (2004) assertion that one's attachments to others (parents, peers, and the community) matters in deciding a course of action because certain acts, especially deviant acts, are "contrary to the wishes and expectations of conventional others" (p. 539). Participation in deviant acts may sever one's emotional bonds or ties with those they love and care for and/or respect (Hirschi, 1969; 2004).

One additional attachment item, shame, is reported by respondents under the theme of emotional consequences. Shame (e.g., feel ashamed of myself, feel shame for

stealing, and embarrassment) is listed by 9% of the respondents. Shame is categorized as an element of attachment because the deviant behavior of individuals may reflect poorly on significant others (J. Gibbs, personal communication, January 1, 2009). Some may question the inclusion of embarrassment as synonymous with shame but shame and embarrassment have been used interchangeably by other criminologists (see e.g., Braithwaite, 1989; Elis & Simpson, 1995; Tibbetts, 2003; Wortley, 1996).

Respondents also indicated that guilt was another potential emotional consequence. Guilt (e.g., feel guilty for doing something wrong or stealing and have a guilty conscience) is identified by 25% of the respondents. For the current analysis, guilt is used as an indicator of belief because individuals may feel guilty when they violate their principles, convictions, values, or participate in behaviors that are deemed wrong or inappropriate (J. Gibbs, personal communication, January 1, 2009).

Another cost item identified by respondents has to do with academic or professional consequences, which represents the commitment component of bond-based self-control. That is, respondents report the following academic or professional cost items: (1) academic (school or professor would be notified, suspended or expelled from college) and (2) professional (limit or lose future employment prospects) (18%). As suggested by Hirschi (2004), one's commitment includes "aspirations and expectations, to investments in a line of activity, to his or her 'stake in conformity'" (p. 539). In other words, "we are controlled by what we are, and by what we wish to be" (Hirschi, 2004, p. 539).

It is important to note that respondents did not identify any involvement items as potential consequences (or inhibitors) of deviant behavior. This is an interesting finding

because we would expect students to be involved in a number of conventional activities such as intercollegiate sports, student government, and faith-based organizations and the potential loss of such involvements would be a cost that respondents would likely consider. Nevertheless, the overall results lend support to Hirschi's (2004) contention that bond-relevant self-control items are "factors that one takes into account in deciding whether to commit a criminal act" (p. 545).

Stage 2: Testing Hypotheses of Self-Control Theory

Versatility

Gottfredson and Hirschi (1990) argue that offenders are highly versatile. By versatile they mean, "offenders commit a wide variety of criminal acts, with no strong inclination to pursue a specific criminal act or a pattern of criminal acts to the exclusion of others" (p. 91). To test this hypothesis, Cronbach's alpha was computed and interpreted as a measure of average inter-item correlation. The Cronbach's alpha of .77 suggests that respondents in this sample report being involved in a variety of criminal acts.

Table 25. *Reported Percentage of Deviance Participation of Respondents*

Item	Percentage of respondents who have participated
1. How many times did you cheat on exams, quizzes, and other assignments when you were in grades 9 thru 12?	84%
2. How many times have you read someone else's emails, electronic messages, or cell texts without their permission?	77%

3.	Not counting fights you may have had with a brother or sister when you were a child, how many times have you beaten up someone or tried to physically hurt someone on purpose?	59%
4.	How many times have you intentionally not paid for something, such as food in a restaurant or an admission fee for entertainment?	56%
5.	How many times have you stolen cash, goods, or property worth less than $50?	54%
6.	How many times have you smoked marijuana?	54%
7.	How many times have you copied answers from another student during an exam, used notes to cheat on an exam or quiz, had someone text you answers on you cell or used a similar method, submitted a paper as you own that was written by someone else, and/or copied material directly from an Internet website and submitted the work as you own, since you have been in college?	49%
8.	How many times in the last two (2) weeks did you consume 4 or more drinks within 2 hours if you are female and 5 or more drinks within 2 hours if you are a male?	48%
9.	How often do you use tobacco (smoke, dip or chew)?	44%
10.	How many times have you intentionally copied and sent to others copyright materials like computer software programs (not shareware), movies, and/or video games?	44%
11.	How many times have you damaged someone else's property on purpose?	40%
12.	How many times in the last two (2) weeks have you cut or skipped class?	40%
13.	How many times, not counting immediate family, have you borrowed money from someone when you knew you would probably never repay them?	40%
14.	How many times have you used the identity of another person or made up an identity in emails, blogs, chat rooms, or elsewhere on the Internet?	31%
15.	How many times in the last two (2) weeks did you drink to the point that you don't remember some part of the night?	29%
16.	Other than hunting or fishing, how many times have you intentionally injured an animal?	23%

17. How many times have you purposely gotten high using more than the recommended amount of prescription painkillers (e.g., Tylenol with Codeine, Percocet, Vicodin, and/or OxyContin)?	20%
18. How many times, not counting immediate family members, have you taken someone's car or other motor vehicle without their prior knowledge or permission?	17%
19. How many times have you stolen cash, goods, or property worth $50 or more?	13%
20. How many times have you used a weapon with the intention to threaten or hurt someone?	12%
21. How many times have you used cocaine, crack, or methamphetamines?	9%
22. How many times, not counting immediate family members, have you used someone else's credit card, debit card, or check book without their permission?	7%
23. How many times have you used hallucinogens like LSD, mescaline, or ecstasy?	7%
24. How many times have you written a bad check on purpose?	3%
25. How many times have you used heroin?	1%

Table 25 presents the deviance items with the percentage of respondents who report participating in such behaviors. Respondents report substantial (84% at the high end) to moderate (40% at the low end) participation in at least 13 (52%) of the deviance items. For the remaining 12 deviance items (48%), respondents report low (31% at the high end) to almost no (1% at the low end) participation. Respondents report the least participation in serious drug use (e.g., methamphetamines, hallucinogens, and heroin) and fraud (e.g., credit card and check fraud). Even so, these findings indicate that individuals in the sample report involvement in a wide variety of deviant behaviors, which is consistent with Gottfredson and Hirschi's (1990) assertion that "offenders commit a wide variety of criminal [and analogous] acts" (p. 91).

Testing Hypotheses of HSD Self-Control

Hirschi (2004) indicates in his reconceptualization of self-control theory that the number and salience of the perceived costs of an act to the actor should be taken into consideration in measuring self-control. A HSD self-control measure was developed to measure number and salience of perceived costs. Respondents could have reported up to seven cost items. The salience score for each of the seven items ranged from zero to 10 (or zero to 70 for summated salience scores). In the present study, the number of respondent-generated costs was multiplied by the salience of all costs to arrive at a HSD self-control score. The multiplicative score ranged from zero to 490. Higher scores are indicative of higher self-control.

Figure 11 presents the zero-order correlation between the HSD self-control and likelihood of committing the theft. As predicted by Hirschi (2004), the results indicate that those higher in self-control are less likely to commit the theft of the batteries ($r = -.225$, $p \leq .01$). This finding supports Hirschi's (2004) contention that bond-relevant self-control items are "factors that one takes into account in deciding whether to commit a criminal act" (p. 545).

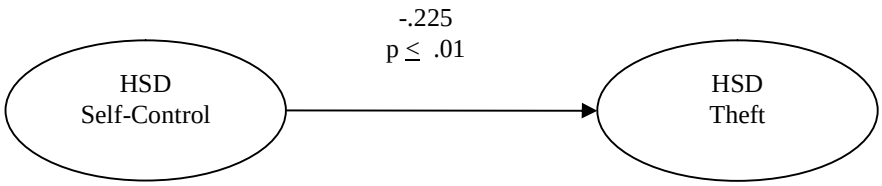

Figure 11. Zero-order correlation of HSD self-control & HSD theft.

Hirschi (2004) also indicates the more inhibitors (number of cost items) that respondents report the less likely they are to commit delinquent acts. Figure 12 shows the zero-order correlation between the reported number of inhibiting factors and the

likelihood of committing the theft of the batteries. The findings show that the number of self-reported inhibitors is significantly related to committing the theft of the batteries ($r = -.269$, $p \leq .01$). This is similar to the results of Hirschi (2004) who found that as the number of reported inhibitors increases, the number of delinquent acts decreases.

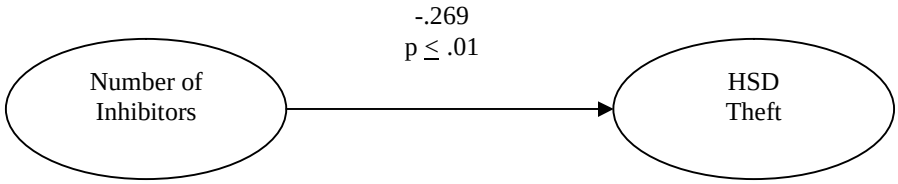

Figure 12. Zero-order correlation of inhibitors & HSD theft.

Similar to the findings for bond-based self-control, the results reported in Figures 11 and 12 indicate that the revised HSD self-control measure is operating as it should according to Hirschi's (2004) reconceptualization.

Gender and HSD Theft

As previously noted, gender is the independent variable that generally shows the strongest and most consistent statistical association with most forms of crime and deviance (Cain, 1989; Campbell, 2002; Cernkovich & Giordano, 1979; Mocan & Rees, 1999; O'Brien, 1999). Many researchers argue that any broad-dimension or "general theory" of criminal or deviant behavior should be able to accommodate, integrate, and explain this commonly known empirical fact (LaGrange & Silverman, 1999; Miller & Burack, 1993; Tittle et al., 2003). Critics of self-control theory have questioned the ability of the theory to explain gender differences in crime because, they argue, that Gottfredson and Hirschi (1990) have not fully develop the role of gender in their theory (see e.g., Blackwell & Piquero, 2005; Miller & Burack, 1993; Peterson-Lynskey et al.,

2000). Still others note it is not that Gottfredson and Hirschi (1990) fail to sufficiently develop the role of gender it is that the majority of tests of the theory are inadequate (Higgins, 2004; Higgins & Tewksbury, 2004; Zager, 1993). Others omit gender altogether from empirical analyses (Brownfield & Sorenson, 1993) or use all male samples (Polakowski, 1994).

Models specifying the regression of deviance on self-control and various demographic factors as control variables are by far the most frequent test of Gottfredson and Hirschi's (1990) general theory (see e.g., Cochran et al., 1998; Gibbs & Giever, 1995; Hay, 2001; Unnever et al., 2003; Wright & Beaver, 2005). The research on gender presented in this dissertation continues in the tradition of testing the basic proposition of Gottfredson and Hirschi's (1990) theory i.e., self-control influences deviance, as part of a causal model. The current study attempts to establish the role of gender in the general theory using path analysis and operationally defining self-control on the basis of Hirschi's (2004) revised conceptualization.

Gottfredson and Hirschi (1990) begin their examination of gender-crime relationship with the observation that males are more likely than females to be involved in crime and noncriminal analogous acts. Gottfredson and Hirschi (1990) also claim that gender differences in crime and deviance are the result of "substantial" gender differences in levels of self-control (p. 147). Stated differently, Gottfredson and Hirschi (1990) argue that females are less likely to participate in deviant behavior than males because females have greater self-control. In his reconceptualization of the theory, Hirschi (2004) reasserts his position that "girls have higher levels of self-control than boys" (p. 547). This study is the first to test conceptual models that include both gender

and a revised measure of self-control based on Hirschi's (2004) reconceptualization. Figure 13 presents the path model of indirect effects of gender on HSD theft through HSD self-control.

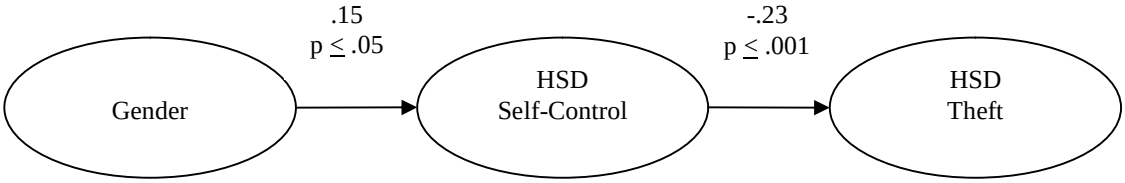

Figure 13. Path model of indirect effects of gender on HSD theft via HSD self-control.[49]

This path model is used to directly test the hypothesis derived from Gottfredson and Hirschi's (1990) general theory that (1) gender affects HSD self-control and (2) HSD self-control affects deviance. The coefficients presented in Figure 13 are structural coefficients estimated with maximum likelihood. Consistent with Gottfredson and Hirschi's (1990) prediction the model shown in Figure 13 indicates that gender has a positive direct effect on HSD self-control (.15) and HSD self-control has a negative direct effect on HSD theft (-.23).

According to Kline (1998, p. 52), "indirect effects involve one or more intervening variables that 'transmit' some of the causal effects of prior variables on to subsequent variables." The indirect effects of gender on HSD theft are calculated by multiplying the path coefficients for the paths from gender to HSD self-control and HSD self-control and deviance. Gender has a negative indirect effect on HSD theft through HSD self-control ((.15) (.-23) = -.08).

Gottfredson and Hirschi (1990) also predict that gender has significant direct effects on both self-control and deviance. Figure 14 presents the path model of the direct

[49] The values on the horizontal paths between the latent variables are standardized structural coefficients.

and indirect effects of gender on HSD theft. The path model shows that gender has a positive direct effect on HSD self-control (.15) and gender has a negative direct effect on HSD theft (-.20). These findings support Gottfredson and Hirschi's (1990) prediction that gender has a direct effect on both self-control and deviant behavior. Figure 14 also shows that gender has a negative indirect effect on HSD theft through HSD self-control ((.15) (-.19) = -.04). The total effect of gender on HSD theft is the sum of the direct and indirect effects (-.20 + -.04 = -.24).

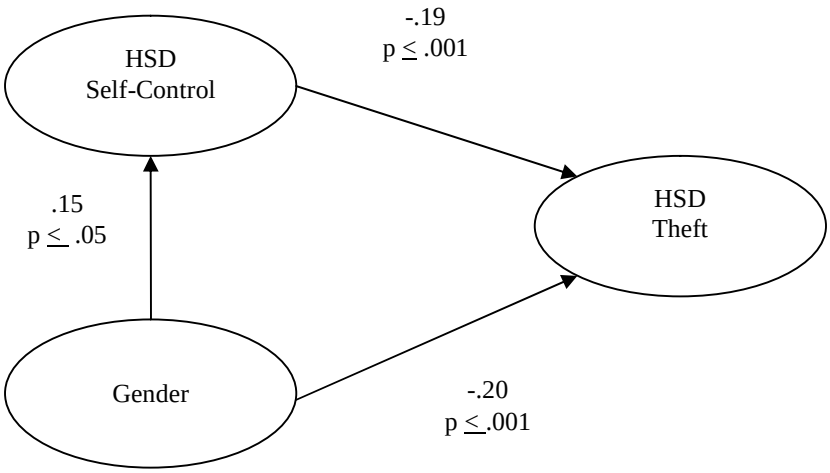

Figure 14. Path model of direct and indirect effects of gender on HSD theft.

In the next section, the same theoretical models will be tested. However, the models will include a measure of bond-based self-control and deviance rather than HSD self-control and HSD theft.

Gender and Bond-Based Self-Control

Figure 15 presents the path model of the indirect effects of gender on deviance via bond-equivalent self-control. Similar to Figure 13, this path model is used to directly test

the hypothesis derived from Gottfredson and Hirschi's (1990) theory that (1) gender affects bond-equivalent self-control, and (2) bond-equivalent self-control affects deviance. Figure 15 shows that gender has a positive direct effect on bond-based self-control (.27) and bond-based self-control has a negative and rather large direct effect on deviance (-.51). Gender also has a negative indirect effect on deviance through bond-based self-control ((.27) (-.51) = -.24).

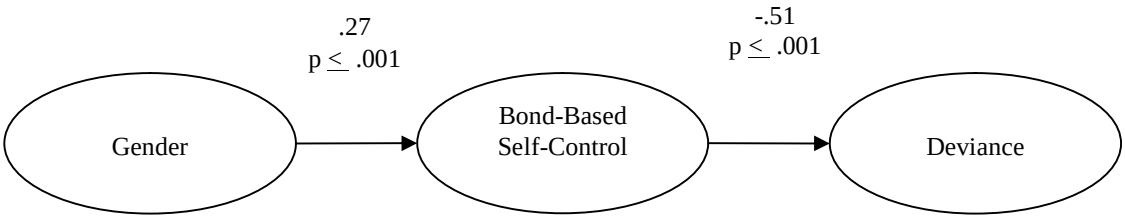

Figure 15. Path model of indirect effects of gender on deviance via self-control.

The model in Figure 16 tests Gottfredson and Hirschi's (1990) hypotheses that gender has a direct effect on self-control and deviance. Gender has a moderate direct effect on bond-equivalent self-control (.27) and deviance (-.20). These findings are similar to Gibbs et al. (1998) who also found gender had direct effects on self-control (.28) and deviance (.19). This is noteworthy because the magnitude of the coefficients is almost identical even though the measures of self-control used in these studies are very different.

The current findings also indicate that bond-equivalent self-control has a large direct effect on deviance (-.46). Again, these findings are similar to those of Gibbs et al. (1998) who found self-control had a substantial direct effect on deviance (-.32) although the magnitude of the effect in the present study is much greater (a difference of .14) than that achieved by Gibbs et al. (1998). The results of this analysis also show that the

indirect effects of gender on deviance through bond-based self-control is ((.27) (-.46) = -.19) and the total effects of gender on deviance is (-.20 + -.19 = -.39).

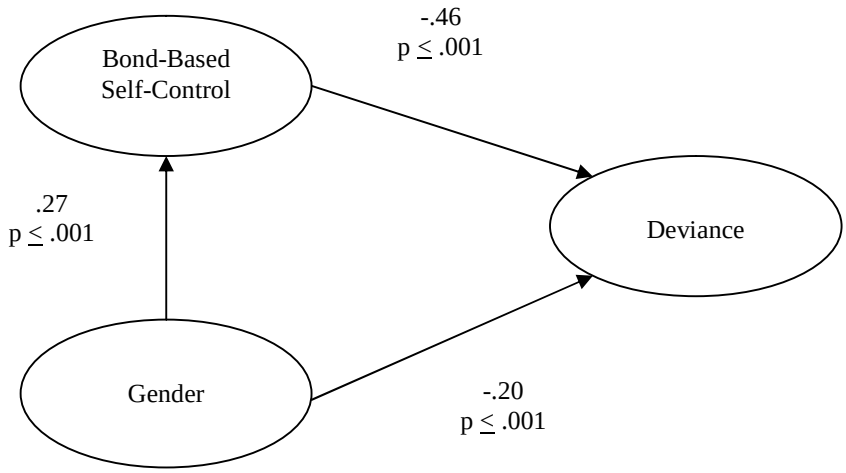

Figure 16. Path model of direct and indirect effects of gender on deviance.

The results shown for the models in Figures 13 and 14 and Figures 15 and 16 are supportive of Gottfredson and Hirschi's (1990) discussion on the gender-crime relationship. Specifically, Gottfredson and Hirschi (1990) claim that gender has a direct effect on deviance (males are more likely than females to participate in deviant behavior) and gender has a direct effect on self-control (females have greater self-control than males). They also claim that self-control has a direct effect on deviance (those with greater self-control are less likely to be involved in deviance).

CHAPTER V

SUMMARY AND CONCLUSIONS

Summary

Since its introduction almost twenty years ago, Gottfredson and Hirschi's (1990) general theory of crime has become one of the most widely cited (Cohn & Farrington, 1999) and tested theories of crime (Piquero & Bouffard, 2007; Pratt & Cullen, 2000; Vazsonyi et al., 2001). A meta-analytical review of the empirical status of Gottfredson and Hirschi's (1990) theory revealed that self-control is "one of the strongest known correlates of crime" (Pratt & Cullen, 2000, p. 952). The principal purpose of this dissertation was to develop and test a measure of self-control based on Hirschi's (2004) revised conceptualization. This study also tested the principal proposition of Gottfredson and Hirschi's (1990) general theory by using path analysis to examine the association between a measure of Hirschi's (2004) modified concept of self-control and self-reported deviance while incorporating gender, a theoretically and empirically important variable.

The following sections include a summary of the pretest findings reported by Gibbs et al. (2008). This summary includes a review of the findings of the pretest of a bond-based self-control measure that was developed using the conceptual and operational guidelines suggested by Hirschi (2004). This review also includes an assessment of a second measure of self-control that was influenced by the work of Higgins (2001) and Piquero and Bouffard (2007). Additionally, an assessment of the deviance measure used by Gibbs et al. (2008) is included.

The findings of Gibbs et al. (2008) were used to further refine a bond-based measure of self-control and a hypothetical scenario self-control measure. The results of

this effort are also discussed in the sections that follow. Finally, theoretical models based on Gottfredson and Hirschi's (1990) discussion of the role of gender in self-control theory were tested and a summary of the results appear in the following sections as well.

Pretest of Deviance

Although developing and testing a revised measure of self-control based on Hirschi's reconceptualization was the primary focus of this dissertation, a measure of deviance also was developed to ultimately test some of the central propositions of Gottfredson and Hirschi's (1990) general theory. The items chosen for inclusion in the deviance measure were designed to capture a wide range of criminal and noncriminal analogous acts. For example, the deviance measure included items about respondents' participation in cheating, class cutting, check and credit card fraud, joyriding, animal abuse, assault, deviant Internet use, and drug use and abuse.

In the current study, the reliability, validity, and dimensionality of the deviance measure were assessed. The Cronbach's alpha (.79) is considered good for research purposes (DeVellis, 1991). The square root of the coefficient alpha (.894) indicates that the measure is highly representative of the content domain representing the deviance construct.

Cattell's scree test and PCA were performed on the deviance measure to assess its dimensionality. The results suggest that the deviance measure in a unidimensional construct. The PCA was used to perform a second measure of reliability, theta. Theta (.82) is a good level of reliability (Armor, 1974). The deviance measure used in the pretest was retained for the subsequent analyses.

Pretest of Bond-Based Self-Control

As noted, the primary purpose of this dissertation was to develop and test a measure of self-control based on Hirschi's (2004) reconceptualization of the self-control concept. This endeavor began with a pretest conducted by Gibbs et al. (2008) who developed and tested a bond-based self-control measure guided by Hirschi's (2004) reconceptualization. Hirschi (2004) describes his revised definition of self-control as "the tendency to consider the full range of potential costs of a particular act" (p. 543). This definition was an expansion of previous definitions to include a wider range of factor's that an actor considers in deciding whether to participate in deviant behavior. According to Hirschi (2004), self-control conceptualized in this way refers to an internal "set of inhibitions" that influences the choices that people make (p. 543). This set of inhibitions is synonymous to the elements of Hirschi's (1969) social bond that include attachment, involvement, commitment, and belief.

Hirschi (2004) offered revised definitions of the four elements of the social bond and each of these were used as a starting point for the development of a bond-based measure of self-control. Items were developed to tap each of the components of bond-based self-control. The pretest bond-based self-control measure consisted of 63 items. The measure was pretested on a nonrandom sample (n = 404) of university students enrolled in introductory criminology courses.

The reliability, validity, and dimensionality of the bond-based self-control measure were assessed. The Cronbach's alpha (.92) is considered good for research purposes (DeVellis, 1991). The content validity measured by the square root of the coefficient alpha (.959) indicates that the scale is highly representative of the content

domain of the bond-based self-control construct. However, after examining the item-total correlations it was determined that the five items measuring the involvement component of the bond-based self-control measure were very low (ranging from .004 to .190). These item-total correlations fall well below the recommended standard of .30. Hirschi (1969) admits that the involvement items tend to perform poorly. These findings were used to revise the pretest bond-based self-control measure and, as a result, the involvement items were eliminated from the final self-control measure. In addition, five belief items were dropped from the final self-control measure because of low item-total correlations as well (ranging from .163 to .288).

The dimensionality of the pretest bond-based self-control measure was evaluated using Cattell's scree test and principal components analysis (PCA). Given the results it is reasonable to assume the bond-based measure is a unidimensional construct (for a similar conclusion see Gibbs et al, 1998) as indicated by Hirschi (2004). The results of the PCA also were used to calculate another measure of reliability, theta. Theta = .93, which indicates a very good level of reliability (Armor, 1974).

Pretest of Self-Control Hypothetical Scenario

In addition to the bond-based self-control measure, a second measure of self-control was developed based on Hirschi's (2004) revised conceptualization. A hypothetical scenario describing a petty theft was created (see Appendix B). The choice of a hypothetical scenario design (HSD) was influenced by the work of Higgins (2001) and Piquero and Bouffard (2007). According to Bouffard (2002), the HSD comes closest to approximating "real world" decision making. After reading the scenario, respondents

were asked to list in order of importance the factors, concerns, and/or things that they would think about or consider in deciding whether to commit the theft described in the scenario. This measurement strategy resulted in respondents reporting a number of items that were rather ambiguous, and, as a result, could not be properly coded. For example, respondents listed items such as "Is it worth it?" and "Do I really need them?" The imprecise response categories may have been the result of using a measure that was less specific than Piquero and Bouffard (2007). Therefore, the HSD was refined for the subsequent test and respondents were given more specific guidelines for their responses. That is, respondents were instructed to list up to seven "bad things" that could happen if they were to commit the theft as described in the scenario. This revision resulted in responses that could be more accurately categorized.

Deviance

The reliability, validity, and dimensionality of the deviance measure were assessed. The Cronbach's alpha (.77) is slightly lower than that achieved in the pretest (.79) but is still considered adequate for research purposes. The square root of coefficient alpha (.877) suggests that the measure is representative of the content domain of the deviance construct. The scree test shows there is one component prior to the break and the PCA indicates that the most distinct break in eigenvalues is between the first (4.29) and second (1.93) (a difference of 2.36), which suggest the deviance measure is a unidimensional construct. The theta = .80, which indicates a good level of reliability (Armor, 1974). These findings are consistent with the findings of the pretest conducted by Gibbs et al. (2008).

Bond-Based Self-Control

The revised bond-based self-control measure included three of the four social bond components identified by Hirschi (2004): attachment, commitment, and belief. The involvement component was not used in the final revised measure because it performed poorly in the pretest (see Table 15). Items were developed to tap each of the three components of bond-based self-control. The final bond-based self-control measure consisted of 43 items. The final measure was tested on a nonrandom sample (n = 257) of university students enrolled in introductory criminology courses.

The reliability, validity, and dimensionality of the bond-based self-control measure were evaluated. The Cronbach's alpha (.90) is excellent for the purpose of research (DeVellis, 1991). The square root of alpha (.949) indicates that the measure is representative of content domain representing the bond-based self-control construct. The scree test indicates that the bond-based self-control measure is a unidimensional construct as suggested by Hirschi (2004).

Several items were included in the survey instrument to test for construct validity. As previously noted, an indication of construct validity is to see if a measure of a concept, i.e., self-control, is behaving empirically in ways consistent with predictions based on the theory. According to Gottfredson and Hirschi (1990) individuals with high self-control are less likely to be involved in auto accidents, job instability, and risky sex. The results indicate that bond-based self-control is significantly related to respondents number of sexual partners ($r = -.201$, $p \leq .01$), unprotected sex ($r = -.220$, $p \leq .01$) and "one night stands" or "weekend flings" ($r = -.277$, $p \leq .001$). In addition, bond-based self-control is significantly related to auto accidents ($r = -.106$, $p \leq .10$). These results

give at least some indication that bond-based self-control measure used in this study is behaving as it should, according to Gottfredson and Hirschi (1990) and Hirschi (2004).

Self-Control Hypothetical Scenario

Respondents were presented with a hypothetical scenario describing a misdemeanor theft (see Appendix C). After reading the scenario, they were asked to list up to seven "bad things" that could happen if they were to commit the theft as described in the scenario. Legal consequences (e.g., arrest, jail, fines or fees, probation, and community service) were the most cited potential cost item (72%) by respondents in this study. This finding is similar to Piquero and Bouffard (2007) who found that legal consequences were the most cited potential cost item for drunk driving (93.9%) and sexual coercion (75.5%) (A. Piquero, personal communication, September 10, 2007). Fear of discovery (getting caught, getting caught by the store clerk, being observed by a hidden surveillance camera, and getting caught by another customer) was the second most cited potential cost item.

Three of the themes or cost items listed by respondents represent the attachment component of bond-equivalent self-control. Specifically, respondents identify the following attachment items: (1) parental attachment (parents would find out, parents would be angry, upset, hurt, or disappointed, and parents would administer some type of punishment) (34%), (2) attachment to others (non-family or friend) (lose respect of others, not be trusted by others, getting a bad reputation, and public humiliation) (14%), and (3) peer attachment (friends find out, and friends would be upset, disappointed, or would think badly of you, or look down on you) (12%). Hirschi (2004, p. 545) argues

that two questions are of primary importance to individuals who are deciding whether to offend: "Do I care what *X* thinks of me?" and "Will *X* know what I have done?" The cost items identified by respondents in this sample reflect concern for what significant others will think of the individual (e.g., parents would be angry, upset, hurt, or disappointed) and whether the offending behavior will be discovered (e.g., parents or friends find out and school or professor will be notified). This findings is consistent with Hirschi's (2004) assertion that one's attachments to others (parents, peers, and the community) matters in deciding a course of action because certain acts, especially deviant acts, are "contrary to the wishes and expectations of conventional others" (p. 539). Participation in deviant acts may sever one's emotional bonds or ties with those they love and care for and/or respect (Hirschi, 1969; 2004).

The results support Hirschi's (2004) argument that HSD self-control items are "factors that one takes into account in deciding whether to commit a criminal act" (p. 545). Piquero and Bouffard (2007) also found that HSD self-control items were listed among the potential consequences for deviant behavior. For example, respondents in their study cited parental attachment (5%) and attachment to others (7%) as potential costs for drunk driving (A. Piquero, personal communication, September 10, 2007). Respondents in Piquero and Bouffard (2007) study also reported that parental attachment (3%), peer attachment (lose girlfriend) (6%), attachment to others (24%), and professional/academic (1%) considerations were potential consequences of sexual aggression (A. Piquero, personal communication, October 16, 2007).

It is unclear why parental attachment is cited more frequently for the theft scenario (34%) and less frequently for the drunk driving (5%) and sexual aggression

scenarios (3%). These findings could be a function of the differences in the samples. Specifically, Piquero and Bouffard's (2007) sample was older (20.6) than the sample used in this study (19.5) and a disproportionate number of 18 year olds were represented in the current sample. Younger students who are entering college or leaving home for the first time may have stronger parental attachments than older student who have been in college for a longer period of time and may not be as concerned about their parents' opinions.

Attachment to others was also cited in the theft scenario (14%) and a lesser degree for drunk driving (7%) and to a greater degree in the sexual aggression scenario (24%) in Piquero and Bouffard's (2007). It may be that drunk driving is not as potentially socially stigmatizing as theft or sexual aggression. In addition, respondents in the current study reported that attachment to peers (12%) was among their considerations for the theft while it was less likely to be reported for Piquero and Bouffard's (2007) respondents for both drunk driving (7%) and sexual aggression (6%). These findings seem less intuitive because it would seem that those closest to us would certainly find drunk driving and sexual aggression objectionable.

One additional attachment item, shame, was reported by respondents under the theme of emotional consequences. Shame (e.g., feel ashamed of myself, feel shame for stealing, and embarrassment) was listed by 9% of the respondents. Respondents also indicated that guilt was another potential emotional consequence. Guilt (e.g., feel guilty for doing something wrong or stealing and have a guilty conscience) was identified by 25% of the respondents. For the current study, guilt was classified as an indicator of belief because individuals may feel guilty when they violate their principles, convictions,

values, or participate in behaviors that are deemed wrong or inappropriate (J. Gibbs, personal communication, January 1, 2009).

Hirschi (2004) hypothesis that inhibitors (number of costs items) should be inversely related to the likelihood of committing the theft was tested. The results show that the number of inhibitors is significantly (negatively) related to committing the theft of the batteries. This finding is similar to Hirschi (2004) who found that as the number of inhibitors increase the number of delinquent acts decreases (see Tables 3 and 4). In addition, the number of costs items reported by the respondents was multiplied by the salience scores to form a HSD self-control measure. Those higher in HSD self-control were less likely to commit the theft of the batteries, which supports Hirschi's (2004) most recent conceptualization of the theory.

Testing Hypotheses of Self-Control Theory

Versatility

Gottfredson and Hirschi (1990) argue that offenders are versatile i.e., "offenders commit a wide variety of deviant acts, with no strong inclination to pursue a specific criminal act or a pattern of acts to the exclusion of others" (p.91). Likewise, Hirschi (2004) claims "Criminals do not specialize in particular crimes [but commit] a large variety of delinquent, deviant, and criminal acts" (p. 537). The Cronbach's alpha of .77 suggests respondents in this sample report being involved in a wide variety of crime and crime-equivalent acts. An examination of the percentage of respondents reporting participation is the 25 deviance items (see Table 25) reveals that the percentages range

from 84% (high school cheating) at the high end and 1% (heroin use) at the low end. In other words, respondents in this study report at least some degree of participation in all 25 deviant behaviors.

Gender and Deviance

In this study, two theoretical models based on Gottfredson and Hirschi's (1990) discussion on gender and crime were evaluated i.e., an indirect effects model and a direct and indirect effects model. As previously noted, two measures of self-control and deviance were developed and included in the models that were tested. In the first model, the indirect effects of gender on hypothetical scenario design (HSD) theft via HSD self-control were tested. The second model tested the indirect effects of gender on deviance through bond-based self-control.

The models tested were supportive of Gottfredson and Hirschi's (1990) discussion of the gender-crime relationship. To be more precise, gender has a direct effect on both measures of self-control and gender has a direct effect on both measures of deviant behavior. The models also show that self-control has a direct effect on both measures of deviance.

Gibbs et al. (1998) also tested a theoretical model that included gender, self-control, and deviance. They reported results that were similar to those reported in the theoretical model that included a measure of bond-based self-control. That is, the magnitude of the coefficients for the direct relationship of gender and self-control and gender and deviance are almost identical even though the measures of self-control are

very different. Gibbs et al. (1998) also reported that self-control had a substantial direct effect on deviance, which is consistent with the results of this study.

The models tested in the current analysis also showed that gender had indirect effects on theft and deviance through HSD self-control and bond-based self-control. However, the indirect effects of gender via HSD self-control were nonsignificant. Gibbs et al. (1998) also found that indirect effects of gender on deviance through self-control were nonsignificant.

Directions for Future Research

Since the formal introduction of *A General Theory of Crime,* criminologists have continued to call for further clarification of the central concepts and measures of Gottfredson and Hirschi's (1990) theory (see e.g., Arneklev et al., 1993; Barlow, 1991; Geis, 2000; Grasmick et al., 1993; Longshore et al., 1998; Longshore et al., 2004; Miller & Burack, 1993; Stylianou, 2002; Tittle et al., 2003). To their credit, Gottfredson and Hirschi (1990) have attempted to offer additional guidance regarding the conceptualization and operationalization of the central concepts of their theory (see e.g., Gottfredson, 2005; Hirschi, 1995; 2004; Hirschi & Gottfredson, 1993; 1994; 2000). Recently Hirschi (2004) decided a "shift" in the conceptualization of self-control was necessary because, as Hirschi (2004) sees it, Gottfredson and Hirschi (1990) presented a conceptualization of self-control that mislead researchers and researchers in turn misinterpreted the meaning of the self-control construct (see also Marcus, 2003; 2004; Taylor, 2001). As a result, the majority of researchers mistakenly translated the concept of self-control into a "personality concept", which Hirschi found "disappointing" (Hirschi

& Gottfredson, 1993, p. 49). In an effort to rectify this widespread misconceptualization, Hirschi (2004) argues that a return to his original social control (bond) theory is necessary because "social control and self-control are the same thing" (p. 543).

The development and testing of a measure of self-control based on Hirschi's revised conceptualization was the primary purpose of this dissertation. Therefore, this effort was closely guided by Hirschi's (2004) revised conceptualization of the concept of self-control. According to Hirschi (2004) self-control is defined as "the tendency to consider the full range of potential costs of a particular act" (p. 543). Using this revised definition, self-control refers to "a set of inhibitions…[or] factors that one takes into account in deciding whether to commit a criminal act—factors that may vary in number and salience" (Hirschi, 2004, p. 545). These factors are best described in the elements of social bond, which is comprised of four elements: attachment, commitment, involvement and belief (see also Hirschi, 1969). Stated differently, attachment to significant others (parents, teachers, and peers), commitment to one's aspirations, involvement in conventional activities, and beliefs in conventional norms are all factors that one takes into account in deciding whether to engage in deviant behavior. With this definition in mind, items were developed to tap each of the elements of the revised self-control measure. The measure of self-control developed and tested here found that self-control was a reliable and valid measure. In addition, the factor analysis indicated that the self-control construct can be considered a unidimensional construct. These findings replicate the pretest of the self-control measure conducted by Gibbs et al. (2008). Nevertheless, this effort should be seen as an initial step toward the development of Hirschi's (2004) revised conceptualization of self-control. Researchers should continue to develop and

test alternative measures of self-control guided by Hirschi's (2004) most recent conceptualization.

One area that needs significant attention is developing reliable measures of the involvement concept. This is one shortcoming that has plagued researchers who have tested social bond theory. Specifically, researchers who have used involvement items in previous studies have achieved low item-total correlations that resulted in unacceptable reliabilities (see e.g., Gottfredson et al., 1994; Hirschi, 1969; Jenkins, 1997, Wong, 2005). Similarly, the pretest conducted by Gibbs et al. (2008) found that the item-total correlations for the involvement items performed the poorest (< .20). As a result, the involvement items were dropped from the scale for the current study.

Another problem encountered in this study was the development of reliable measures of the self-control belief component. Like the involvement items, many of the belief items had low item-total correlations as well (< .30). In the pretest conducted by Gibbs et al. (2008), item-total correlations were lowest for items involving violations of the law. Therefore, individuals may be willing to compromise their beliefs for minor forms of deviance (e.g. cheating on exams and lying to professors) but not for violations of the law because they recognize that consequences are significantly greater for the latter. Researchers should strive to develop better measures of bond-based self-control, especially the measures of involvement and belief. This is important because Hirschi (2004) indicates that the inclusion of all four elements of self-control (social bond) represent the most "accurate" test of self-control theory (see p. 544).

A second measure of self-control also was developed and tested that was influenced by the work of Higgins (2001) and Piquero and Bouffard (2007). Like these

researchers, a hypothetical scenario design (HSD) was used that presented respondents with a hypothetical petty theft scenario. After reading the scenario, respondents were asked to indicate the likelihood of committing theft. In addition, they were asked to list up to seven "bad things" that might happen as a result of the decision to commit the theft. Bouffard (2002) claims that the HSD is the best way to allow respondents to simulate "real world" decision making. This measurement strategy would likely be endorsed by Hirschi (2004) because he indicates that a measure of self-control should allow respondents to identify the factors that affect their decision and the salience of those factors.

The responses of the sample were examined and categorized according to themes. Of particular interest for this study was whether respondents would identify self-control (i.e., social bond) items as important factors in deciding whether to commit the theft. Respondents did list a number of HSD self-control items among their responses including: (1) parental attachment, (2) peer attachment, (3) attachment to others (non-family or friend), (4) shame, (5) guilt, and (6) commitment. Piquero and Bouffard (2007) also found that HSD self-control items were listed among the reasons for deciding whether to commit drunk driving and sexual aggression including: (1) parental attachment, (2) peer attachment, (3) attachment to others, and (4) commitment (A. Piquero, personal communication, October 10, 2007). Although these findings are encouraging, researchers should continue to perfect the use of hypothetical scenario designs when testing Hirschi's (2004) revised self-control theory because this measurement strategy allows respondents to identify the factors that are part of the decision making process and the salience of those factors.

Two theoretical models based on Gottfredson and Hirschi's (1990) discussion on gender and crime were tested. In examining the standardized path coefficients, support was found for Gottfredson and Hirschi's (1990) assertion that gender has a significant direct effect on self-control and deviance. That is, females have higher levels of self-control and lower deviance involvement in comparison to males. Studies have consistently found females have more self-control and less deviance involvement than males (Burton et al., 1998; Gibbs & Giever, 1995; Gibbs et al., 1998; Giever, 1995; Higgins, 2004; Higgins & Tewksbury, 2004; Keane et al., 1993; LaGrange & Silverman, 1999; Nakhaie et al., 2000a; Piquero et al., 2002; Tibbetts, 1997; 1999).

The reason for gender differences in self-control (Gottfredson & Hirschi, 1990; Gibbs et al., 1998; Higgins, 2004; Higgins & Tewksbury, 2004; Lytton & Romney, 1991) and deviance (Adler, 1975; Barlow, 1991; Broidy & Agnew, 1997; Chesney-Lind & Shelden, 1998; Daly & Chesney-Lind, 1988; Ensminger, Kellam, & Rubin, 1983; Geis, 2000; LaGrange & Silverman, 1999; Leonard, 1982; Smart; 1976) has become the subject of substantial debate in criminology. Some researchers argue gender differences in self-control can be linked to differential parental management practices (Higgins, 2004; Higgins & Tewksbury; 2004) while others claim that there is little or no difference in the way males and females are parentally managed (Gibbs et al., 1998, Giever, 1995; Lytton & Romney, 1991). These theoretical disagreements may remain unresolved given Hirschi's (2004) reconceptualization of self-control theory. To be more precise, Hirschi (2004) does not include parental management as a separate and distinct concept as part of the revised theoretical model. It seems that the parental management concept has been subsumed as part of the concept of attachment. For example, Hirschi (2004, p. 545)

suggests that the following measures should be as part of the attachment concept: (1) "Does your mother know where you are when you are way from home?", (2) "Does your mother know who you are with when you are away from home?", (3) "Do you share your thoughts and feelings with your mother?", and (4) "Would you like to be the kind of person your mother is?" These items or variants of these items have been used in other studies to operationalize parental management (see e.g., Gibbs & Giever, 1995; Gibbs et al., 1998, Giever, 1995; Hay, 2001; Higgins, 2001; Higgins, 2004; Lynskey-Peterson et al., 2000; Polakowski, 1994; Sorensen & Brownfield, 1995; Wright & Beaver, 2005). Researchers should attempt to reconcile the parental management component of the original version of self-control theory with Hirschi's (2004) revised concept of (parental) attachment from his most recent exposition.

Gottfredson and Hirschi (1990) state that their theory is designed to "explain all crime, at all times" across all social categories including social class, race, and gender (p. 117). In other words, self-control theory is proposed as a "general" theory of crime and deviant behavior. Most recently, Hirschi (2004) reiterates his and Gottfredson's position by noting that his revision of self-control theory "should have little effect on the empirical predictions derived from the theory" (p. 548). Therefore, researchers should continue to investigate whether Hirschi's (2004) revised conceptualization of self-control theory is indeed a general theory of crime.

It is important to note that there are those who argue the ability of self-control theory to explain male-female differences in crime is likely to remain unclear because the role of gender is underdeveloped (see e.g., Blackwell & Piquero, 2005; Lynskey-Peterson et al., 2000; Miller & Burack, 1993). Still others argue it is not that Gottfredson and

Hirschi (1990) have failed to sufficiently develop the role of gender; it is that the majority of tests of the theory are inadequate (Higgins, 2004; Higgins & Tewksbury, 2004; Zager, 1993). For example, the bulk of the research indicates gender generally is included only as a control variable (see e.g., Arneklev et al., 1993; Cochran et al., 1998; Gibbs & Giever, 1995; Giever, 1995; Grasmick et al., 1993; Higgins & Makin, 2004; Longshore, 1998; Nagin & Paternoster, 1993; Nakhaie et al., 2000a; Piquero & Tibbetts, 1996; Tibbetts & Whittimore, 2002; Wood et al., 1993). Others have omitted gender altogether from empirical analyses (Brownfield & Sorenson, 1993) or use all male samples (Polakowski, 1994). The results of this study coupled with the findings of other studies would seem to indicate that further exploration of the role of gender in self-control theory is warranted.

Limitations of the Study

The primary limitation of this research is that a non-representative (non-random) sample was used. In comparison to the university population, the sample is younger, with the majority of respondents being eighteen years of age. Females are underrepresented in the sample, while males are overrepresented. Blacks and Hispanics are overrepresented, while Asians and other minorities are underrepresented. Finally, freshmen are significantly overrepresented, while juniors and seniors are underrepresented. This means that the generalizability of the findings is limited in scope. A random sample or a non-random sample that is representative of the population will aid in the generalizability of the results in future studies.

This study limited the investigation of relationship between gender and crime to two theoretical models based on self-control theory. The models chosen for inclusion in this study were limited to those suggested by Gottfredson and Hirschi (1990) and those most commonly tested by other researchers (Burton et al., 1998; Gibbs & Giever, 1995, Gibbs et al., 1998; Giever, 1995, Higgins, 2001; LaGrange & Silverman, 1999; Nagin & Paternoster, 1993, Piquero et al., 2002). A full consideration of other possible theoretical models based on self-control theory were beyond the scope of this dissertation. Additional models should be developed and tested by other researchers.

Conclusions

The primary purpose of this dissertation was to develop and test a measure of self-control based on Hirschi's (2004) revised conceptualization of the self-control concept. To my knowledge, it is one the first to evaluate the psychometric properties of a measurement device developed on the basis of Hirschi's (2004) revised definition of self-control (see also Gibbs et al., 2008). Thus, this effort represents a first step in developing and testing a measure of self-control based on Hirschi (2004) revision of the self-control concept. Hopefully researchers can use this study as a starting point for the further development and testing of self-control measures based on Hirschi's (2004) reconceptualization.

A secondary goal of this dissertation was to assess the role of gender in Gottfredson and Hirschi's (1990) general theory. The models tested for the current study were generally supportive of self-control theory. However, the further development of

gender models will be necessary to more fully understand the role of gender in self-control theory.

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Appendix A

Presentation and Discussion of Parental Management Measures

Gottfredson and Hirschi (1990) emphasize the importance of effective parental management for the development of self-control in children. Effectively managing children requires parents to perform four primary tasks: (1) make an emotional investment in the child, (2) monitor the child's behavior, (3) recognize deviant behavior when it occurs, and (4) administer proportionate (non-corporal) punish for deviant behavior. The consistent and successful application of the child rearing model produces socialized (i.e., self-controlled) children (Gottfredson & Hirschi, 1990; Hirschi, 1994; 1995).

A review of the literature indicates only a small portion of the studies that are designed to test Gottfredson and Hirschi's theory include measuring and testing parental management as part of the theoretical model (see e.g., Feldman & Weinberger, 1994; Gibbs et al., 1998; Giever, 1995; Hay, 2001; Higgins, 2001; 2004; Polakowski, 1994; Unnever et al., 2003; Wright & Beaver, 2005). These measures are summarized in Table A1.

Table A1. *Parental Management Measures*

Feldman and Weinberger (1994)[50]

Conceptualization

Parenting (parental management) refers to the child rearing practices used in the home that includes inconsistency, rejection versus child-centeredness, and assertive/harsh discipline.

Inconsistency refers to the extent to which parents arbitrarily alter their parenting due to extraneous factors.

Rejection versus child-centeredness is the extent to which children feel that they are neither valued nor a priority in the lives of their parents.

Assertive/harsh discipline is the extent to which parents wield power in an authoritarian or overt way.

Operationalization

Inconsistency (Cronbach's alpha = 77; respectable)

1. Whether she or he punishes me often depends on what mood she or he is in.
2. She or he is easy on me one minute, and hard on me the next.

Assertive/Harsh Discipline (Cronbach's alpha = .76; respectable)

3. She or he makes me feel that I am being bossed around.
4. She or he sometimes throws things or hits me when she or he is angry over something I have done.
5. She or he always makes sure I hear about it if I break a rule.
6. She or he keeps the home in order by having a lot of rules and regulations for me.

Rejection versus Child-Centeredness (Cronbach's alpha = .85; very good)

7. She or he gives up a lot of things to make sure I am happy.
8. She or he enjoys staying home with me more than going out with friends.
9. She or he often gives up something to get something for me.

[50] A 5-point Likert response scale: 1 = False, 2 = Somewhat false, 3 = Not sure, 4 = Somewhat true, and 5 = True. The possible range of the scale was 30 to 150. The original measures consist of 30 items but all of the items were not reported.

Giever (1995)[51]

Conceptualization

Parental management is conceptualized as monitoring and discipline. Monitoring refers to, ". . . the extent the parent is aware of the child's whereabouts, his deviant behavior in and outside of home, and the degree the parent supervises the child's activity" (Patterson & Dishion, 1985, p. 69). Discipline ". . . included the parents' backing up their threats, controlling their anger, being consistent regardless of mood, being consistent with each other, being firm, and using reasoning" (Larzelere & Patterson, 1990, p. 317).

Operationalization

1. When I was in 9th grade, an adult in my house knew where I was when school was out.
2. It was important in my house that I completed my homework each day.
3. I was allowed to spend any amount of time I wanted watching TV.
4. When I was in 9th grade, no one really cared what type of programs I watched on TV.
5. When I was in 9th grade, my parents knew my close friends.
6. In my house, if you were told that you would get punished for doing certain things, and you got caught doing one, you definitely got punished.
7. I had to tell an adult in my house where I was going when I went out.
8. If I wanted to, I would have been allowed to stay home from school when I wasn't really sick.
9. When I was in 9th grade, I would talk about what I did each day with an adult in my house.
10. In my house, whether or not I got punished for something usually depended on the mood of my parent(s).
11. If I had a problem when I was in 9th grade, I felt I could talk it over with a parent or other adult in my house if I wanted to.
12. An adult in my house was aware of who I was out with.

[51] The response category was a visual analog featuring a 10 centimeter response line anchored by the terms 1 = "Not at all true" to 5 "Very true." The possible range of the scale was 0 to 400. Cronbach's alpha = .91which is considered excellent by DeVellis (1991). The most obvious break in eigenvalues is between the first (11.2) and second (3.1) factors (a difference of 8.1) indicate a unidimensional construct (for similar results see Gibbs et al., 1998; Higgins, 2001).

Table A1 (continued). *Parental Management Measures*

Giever (1995) (Continued)

13. When I was in 9th grade, an adult in my house knew what time I got home on weekend nights.
14. If I got caught doing something wrong, I might get yelled at, lectured, or threatened with punishment, but not actually punished by loss of privileges or grounding, for example.
15. At least one adult in my house would talk with me about things that were important to me when I was in 9th grade.
16. No one in my house was really that concerned about what time I got home on weekend nights.
17. When I was in 9th grade, it seemed like at least one of the adults in the house was always on my case about something.
18. When I was in 9th grade, at least one of the adults in the house was pretty informed about what was happening in my life.
19. You really had to get one of the adults in my house mad before they would bother punishing you.
20. All of the adults in my house thought what was going on in their lives was more important than what was going on in mine when I was in 9th grade.
21. In my house, if you complained, carried on, or pitched a fit long enough, you got to do what you wanted to do.
22. When I was in 9th grade, at least one of the adults in my house was more concerned about my welfare than their own.
23. The punishment in my house was fairly consistent and depended largely on how serious a rule I had broken.
24. At least one of my parents paid pretty close attention to what I was doing and who I was doing it with.
25. If you broke one of the rules and got caught, you got punished in my house.
26. When I was in 9th grade, at least one adult in my house was pretty well informed about what I was doing in school, for example, what subjects I was taking, who my teachers were, and the clubs and activities in which I was involved.
27. The rules about what would get you into trouble were clear and applied consistently in my house.
28. When I was in 9th grade, if my parents had been notified that I was treating my teachers with disrespect, I would have been in serious trouble.
29. In my house, you never knew when one of the adults might just have enough and start hitting you.
30. When I was in 9th grade, if my parents received a report that I had been shoplifting gum, candy, or other small items, I would have been in serious trouble.
31. If I was feeling down or depressed, one of the adults in my house would notice it.
32. When you were punished in my house, there was a good reason for it.
33. When I was in 9th grade, if I skipped school and my parents found out, I would have been in serious trouble.
34. When I was punished, one of the adults in my house would talk to me about why I was being punished so I fully understood.
35. In my house, the level of punishment was appropriate for the seriousness of the misbehavior.
36. In my house, you were more likely to lose privileges or get grounded as a punishment than to get hit.
37. When I was in 9th grade, if I got caught smoking cigarettes, I would have been in serious trouble.
38. At least one of the adults in my house was likely to be in a bad mood.
39. When I was in 9th grade, if I came home drunk, I would have been in serious trouble.
40. When I was in 9th grade, if I was going to sleep over at a friend's house, one of my parents would check on the plan with my friend's parents.

Table A1 (continued). *Parental Management Measures*

Hay (2001)[52]

Conceptualization

Parental management is conceptualized as monitoring and discipline.

Operationalization

Monitoring (Cronbach's alpha = 79; respectable)

1. My parents keep close track of me.
2. My parents are personally familiar with all or most of my friends.
3. I am clear about rules I am suppose to follow.
4. My parents make a big effort to know if I am following the rules.

Discipline (Cronbach's alpha = .45; unacceptable)

1. If your mother found out that you had done something that was strongly disliked, she would definitely do something to try to stop me from doing it again.
2. If your father found out that you had done something that was strongly disliked, he would definitely do something to try to stop me from doing it again.
3. How likely is that your mother would respond to your rule-violating behavior by doing nothing at all?
4. How likely is that your father would respond to your rule-violating behavior by doing nothing at all?

Conceptualization

Authoritative parenting is conceptualized using Baumrind's (1991) description of effective parents i.e., who are "demanding and responsive."

Operationalization

Acceptance-Involvement (Cronbach's alpha = .88; very good)

1. I'm closer to my mother/father than a lot of kids are to theirs.
2. Having a good relationship with my mother/father is important to me.
3. I would like to be the kind of person my mother/father is.
4. She/he is interested in what I do.
5. She/he encourages me to discuss my problems with him/her.
6. She/he has my best interest at heart.
7. I think she/he shows more interest in my brothers and sisters than in me.
8. Other mothers/fathers seem to show more interest in their children than mine does in me.
9. She/he seems to wish I was a different sort of person.
10. She/he tries to understand my problems and worries.

Psychological Autonomy (Cronbach's alpha = 78; respectable)

11. Even though I'm only a few years away from being an adult, she/he still treats me like a little kid.
12. When she/he and I have a disagreement, she/he tries to use power to win the argument.
13. When she/he is making a decision about something that concerns me, she/he rarely asks for my opinion.
14. Even when she/he does not agree with me on things, she/he shows respect for my opinions.

Fair Discipline (Cronbach's alpha = .77; respectable)

15. She/he frequently overacts and gets mad at me over little things.
16. When I am older, I will discipline my children in the same way she/he disciplines me.
17. When she/he disciplines me, she/he is fair about it.
18. She/he is more lenient with my brothers and sisters than me.
19. She/he often gets mad and disciplines me just because she/he is in a bad mood about something.

Non-Physical Punishment (Cronbach's alpha = .85; very good)

20. She/he threatens to slap, hit, or kick me.
21. She/he actually slaps, hits, or kicks me.
22. She/he pushes, grabs, or shoves me.

[52] A Likert response scale ranging from 0 = "Completely disagree" to 6 "Completely agree." The possible range of the scale was 0 to 132. Reliabilities evaluated using DeVellis' (1991) recommendations.

Table A1 (continued). *Parental Management Measures*

Higgins (2001)[53]

Conceptualization

Parental management (PM_1) refers to supervision and disciplinary practices followed in the household.

Operationalization

1. When I was in 9th grade, an adult in my house knew where I was when school was out.
2. It was important in my house that I completed my homework each day.
3. I was allowed to spend any amount of time I wanted watching TV.
4. When I was in 9th grade, no one really cared what type of programs I watched on TV.
5. When I was in 9th grade, my parents knew my close friends.
6. In my house, if you were told that you would get punished for doing certain things, and you got caught doing one, you definitely got punished.
7. I had to tell an adult in my house where I was going when I went out.
8. If I wanted to, I would have been allowed to stay home from school when I wasn't really sick.
9. When I was in 9th grade, I would talk about what I did each day with an adult in my house.
10. In my house, whether or not I got punished for something usually depended on the mood of my parent(s).
11. If I had a problem when I was in 9th grade, I felt I could talk it over with a parent or other adult in my house if I wanted to.
12. An adult in my house was aware of who I was out with.
13. When I was in 9th grade, an adult in my house knew what time I got home on weekend nights.
14. If I got caught doing something wrong, I might get yelled at, lectured, or threatened with punishment, but not actually punished by loss of privileges or grounding, for example.
15. At least one adult in my house would talk with me about things that were important to me when I was in 9th grade.
16. No one in my house was really that concerned about what time I got home on weekend nights.
17. When I was in 9th grade, it seemed like at least one of the adults in the house was always on my case about something.
18. When I was in 9th grade, at least one of the adults in the house was pretty informed about what was happening in my life.
19. You really had to get one of the adults in my house mad before they would bother punishing you.
20. All of the adults in my house thought what was going on in their lives was more important than what was going on in mine when I was in 9th grade.
21. In my house, if you complained, carried on, or pitched a fit long enough, you got to do what you wanted to do.
22. When I was in 9th grade, at least one of the adults in my house was more concerned about my welfare than their own.
23. The punishment in my house was fairly consistent and depended largely on how serious a rule I had broken.
24. At least one of my parents paid pretty close attention to what I was doing and who I was doing it with.
25. If you broke one of the rules and got caught, you got punished in my house.
26. When I was in 9th grade, at least one adult in my house was pretty well informed about what I was doing in school, for example, what subjects I was taking, who my teachers were, and the clubs and activities in which I was involved.
27. The rules about what would get you into trouble were clear and applied consistently in my house.
28. When I was in 9th grade, if my parents had been notified that I was treating my teachers with disrespect, I would have been in serious trouble
29. When I was in 9th grade, if my parents had been notified that I was treating my teachers with disrespect, I would have been in serious trouble.
30. When I was in 9th grade, if my parents received a report that I had been shoplifting gum, candy, or other small items, I would have been in serious trouble.
31. If I was feeling down or depressed, one of the adults in my house would notice it.

[53] The response category was a visual analog featuring a 10 centimeter response line anchored by the terms 1 = "Not true at all" to 5 = "Very true." The possible range of the scale was 0 to 400. Cronbach's alpha = .90 which is considered excellent by DeVellis (1991). The greatest break in eigenvalues is between the first (9.2) and second (2.8) (a difference of 6.4) indicates parental management is a unidimensional construct.

Table A1 (continued). *Parental Management Measures*

Higgins (2001)

32. When you were punished in my house, there was a good reason for it.
33. When I was in 9th grade, if I skipped school and my parents found out, I would have been in serious trouble.
34. When I was punished, one of the adults in my house would talk to me about why I was being punished so I fully understood.
35. In my house, the level of punishment was appropriate for the seriousness of the misbehavior.
36. In my house, you were more likely to lose privileges or get grounded as a punishment than to get hit.
37. When I was in 9th grade, if I got caught smoking cigarettes, I would have been in serious trouble.
38. At least one of the adults in my house was likely to be in a bad mood.
39. When I was in 9th grade, if I came home drunk, I would have been in serious trouble.
40. When I was in 9th grade, if I was going to sleep over at a friend's house, one of my parents would check on the plan with my friend's parents.

Higgins (2001)[54]

Conceptualization

Parental management (PM_2) refers to supervision and discipline.

Operationalization

1. When I was in 3rd grade, an adult in my house knew where I was when school was out.
2. When I was in 3rd grade, my parents knew my close friends.
3. When I was in 3rd grade, no one really cared what types of programs I watched on TV.
4. An adult in my house was aware of who I played with.
5. I had to tell an adult in my house where I was going when I went out to play.
6. When I was in 3rd grade, my parents would praise me when I did well in school.
7. When I was in 3rd grade, I would have been in serious trouble if my parents had been notified that I was treating my teachers with disrespect.
8. In my house, the punishment was appropriate for the seriousness of the misbehavior.
9. When I was in the third grade, if I got caught misbehaving, I would get threatened with punishment but not get punished.
10. I really had to get one of the adults in the house mad before they would bother punishing me, when I was in 3rd grade.
11. When you were punished in my house, there was good reason for it.
12. When I was in the 3rd grade, it was important that I completed my homework each day.
13. When I was in the 3rd grade, I was allowed to watch TV as much as I wanted.
14. When I was in the 3rd grade, if I was felling down or depressed, one of the adults in my house would notice it.
15. When I was in the 3rd grade, if my parents found out I skipped school, I would have been in serious trouble.
16. When I was in the 3rd grade, if I was going to sleep over at a friend's house, one of my parents would check with my friend's parents.
17. In my house, if I broke one of the rules and got caught, I got punished.
18. When I was in the 3rd grade, at least one of my parents paid pretty close attention to what I was doing and who I was doing it with.
19. When I was in 3rd grade, I was allowed to watch any kind of TV show I wanted to watch.
20. When I was in 3rd grade, if I wanted to go someplace, I had to ask my parents if it was alright.
21. When I was in 3rd grade, I had to obey my parent's rules.
22. When I was in 3rd grade, my parents often asked me what I was doing.
23. When I was in 3rd grade, I felt comfortable talking to my parents about anything.
24. When I was in 3rd grade, I felt close to my parents.
25. When I was in 3rd grade, my parents were proud of me when I finished something difficult I had worked hard at.

[54] The response category was a visual analog featuring a 10 centimeter response line anchored by the terms 1 = "Not true at all" to 5 "Very true." The possible range of the scale was 0 to 250. Cronbach's alpha = .87 which is considered very good by DeVellis (1991). The greatest break in eigenvalues is between the first (7.5) and second (2.3) factors (a difference of 5.2) which indicate a unidimensional construct.

Table A1 (continued). *Parental Management Measures*

Higgins (2001)[55]

Conceptualization

Parental management (PM_3) refers to respect, autonomy, understanding, and being perceived and treated as an adult.

Operationalization

1. My parents respect my feelings.
2. My parents truly care about me.
3. My parents treat me like a child.
4. My parents accept me as I am.
5. I have to rely on myself when I have a problem to solve.
6. I like to get my parent's point of view on things that I am concerned about.
7. My parents treat me like an adult.
8. My parents sense when I am upset about something.
9. Talking over my problems with my parents makes me feel ashamed or foolish.
10. My parents value my opinion.
11. My parents express their love for me.
12. I do not always tell my parents everytime I get upset.
13. When we discuss things, my parents consider my point of view.
14. My parents trust my judgment.
15. My parents have their own problems, so I do not bother them with mine.
16. My parents help me understand myself better.
17. I tell my parents about my problems and troubles.
18. I often feel angry with my parents.
19. I do not get much attention at home.
20. My parents encourage me to talk about my difficulties.
21. My parents understand me.
22. My parents still try to tell me what to do.
23. When I am angry about something, my parents try to be understanding.
24. I trust my parents.
25. My parents do not understand what I am going through these days.
26. I can count on my parents when I need to get something off my chest.
27. My parents do not interfere in my life.
28. If my parents know something is bothering me, they ask me about it.
29. I know my parents are there for me.
30. I know my parents will help me if I need it.
31. My parents respect my privacy.

[55] The response category was a visual analog featuring a 10 centimeter response line anchored by the terms 1 = "Not true at all" to 5 "Very true." The possible range of the scale ranged from 0 to 310. Cronbach's alpha = .92 which is considered excellent by DeVellis (`1991). The greatest break in eigenvalues is between the first (9.7) and second (2.4) factors (a difference of 7.3) which indicate a unidimensional construct.

Table A1 (continued). *Parental Management Measures*

Lynskey-Peterson et al. (2000)

Conceptualization

Parental attachment refers to the closeness of the parent-child relationship. (Cronbach's alpha = not reported for the parental attachment scale. Maternal attachment achieved a very good Cronbach's alpha = .84 and paternal attachment a very good Cronbach's alpha = .88).

Operationalization

1. I can/can't talk to my mother/father about anything.
2. My mother/father always/never trusts me.
3. My mother/father knows/does not know all of my friends.
4. My mother/father always/never understands me.
5. I always/never ask my mother/father for advice.
6. My mother/father always/never praises me when I do well.

7 6 5 4 3 2 1

Conceptualization

Parental monitoring is conceptualized as knowing the whereabouts of your children. (Cronbach's alpha = 73; respectable)

Operationalization

1. When I go someplace, I leave a note for my parents or call them to let them know where I am.
2. My parents know where I am when I am not at home or at school.
3. I know how to get in touch with my parents if they are not at home.
4. My parents know who I am with if I am not at home.

Strongly Disagree	Disagree	Neither disagree nor agree	Agree	Strongly Agree
1	2	3	4	5

Polakowski (1994)[56]

Conceptualization

Parental management (supervision) refers to parents' watchfulness and strictness of rules.

Operationalization

Supervision/Monitoring

1. Social workers assessment of parental watchfulness (actual item not reported).
2. Social workers report of parental strictness of rules (actual item not reported).

Sorensen & Brownfield (1995)

Conceptualization

Parental management (socialization) is conceptualized as parents' recognition, ability, and willingness to punish their children's deviant behavior.

Operationalization

Parental Supervision

1. As far as my father is concerned, I am pretty much free to come and go as I please.

Unnever et al. (2003)[57]

Conceptualization

Parental management refers to monitoring and consistent punishment of the child.

Operationalization

Monitoring (Cronbach's alpha = .75; respectable)

1. How often does your mother know who you are with when you are way from home?
2. How often does your mother know who you are with when you are way from home?
3. How often does your father know where you are when you are away from home?
4. How often does your father know where you are when you are away from home?

Never			Always
1	2	3	4

Consistent Discipline (Single-item measure)

5. How often does/do your parent or parents (guardians) punish you for something at one time and then at other times not punish you for the same thing?

Never			Always
1	2	3	4

[56] Cronbach's alpha = not reported.

[57] Reliability evaluated using DeVellis' (1991) recommendations.

Table A1 (continued). *Parental Management Measures*

Wright & Beaver (2005)[58]

Conceptualization

Socialization (parental management) is conceptualized as parents who supervise, recognize, and consistently punish childhood transgressions.

Operationalization

Five measures of parenting behaviors are included: parental involvement, parental withdrawal, parental affection, physical punishment and family rules.

Parental Involvement (Cronbach's alpha = .75; respectable)

Conceptualization

Parental involvement refers to the amount of time the parent spends with the child on various activities.

Operationalization

1. How often do you read to your child?
2. How often do you tell stories to your child?
3. How often do you sing songs to your child?
4. How often do you help your child with chores?
5. How often do you help your child with art activities?
6. How often do you play games with your child?
7. How often do you teach your child about nature?
8. How often do you help your child build things?
9. How often do you play sports with your child?
   Number of hours_____

Parental Withdrawal (Cronbach's alpha = .68; minimally acceptable)

Conceptualization

Parental withdrawal refers to the degree to which parents retreat from, or hold unfavorable attitudes toward, their child.

Operationalization

1. I am too busy to play with my child.
2. I have difficulty being warm with my child.
3. Being a parent is harder than I anticipated.
4. My child does things that bother me.
5. I have to sacrifice to meet my child's needs.
6. I feel trapped as a parent.
7. I often feel angry with my child.
8. My child is hard to care for.
9. Being a parent is more work than pleasure.
   (0) No (1) Yes

Parental Affection (Cronbach's alpha = .59; unacceptable)

Conceptualization

Parental affection is defined as the degree of affection between the child and the parent**.**

Operationalization

1. We spend warm, close time together.
2. My child likes me.
3. I always show love for my child.
4. I express affection to my child.
   (0) No (1) Yes

Physical Punishment (Cronbach's alpha = not reported)

Conceptualization

Physical punishment refers to the physical punish of the child.

Operationalization

1. What would you do if your child were to hit you?
   a. Hit the child back; or
   b. Spank the child.

Family Rules (Cronbach's alpha = .58; unacceptable)

Conceptualization

Family rules refer to the rules within the home.

Operationalization

1. Are there family rules for which television programs your child can watch? (0) No (1) Yes
2. What number of hours is your child permitted to watch television? Number of hours _____
3. How late or early is your child allowed to watch television?

[58] Reliabilities evaluated using DeVellis' (1991) recommendations.

Polakowski (1994) was the first to include measures of parental management (supervision) in an effort to go beyond previous tests of Gottfredson and Hirschi's (1990) general theory. His conceptualization of parental supervision is taken partly from Hirschi's (1969) conceptualization of parental attachment, which includes the elements of parental supervision and monitoring. He also indicates that his conceptualization of parental supervision is taken from Matsueda (1982) who conceptualizes parental supervision as "a parent's knowledge of the whereabouts of his/her child" (Polakowski, 1994, p. 53). But Polakowski's operationalization of parental supervision is broader than Hirschi's or Matsueda's conceptualizations in that it includes not only a measure of parental watchfulness, but a measure of parental strictness of rules (see Table A1). Therefore, Polakowski's measure of parental supervision comes closer to Gottfredson and Hirschi's conceptualization of parental management because it actually includes measures of both monitoring and discipline. However, it is readily apparent that the inclusion of two items does not adequately cover the content domain of parental management as described by Gottfredson and Hirschi. For example, Polakowski's (1994) measure does not include any items that measure parental recognition of deviant behavior. This limitation is largely a function of using a secondary data set whose measures were not specifically designed to tap the concept of parental management.

The primary strength of Polakowski's (1994) measure of parental supervision is that it is gathered from an independent source. As noted, self-reports commonly suffer from response bias. And Wright and Beaver (2005, p. 1178) point out that "parental reports, although used widely, are slightly less reliable than information gathered from other sources." For that reason, Polakowski includes two indicators of parental

supervision that are obtained from social workers observations of parent's watchfulness and strictness of rules. Unfortunately, Polakowski (1994) does not report the reliability of his measure.

Like Polakowski's (1994) measure, Unnever et al.'s (2003) conceptualization of parental management includes two elements: monitoring and consistency of punishment. Even though Gottfredson and Hirschi (1990) indicate that recognition of deviant behavior is an important component of parental management, Unnever and his associates do not include it. Still their conceptualization of parental management is, for the most part, consistent with Gottfredson and Hirschi's description of parental management. But their operationalization of parental management is inconsistent with Gottfredson and Hirschi's (1990) description.

To be more precise, Gottfredson and Hirschi (1990) indicate that parental management is a single, unitary construct that includes monitoring and disciple. Unnever et al. (2003) use separate measures of monitoring and discipline instead of one global concept of parental management. That is, they operationalize monitoring using a 4-item scale that is designed to assess how effectively parents or guardians monitor the behavior of their children (e.g., "How often does/do your parents or guardians know who you are with when you are away from home?"). The reliability of their monitoring scale is considered respectable (Cronbach's alpha = .75) (Carmines & Zeller, 1979; DeVellis, 1991). Consistency of punishment is measured using a single item (e.g., "How often does/do your parent or parents (guardians) punish you for something at one time and then at other times not punish you for the same thing?") (see Table A1). Single item measures

are rarely, if ever, considered sufficient for capturing the full content domain of a concept (Converse & Presser, 1986; DeVellis, 1991; Sullivan & Feldman, 1979).

Similar to Polakowski (1994) and Unnever et al. (2003), Hay (2001) identifies monitoring and discipline as the primary elements of parental management. Hay does note that his measure falls short of Gottfredson and Hirschi's (1990) conceptualization of parental management because "no items on whether parents recognize deviant behavior when it occurs" are included (p. 715). Hay also uses separate measures for monitoring and discipline. Monitoring consists of eight items that ask respondents to indicate how much they agree (completely disagree to completely agree) with whether their mothers/fathers keep close track of them, know most or all of their friends, are clear about rules they must follow, and make an effort to know if they are following the rules (see Table 29). The internal consistency of the measure is fairly good (Cronbach's alpha = .79) (DeVellis, 1991). Discipline includes four items that ask respondents how much they agreed with whether their parents found out they had done something wrong, she/he would do something to prevent it from occurring in the future, and how likely their parents would do nothing at all (see Table A1). The internal consistency of the discipline measure is considered unacceptable for research purposes (Cronbach's alpha = .45) (Carmines & Zeller, 1979; DeVellis, 1991). Hay (2001) indicates that the low internal consistency is partly the result of low inter-item correlations (lower than expected correlations between the items for mothers and fathers). Additionally, the low reliability of the discipline measures is most likely a function of the limited number of items in the measure (see Converse & Presser, 1986; DeVellis, 1991; Sullivan & Feldman, 1979).

Hay (2001) goes on to argue that an inherent problem with Gottfredson and Hirschi's (1990) conceptualization of parental management is that it is rather narrow. As a result, he includes a measure of "authoritative parenting" developed by Baumrind (1996) that he argues is a much broader conceptualization of parenting. Specifically, Baumrind's (1996) measure consists of four variables (with multiple items): (1) parental acceptance and involvement in their children's lives; (2) the degree to which parents facilitate their children's psychological autonomy; (3) the extent to which parents use fair discipline; and (4) the use of non-corporal punishment (see Table A1). Hay reports that his measures achieve good reliabilities ranging from .77 to .88.

At first glance, it seems that Baumrind's (1996) parenting concept is broader than Gottfredson and Hirschi's (1990) parental management construct. However, on closer inspection it is easy to see that most of Baumrind's parenting concepts overlap conceptually with Gottfredson and Hirschi's (1990). For example, like Baumrind, Gottfredson and Hirschi (1990) advocate fair, non-corporal punishment. As a matter of fact, Gottfredson and Hirschi (1990) indicate that parental sanctions need not be "corporal." On the contrary, "effective punishment by the parent…usually entails nothing more than explicit disapproval of unwanted behavior" (Gottfredson & Hirschi, 1990, p. 100). In addition, similar to Baumrind, Gottfredson and Hirschi (1990, p. 98) claim that "parental concern for the welfare or behavior of the child is a necessary condition for successful child-rearing." Thus, for Hay (2001) to argue that the two parenting measures are conceptually distinct seems somewhat misleading.

In a study conducted by Lynskey-Peterson et al. (2000), they define parenting using two concepts: parental attachment and parental monitoring. Parental attachment is

a key component of parental management. As noted, Gottfredson and Hirschi (1990) argue "parental concern for the welfare or behavior of the child is a necessary condition for successful child-rearing" (p. 98). However, the parental attachment component of self-control theory has received less empirical attention than the monitoring and discipline components.

Lynskey-Peterson et al. (2000) define parental attachment as the closeness of the parent-child relationship. Parental attachment consists of two measures: maternal and paternal attachment. Both measures include six items each (e.g., "My mother/father always/never understands me;" "My mother/father always/never trusts me;" and "I always/never ask my mother/father for advice") (see Table A1). Both measures are reliable indicators with an internal consistency of .84 for the maternal attachment scale and an internal consistency of .88 for the paternal attachment scale. The reliability of the composite parental attachment measure is not reported.

Lynskey-Peterson et al. (2000) conceptualize parental monitoring as parents knowing the whereabouts of their children. Their measures includes four supervision items (e.g., "I know how to get in touch with my parents if they are not at home;" and "My parents know who I am with if I am not at home"). Even though they include a small number of items, the measure achieves a fairly good level of internal consistency (Cronbach's alpha = .73).

Wright and Beaver (2005) indicate that their conceptualization of parental management comes from Gottfredson and Hirschi's (1990) discussion of the child rearing model. Based on Gottfredson and Hirschi's (1990) discussion, Wright and Beaver (2005) identify three components of parental management: (1) parental supervision; (2)

recognition of deviant behavior; and (3) the application of consistent punishment. However, Wright and Beaver (2005) indicate that, because of the limitations associated with using measures obtained from a secondary data set, they are unable to measure all of the parenting variables identified by Gottfredson and Hirschi (1990) (i.e., recognition of deviant behavior).

In operationalizing parental management, Wright and Beaver (2005) include five measures of parenting behaviors: parental involvement, parental withdrawal, parental affection, physical punishment, and family rules (see Table A1). The reliability coefficients range from .58 (unacceptable) to .75 (respectable) (DeVellis, 1991). The scales with the fewest items achieved the lowest internal consistency. For example, the variable "family rules" had three items and achieved a reliability of .58. The variable "parental affection" that included four items reached a reliability of .59. While Wright and Beaver (2005) do not offer any insight as to why the reliability of some of their scales are so low, as previously indicated, measures with fewer items tend to be less reliable (Carmines & Zeller, 1979; DeVellis; Sullivan & Feldman, 1979).

Feldman and Weinberger (1994) propose yet another conceptualization of parenting but it is not specifically guided by Gottfredson and Hirschi's (1990) discussion of parental management. Although Feldman and Weinberger's conceptualization is not taken from Gottfredson and Hirschi (1990), their definition matches up well with Gottfredson and Hirschi's (1990) parental management concept. For example, Feldman and Weinberger (1994) define parenting (parental management) as the child rearing practices used in the home that includes three primary areas: inconsistency, rejection versus child-centeredness, and assertive/harsh discipline. Inconsistency refers to the

extent to which parents arbitrarily alter their parenting due to extraneous factors. Gottfredson and Hirschi (1990) also indicate that consistency is a key element of successful child rearing. Rejection versus child-centeredness is the extent to which child feels that he or she is valued or a priority in the lives of their parents. This similar to Gottfredson and Hirschi's (1990) concept of emotional attachment or investment in the child. Assertive/harsh discipline is the extent to which parents wield power over the child in an authoritarian or overt way. Gottfredson and Hirschi (1990) also indicate that parents need not use intimidation as a parenting tactic, but should instead use proportionate (non-physical) punishment.

Feldman and Weinberger (1994) developed a 30-item measure (i.e., Weinberger Parenting Inventory) of parenting (all of the items were not reported) (see Table A1). The measure included items such as, "Whether she or he punishes me often depends on what mood she or he is in;" "She or he is easy on me one minute, and hard on me the next;" "She or he makes me feel that I am being bossed around;" "She or he sometimes throws things or hits me when she or he is angry over something I have done;" "She or he gives up a lot of things to make sure I am happy;" and "She or he enjoys staying home with me more than going out with friends." The reliabilities of the measures ranged from .76 to .85, which are considered fairly reliable indicators (DeVellis, 1991). However, the internal consistency of the composite measure of parenting is not reported.

To date, Giever (1995) is the only researcher to develop a measure that is derived directly from Gottfredson and Hirschi's (1990) description of parental management (see also Gibbs et al., 1998; Higgins, 2001). Because Gottfredson and Hirschi (1990) relied upon Gerald Patterson and his colleagues at the Oregon Learning Center in developing

their concept of parental management, Giever did the same. He indicates that his reliance on the work of Patterson and his associates was necessary because Patterson offers a more detailed conceptualization of parental management than Gottfredson and Hirschi (1990).

Patterson and his colleagues focused their efforts on two areas of parental management: monitoring and discipline (Capaldi & Patterson, 1991; Dishion, Patterson, Stoolmiller, & Skinner, 1991; Larzelere & Patterson, 1990; Patterson, Chamberlain & Reid, 1982; Patterson, DeBaryshe, & Ramsey, 1989; Patterson & Dishion, 1985; Snyder & Patterson, 1987). Patterson and Dishion (1985) conceptually define parental monitoring as, ". . . the extent the parent is aware of the child's whereabouts, his deviant behavior in and outside of home, and the degree the parent supervises the child's activity" (p. 69). Discipline refers to ". . .the parents' backing up their threats, controlling their anger, being consistent regardless of mood, being consistent with each other, being firm, and using reasoning" (Larzelere & Patterson, 1990, p. 317).

Like Patterson and his associates, Giever's (1995) measures of parental management consisted of two broad domains: supervision and discipline. The items in the Giever scales focused on the home environment in general, rather than the actions of a particular parent or adult in the household. The goal was to capture the general style of parental management which took place in the respondents' homes. They focused on the respondents' ninth grade or freshmen year in high school as a reference point. They claim that the first year of high school is a good reference point because it is a transition period in the respondent's life and, as such, it might have particular salience:

> We selected ninth grade or freshman year in high school as our measurement reference point because we think that this is a juncture at which many parental management issues come sharply into focus. It may be the point closest to our respondent's current ages for which parental practices and policies are most clearly remembered because they have such salience during what is considered by many a period of transition and testing. At this age, children may be more likely than during other periods in their lives to carefully and critically scrutinize their parents' monitoring and disciplinary practices, and we assume, remember them better than at other ages (Gibbs et al., 1998, p. 51).

Giever (1995) developed a 40-item parental management scale. Giever parental management scale includes parental supervision measures (e.g., "When I was in 9th grade, an adult in my house knew where I was when school was out;" "When I was in 9th grade, if I was going to sleep over at a friend's house, one of my parents would check on the plan with my friend's parents;" and "No one in my house was really that concerned about what time I got home on weekend nights") and parental discipline measures (e.g., "In my house, if you were told that you would get punished for doing certain things, and you got caught doing one, you definitely got punished;" "In my house, whether or not I got punished for something usually depended on the mood of my parent(s);" and "If you broke one of the rules and got caught, you got punished in my house") (see Table A1). Giever's parental management scale achieves an excellent level of internal consistency (Cronbach's alpha = .91).

Appendix B

Pretest Survey Instrument

Dear Student:

You are invited to participate in a research study. You are eligible to participate because you are a student in a class at this university that has been selected for data collection. The following information is provided in order to help you to make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask.

Unfortunately, if you are not 18 years of age or older, you cannot participate in this study. Please follow the directions for non-participation that will be described presently.

The purpose of this study is to explore the connection between personal factors and self-reported deviance. You will be asked to provide information on your personal characteristics, past behavior, current views and opinions, and how you think you would think and act in a hypothetical situation.

The survey is anonymous; this means it does NOT require your name or any other identifying information (e.g., social security number or student identification number). The information you provide cannot be associated with you. The level of risk associated with this research study is minimal. There is very little chance that participation will result in any negative effects for you.

Your participation in this study is completely voluntary and is not considered part of the course you are taking. Participation or non-participation will not affect the evaluation of your performance in this class. You are free to decline to participate in this study or to withdraw at any time without adverse effects. Your decision will not result in any loss of benefits to which you are otherwise entitled. If you choose to participate, and subsequently decide you would rather not, you may withdraw at any time by simply ceasing to provide further information and handing in an incomplete questionnaire at the end of the session. If you choose to participate, your participation will have no bearing on your academic standing or services you receive from the University.

The survey is anonymous and therefore cannot be used to identify particular individuals. The information you provide will be considered only in combination with that of other respondents. The aggregate, combined, or summary information obtained in the study may be published in academic journals or presented at academic meetings.

Completing the attached questionnaire indicates your consent to take part in this project. If you do not want to participate, please return the blank questionnaire at the end of the data collection period.

Thank you for your time.

Sincerely,

John J. Gibbs

John J. Gibbs, PhD
Professor

This project has been approved by the Indiana University of Pennsylvania Institutional Review Board for the Protection of Human Subjects (Phone: 724-357-7730).

PART I

Please answer the following questions about your personal characteristics and behavior.

1. What is your gender? Female_____ Male_____

2. What was your age at your last birthday? _____

3. What is your class status?

Freshman	_____
Sophomore	_____
Junior	_____
Senior	_____

4. What is your primary race/ethnicity?

African American/Black	_____
Asian	_____
Hispanic	_____
White	_____
Other (please specify)	_____

5. Which of the arrangements below best describes the household in which you lived most of the time while growing up?

Two-parent household	_____
Single parent, mother head of household	_____
Single parent, father head of household	_____
Other (please specify below)	_____

6. What is your current living arrangement?

Home	_____
Residence Hall or Dorm	_____
Apartment or House	_____
Fraternity or Sorority	_____
Other (please specify below)	_____

7. What was your high school average?

A _____
B _____
C _____
D _____

8. How many credit hours are you taking this semester? _____

9. What is your cumulative grade point average? _____

10. Are you registered to vote?

No _____

Yes _____

11. Are you a member, pledging, or planning to pledge a fraternity or sorority?

No _____

Yes _____

12. Are you a regular member of a service association or organization whose central purpose is to help people in the local community (e.g., Big Brothers and Sisters)?

No _____

Yes _____

13. Are you a member of a campus club, association, society, or other organization that is focused on career interests and/or academics?

No _____

Yes _____

14. Do you participate in student government, e.g., student senate, or a student political organization, e.g., Young Republicans, Student Democrats, or Student Green Party?

No _____

Yes _____

15. Are you actively involved in a faith-based student organization such as Student Christian Organization (SCO), Student Jewish Organization (SJO), or Muslim Student Association (MSA)?

No _____

Yes _____

16. Are you a member of an intercollegiate sports team?

No _____

Yes _____, if yes, please list the team(s) on which your play:

_____

_____

_____

_____

17. How often do you watch the Daily Show or the Colbert Report?

Never _____
Occasionally _____
Frequently _____
Regularly _____

18. Other than sports and weather, how often do you watch news on TV; read newspapers, news magazines, or news on the Internet; and/or listen to the news on the radio?

Never _____
Occasionally _____
Frequently _____
Regularly _____

19. How often do you listen to National Public Radio (NPR) or watch TV shows on the Public Broadcasting Channel (PBS)?

Never _____
Occasionally _____
Frequently _____
Regularly _____

20. How often do you keep up with sports results by way of TV, radio, newspaper, magazine, and/or Internet?

Never	_____
Occasionally	_____
Frequently	_____
Regularly	_____

21. How often do you keep up with the latest trends, styles, and fashions by way of TV, radio, newspaper, magazine, and/or Internet?

Never	_____
Occasionally	_____
Frequently	_____
Regularly	_____

22. Other than books assigned for courses, how many books have you read in the last year?

None	_____
One or Two	_____
Several	_____
Many	_____

23. How many hours a day do you typically watch TV?

_____

24. On an average day, how many hours do you spend for your **entertainment** on websites, social networks, instant messaging, and texting and talking on your cell?

_____

25. Approximately how many hours a day do you spend playing electronic games?

_____

26. What is the highest number of alcoholic drinks you consumed on **any single night from last Thursday through Saturday night**? (If you didn't drink, please enter 0).

Number of drinks _____

27. What is the most alcohol you consumed on any **single night from last Sunday through Wednesday**?

Number of drinks _____

28. How many times in the **last two (2) weeks** did you drink to the point that you don't remember some part of the night?

Number of times _____

29. How many times in the **last two (2) weeks** did you consume *4 or more* drinks within *2 hours* if you are a ***female*** and *5 or more* drinks within *2 hours* if you are a ***male***? (Enter 0 for none).

Number of times _____

30. How many times did you cheat on exams, quizzes, and other assignments when you were in grades 9 through 12?

None _____
One or Two _____
Several _____
Many _____

31. In the space provided below please indicate, how many times you have committed each of the following acts since you've been in college.

Copied answers from another student during an exam:

None _____
One or Two _____
Several _____
Many _____

Used notes to cheat on an exam or quiz:

None _____
One or Two _____
Several _____
Many _____

Had someone text you answers on your cell or used a similar method:

None _____
One or Two _____
Several _____
Many _____

Submitted a paper as your own that was written by someone else, including papers bought from term paper services:

None _____
One or Two _____
Several _____
Many _____

Copied material directly from an Internet website and submitted the work as your own:

None _____
One or Two _____
Several _____
Many _____

32. How many times in the **last two (2) weeks** have you missed class for what the average professor would consider a legitimate reason (e.g., real illness, family emergency)?

Number of times _____

33. How many times in **the last two (2) weeks** have you **cut** or skipped class?

Number of cuts (unexcused absences) _____

34. How many total hours of class did you miss because of **cuts** in **the last two (2) weeks?**

Total hours missed _____

35. How often do you use tobacco (smoke, dip, or chew)? (check one category)

Never _____
Occasionally _____
Regularly/Habitually _____

36. How many jobs have you had since you were 16?

None _____
One or Two _____
Several _____
Many _____

37. How many jobs have you quit without giving at least 2 weeks notice?

None _____
One or Two _____
Several _____
Many _____

38. How many jobs have you been fired from or asked to resign?

None _____
One or Two _____
Several _____
Many _____

39. How many times have you been involved in a car accident while you were driving?

None _____
One or Two _____
Several _____
Many _____

40. How many sexual partners have you had in your life?

None _____
One or Two _____
Several _____
Many _____

41. How many times have you had unprotected sex?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

42. How many times have you had casual sex or what some people call a "one-night stand" or "weekend fling"?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

Studies have found that almost everyone breaks some rules and regulations during their lifetime. Some break them regularly, others less often. Below are some examples. Please indicate how often during your LIFETIME that you have done the following:

43. How many times have you intentionally not paid for something, such as food in a restaurant or an admission fee for entertainment?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

44. How many times, not counting immediate family members, have you used someone else's credit card, debit card, or checkbook without permission?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

45. How many times have you stolen cash or an item (tangible property) worth less than $50?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

46. How many times have you stolen cash or an item (tangible property) worth $50 or more?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

47. How many times have you written a bad check on purpose?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

48. How many times, not counting immediate family, have you borrowed money from someone when you knew you would probably never repay them?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

49. How many times, not counting immediate family members, have you taken someone's car or other motor vehicle without their prior knowledge and permission?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

50. How many times have you damaged someone else's property on purpose?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

51. Not counting fights you may have had with a brother or sister or in sports, like hockey, how many times have you beaten up someone or physically hurt someone on purpose?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

52. How many times have you used a weapon with the intention to threaten or hurt someone?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

53. Other than hunting or fishing, how many times have you intentionally injured an animal?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

54. How many times have you smoked marijuana?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

55. How many times have you used cocaine, crack, or methamphetamines?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

56. How many times have you used heroin?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

57. How many times have you used hallucinogens like LSD, mescaline, or ecstasy?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

58. How many times have you purposely gotten high using more than the recommended amount of prescription painkillers (e.g., Tylenol with Codeine, Percocet, Vicodin, and/or OxyContin)?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

59. How many times have you read someone else's e-mails, instant messages, or cell texts without their permission?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

60 How many times have you intentionally copied and sent to others copyright protected materials like computer software programs (not shareware), movies, and/or video games?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

61. How many times have you used the identity of another person or a made-up identity in e-mails, blogs, chatrooms, or elsewhere on the Internet?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

PART II

Please place a vertical slash mark between **"Strongly Disagree"** and **"Strongly Agree"** on the line below each statement to indicate to what extent the statement reflects your feelings and/or opinions.

The meaning of parents is intended to represent the parent or parents with whom you lived when growing up. Depending on your situation, it can mean either your mother or father, both of them, or another legal guardian

It's important that you respond to all statements.

62. I care a lot about what my parents think of me.

Strongly Strongly
Disagree_____Agree

63. Grades are important to me.

Strongly Strongly
Disagree_____Agree

64. If I lost the respect of my parents, I would be very upset.

Strongly Strongly
Disagree_____Agree

65. What my professors think of me matters a lot to me.

Strongly Strongly
Disagree_____Agree

66. It is very important to me to be the respected by friends whose values I respect.

Strongly Strongly
Disagree_____Agree

67. I feel I can talk to my parents about most things.

Strongly Strongly
Disagree_____Agree

68. Generally, I have a lot of respect for my professors.

Strongly Strongly
Disagree_____Agree

69. I value the opinion of my parents about most things.

Strongly Strongly
Disagree_____Agree

70. In most cases, if I hurt the feelings of a friend, it would bother me a great deal.

Strongly Disagree_____Strongly Agree

71. Most of my friends place great importance on graduating from college.

Strongly Disagree_____Strongly Agree

72. I would be very upset if I did something to let down my parents.

Strongly Disagree_____Strongly Agree

73. Graduating from college is a very high priority for me.

Strongly Disagree_____Strongly Agree

74. If a professor expressed disappointment in me, I would be disappointed in myself.

Strongly Disagree_____Strongly Agree

75. My parents' respect means a great deal to me.

Strongly Disagree_____Strongly Agree

76. The opinion of me held by friends I respect matters a lot to me.

Strongly Disagree_____Strongly Agree

77. I have such a close relationship with my parents that I wouldn't want to do anything to jeopardize it.

Strongly Disagree_____Strongly Agree

78. I like most of my professors.

Strongly Disagree_____Strongly Agree

79. My parents are pretty well informed about what is happening in my life.

Strongly Disagree_____Strongly Agree

80. Most of my friends plan adequate time to complete course assignments.

Strongly Disagree_____Strongly Agree

81. I can honestly say that I've tried to do my best in college.

Strongly Disagree_____Strongly Agree

82. I've taken steps to find out about careers and/or further education in fields that interest me.

Strongly Disagree_____Strongly Agree

83. I have a great deal of admiration for my parents.

Strongly Disagree_____Strongly Agree

84. My parents consider me trustworthy.

Strongly Disagree_____Strongly Agree

85. Doing well in school is important to most of my friends.

Strongly Disagree_____Strongly Agree

86. Right now, most of my energy is focused on getting my education.

Strongly Disagree_____Strongly Agree

87. I usually schedule enough time to prepare well for exams.

Strongly Disagree_____Strongly Agree

88. I take school seriously.

Strongly Disagree_____Strongly Agree

89. School is **not** very important to most of my friends.

Strongly Disagree_____Strongly Agree

90. Most of my close friends are ready to party 24/7.

Strongly Disagree_____Strongly Agree

91. I consider college mostly a waste of my time.

Strongly Disagree_____Strongly Agree

92. A lot of my friends plan on dropping out of college or already have dropped out.

Strongly Disagree_____Strongly Agree

93. I go out or spend time hanging with friends even when I have an exam the next day.

Strongly Disagree_____Strongly Agree

94. Most of my friends frequently cut classes.

Strongly Disagree_____Strongly Agree

95. Most of my friends think it's okay to cheat on an exam or class assignment.

Strongly Disagree_____Strongly Agree

96. Copying something from the Internet for a paper and presenting it as your own words and ideas is not a big deal.

Strongly Disagree_____Strongly Agree

97. Rules restricting alcohol use on campus should **not** be strictly enforced.

Strongly Disagree_____Strongly Agree

98. There are some circumstances in which it is okay to cheat on an exam.

Strongly Disagree_____Strongly Agree

99. Dishonesty is frequently the best policy in dealing with professors.

Strongly Disagree_____Strongly Agree

100. There are a number of situations in which it is okay to lie.

Strongly Disagree_____Strongly Agree

101. Even though it is technically illegal, underage drinking when you are a college student should not be considered serious.

Strongly Disagree_____Strongly Agree

102. Marijuana possession and use is against the law, but authorities should let it go when a few friends get together to smoke.

Strongly Disagree_____Strongly Agree

103. Law enforcement officers should look the other way when people exceed a posted speed limit of 55 mph by 10 mph.

Strongly Disagree_____Strongly Agree

104. Although it's a violation of the law to drink and drive, the police should let you off when you're just a little over the legal limit.

Strongly Disagree_____Strongly Agree

105. You should be able to do what you want in your apartment, house, or dorm room.

Strongly Disagree_____Strongly Agree

106. If you have a chance to get around rules and regulations, you should take it.

Strongly Disagree_____Strongly Agree

107. You should look out for yourself before you worry about anyone else.

Strongly Disagree_____Strongly Agree

108. I believe rules were made to be broken.

Strongly Disagree_____Strongly Agree

109. Doing the right thing is always more important than getting what you want.

Strongly Disagree_____Strongly Agree

110. I am a person with a lot of self-control.

Strongly Disagree_____Strongly Agree

111. I usually think of future consequences before I act.

Strongly Disagree_____Strongly Agree

112. You should take your pleasure where and when you can get it.

Strongly Disagree_____Strongly Agree

113. I plan my life pretty carefully.

Strongly Disagree_____Strongly Agree

114. If you want to have fun, you have to be willing to take a few chances.

Strongly Disagree_____Strongly Agree

115. I try to look out for myself first, even if it makes things difficult for others.

Strongly Disagree_____Strongly Agree

116. When I'm mad at someone, I frequently yell or throw things rather than discuss the problem.

Strongly Disagree_____Strongly Agree

117. I can be pretty quick to anger.

Strongly Disagree_____Strongly Agree

118. I seldom give in to impulses or desires of the moment.

Strongly Disagree_____Strongly Agree

Please go to the next page to complete the last part of the survey.

PART III

Please read the following scenario carefully and imagine yourself in the situation.

It is late Sunday night. After checking with everyone you know for the kind of batteries you need for a recording device to complete an important assignment due Monday morning, you go to a convenience store.

You get to the store just about closing time, and you discover that you do not have enough cash to pay for the batteries. You know you've reached the limit on your credit card, your debit card balance is zero, and the store doesn't accept checks.

The clerk is busy getting ready to close, and you don't see any video cameras or other security devices. You've heard that a number of students have taken small items from the store, and they didn't get caught. You can easily slip the batteries into your pocket and buy a candy bar with the little cash you have to avoid suspicion. You have to quickly decide whether or not to take the batteries.

1. On a scale ranging from 0 percent (Very Unlikely) to 100 percent (Very Likely), what is the probability that you would take the batteries?

   _____ (percentage)

2. Please list the factors, concerns, or things that you would think about or consider in deciding whether or not to take the batteries. *(Use the back of this page if you need more space).*

   1. _____
   2. _____
   3. _____
   4. _____
   5. _____
   6. _____
   7. _____
   8. _____
   9. _____
   10. _____

Thank you for your time. If you have any comments or concerns, let us know.

Appendix C

Survey Instrument

Dear Student:

You are invited to participate in a research study. You are eligible to participate because you are a student in a class at this university that has been selected for data collection. The following information is provided in order to help you to make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask.

Unfortunately, if you are not 18 years of age or older, you cannot participate in this study. Please follow the directions for non-participation that will be described presently.

The purpose of this study is to explore the connection between personal factors and self-reported deviance. You will be asked to provide information on your personal characteristics, past behavior, current views and opinions, and how you think you would think and act in a hypothetical situation.

The survey is anonymous; this means it does NOT require your name or any other identifying information (e.g., social security number or student identification number). The information you provide cannot be associated with you. The level of risk associated with this research study is minimal. There is very little chance that participation will result in any negative effects for you.

Your participation in this study is completely voluntary and is not considered part of the course you are taking. Participation or non-participation will not affect the evaluation of your performance in this class. You are free to decline to participate in this study or to withdraw at any time without adverse effects. Your decision will not result in any loss of benefits to which you are otherwise entitled. If you choose to participate, and subsequently decide you would rather not, you may withdraw at any time by simply ceasing to provide further information and handing in an incomplete questionnaire at the end of the session. If you choose to participate, your participation will have no bearing on your academic standing or services you receive from the University.

The survey is anonymous and therefore cannot be used to identify particular individuals. The information you provide will be considered only in combination with that of other respondents. The aggregate, combined, or summary information obtained in the study may be published in academic journals or presented at academic meetings.

Completing the attached questionnaire indicates your consent to take part in this project. If you do not want to participate, please return the blank questionnaire at the end of the data collection period.

Thank you,
Kimberly D. Dodson
Kimberly D. Dodson

This project received approval from the IUP Institutional Review Board for the Protection of Human Subjects (Phone: 724-357-7730). If you have questions or concerns please contact me at k.d.dodson@iup.edu. You may also contact the project chair, Dr. Jake Gibbs, at jgibbs@iup.edu or (724) 357-2720.

PART I

Please answer the following questions about your personal characteristics and behavior.

1. What is your gender? Female_____ Male_____

2. What was your age at your last birthday? _____

3. What is your class status?

Freshman	_____
Sophomore	_____
Junior	_____
Senior	_____

4. What is your primary race/ethnicity?

African American/Black	_____
Asian	_____
Hispanic	_____
White	_____
Other (please specify)	_____

5. Which of the arrangements below best describes the household in which you lived most of the time while growing up?

Two-parent household	_____
Single parent, mother head of household	_____
Single parent, father head of household	_____
Other (please specify below)	_____

6. What is your current living arrangement?

Home	_____
Residence Hall or Dorm	_____
Apartment or House	_____
Fraternity or Sorority	_____
Other (please specify below)	_____

7. What was your high school average?

A _____
B _____
C _____
D _____

8. How many credit hours are you taking this semester? _____

9. What is your cumulative grade point average? _____

10. How many times did you cheat on exams, quizzes, and other assignments when you were in grades 9 through 12?

None _____
One or Two _____
Several _____
Many _____

11. In the space provided below please indicate, how many times you have committed each of the following acts since you've been in college.

Copied answers from another student during an exam:

None _____
One or Two _____
Several _____
Many _____

Used notes to cheat on an exam or quiz:

None _____
One or Two _____
Several _____
Many _____

Had someone text you answers on your cell or used a similar method:

None _____
One or Two _____
Several _____
Many _____

Submitted a paper as your own that was written by someone else, including papers bought from term paper services:

None _____
One or Two _____
Several _____
Many _____

Copied material directly from an Internet website and submitted the work as your own:

None _____
One or Two _____
Several _____
Many _____

12. How many times in the **last two (2) weeks** have you missed class for what the average professor would consider a legitimate reason (e.g., real illness, family emergency)?

Number of times _____

13. How many times in **the last two (2) weeks** have you **cut** or skipped class?

Number of cuts (unexcused absences) _____

14. How many total hours of class did you miss because of **cuts** in **the last two (2) weeks?**

Total hours missed _____

15. How often do you use tobacco (smoke, dip, or chew)? (check one category)

Never _____
Occasionally _____
Regularly/Habitually _____

16. How many jobs have you had since you were 16?

None _____
One or Two _____
Several _____
Many _____

17. How many jobs have you quit without giving at least 2 weeks notice?

None _____
One or Two _____
Several _____
Many _____

18. How many jobs have you been fired from or asked to resign?

None _____
One or Two _____
Several _____
Many _____

19. How many times have you been involved in a car accident while you were driving?

None _____
One or Two _____
Several _____
Many _____

20. How many sexual partners have you had in your life?

None _____
One or Two _____
Several _____
Many _____

21. How many times have you had unprotected sex?

None _____
One or Two _____
Several _____
Many _____

22. How many times have you had casual sex or what some people call a “one-night stand” or “weekend fling”?

None _____
One or Two _____
Several _____
Many _____

23. What is the highest number of alcoholic drinks you consumed on **any single night from last Thursday through Saturday night**? (If you didn't drink, please enter 0).

Number of drinks _____

24. What is the most alcohol you consumed on any **single night from last Sunday through Wednesday**?

Number of drinks _____

25. How many times in the **last two (2) weeks** did you drink to the point that you don't remember some part of the night?

Number of times _____

26. How many times in the **last two (2) weeks** did you consume *4 or more* drinks within *2 hours* if you are a ***female*** and *5 or more* drinks within *2 hours* if your are a ***male***? (Enter 0 for none).

Number of times _____

Studies have found that almost everyone breaks some rules and regulations during their lifetime. Some break them regularly, others less often. Below are some examples. Please indicate how often during your LIFETIME that you have done the following:

27. How many times have you intentionally not paid for something, such as food in a restaurant or an admission fee for entertainment?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

28. How many times, not counting immediate family members, have you used someone else's credit card, debit card, or checkbook without permission?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

29. How many times have you stolen cash, goods, or property worth less than $50?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

30. How many times have you stolen cash, goods, or property worth $50 or more?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

31. How many times have you written a bad check on purpose?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

32. How many times, not counting immediate family, have you borrowed money from someone when you knew you would probably never repay them?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

33. How many times, not counting immediate family members, have you taken someone's car or other motor vehicle without their prior knowledge and permission?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

34. How many times have you damaged someone else's property on purpose?

Never _____
Once or Twice _____
Several Times _____
Very Often _____

35. Not counting fights you may have had with a brother or sister when you were a child, how many times have you beaten up someone or tried to physically hurt someone on purpose?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

36. How many times have you used a weapon with the intention to threaten or hurt someone?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

37. Other than hunting or fishing, how many times have you intentionally injured an animal?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

38. How many times have you smoked marijuana?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

39. How many times have you used cocaine, crack, or methamphetamines?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

40. How many times have you used heroin?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

41. How many times have you used hallucinogens like LSD, mescaline, or ecstasy?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

42. How many times have you purposely gotten high using more than the recommended amount of prescription painkillers (e.g., Tylenol with Codeine, Percocet, Vicodin, and/or OxyContin)?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

43. How many times have you read someone else's e-mails, electronic messages, or cell texts without their permission?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

44. How many times have you intentionally copied and sent to others copyright protected materials like computer software programs (not shareware), movies, and/or video games?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

45. How many times have you used the identity of another person or a made-up identity in e-mails, blogs, chat rooms, or elsewhere on the Internet?

Never	_____
Once or Twice	_____
Several Times	_____
Very Often	_____

PART II

Please place a vertical slash mark between **"Strongly Disagree"** and **"Strongly Agree"** on the line below each statement to indicate to what extent the statement reflects your feelings and/or opinions.

The meaning of parents is intended to represent the parent or parents with whom you lived when growing up. Depending on your situation, it can mean either your mother or father, both of them, or another legal guardian.

It's important that you respond to all statements.

46. I care a lot about what my parents think of me.

Strongly Disagree_____Strongly Agree

47. Grades are important to me.

Strongly Disagree_____Strongly Agree

48. If I lost the respect of my parents, I would be very upset.

Strongly Disagree_____Strongly Agree

49. What my professors think of me matters a lot to me.

Strongly Disagree_____Strongly Agree

50. It is very important to me to be respected by friends whose values I respect.

Strongly Disagree_____Strongly Agree

51. I feel I can talk to my parents about most things.

Strongly Disagree_____Strongly Agree

52. Generally, I have a lot of respect for my professors.

Strongly Disagree_____Strongly Agree

53. I value the opinion of my parents about most things.

Strongly Disagree_____Strongly Agree

54. In most cases, if I hurt the feelings of a friend, it would bother me a great deal.

Strongly Disagree_____Strongly Agree

55. Most of my friends place great importance on graduating from college.

Strongly Disagree_____Strongly Agree

56. I would be very upset if I did something to let down my parents.

Strongly Disagree_____Strongly Agree

57. Graduating from college is a very high priority for me.

Strongly Disagree_____Strongly Agree

58. If a professor expressed disappointment in me, I would be disappointed in myself.

Strongly Disagree_____Strongly Agree

59. My parents' respect means a great deal to me.

Strongly Disagree_____Strongly Agree

60. The opinion of me held by friends I respect matters a lot to me.

Strongly Disagree_____Strongly Agree

61. I have such a close relationship with my parents that I wouldn't want to do anything to jeopardize it.

Strongly Disagree_____Strongly Agree

62. I like most of my professors.

Strongly Disagree_____Strongly Agree

63. My parents are pretty well informed about what is happening in my life.

Strongly Disagree_____Strongly Agree

64. Most of my friends plan adequate time to complete course assignments.

Strongly Disagree_____Strongly Agree

65. I can honestly say that I've tried to do my best in college.

Strongly Disagree_____Strongly Agree

66. I've taken steps to find out about careers and/or further education in fields that interest me.

Strongly Disagree_____Strongly Agree

67. I have a great deal of admiration for my parents.

Strongly Disagree_____Strongly Agree

68. My parents consider me trustworthy.

Strongly Disagree_____Strongly Agree

69. Doing well in school is important to most of my friends.

Strongly Disagree_____Strongly Agree

70. Right now, most of my energy is focused on getting my education.

Strongly Disagree_____Strongly Agree

71. I usually schedule enough time to prepare well for exams.

Strongly Disagree_____Strongly Agree

72. I take school seriously.

Strongly Disagree_____Strongly Agree

73. School is **not** very important to most of my friends.

Strongly Disagree_____Strongly Agree

74. Most of my close friends are ready to party 24/7.

Strongly Disagree_____Strongly Agree

75. I consider college mostly a waste of my time.

Strongly Disagree_____Strongly Agree

76. A lot of my friends plan on dropping out of college or already have dropped out.

Strongly Disagree_____Strongly Agree

77. I go out or spend time hanging with friends at night even when I have an exam the next morning.

Strongly Disagree_____Strongly Agree

78. Most of my friends think frequent absences from class are okay.

Strongly Disagree_____Strongly Agree

79. Most of my friends think it's okay to cheat on an exam or class assignment.

Strongly Disagree_____Strongly Agree

80. Copying something from the Internet for a paper and presenting it as your own words and ideas is not a big deal.

Strongly Disagree_____Strongly Agree

81. Rules restricting alcohol use on campus should **not** be strictly enforced.

Strongly Disagree_____Strongly Agree

82. There are some circumstances in which it is okay to cheat on an exam.

Strongly Disagree_____Strongly Agree

83. Dishonesty is frequently the best policy in dealing with professors.

Strongly Disagree_____Strongly Agree

84. There are a number of situations in which it is okay to lie.

Strongly Disagree_____Strongly Agree

85. Even though it is technically illegal, underage drinking when you are a college student should **not** be considered serious.

Strongly Disagree_____Strongly Agree

86. Marijuana possession and use is against the law, but authorities should let it go when a few friends get together to smoke.

Strongly Disagree_____Strongly Agree

87. Law enforcement officers should look the other way when people exceed a posted speed limit of 55 mph by 10 mph.

Strongly Disagree_____Strongly Agree

88. Although it's a violation of the law to drink and drive, the police should let you off when you're just a little over the legal limit.

Strongly Disagree_____Strongly Agree

89. You should be able to do what you want to do without restrictions in the apartment, house, or room you rent.

Strongly Disagree_____Strongly Agree

90. If you have a chance to get around rules and regulations, you should take it.

Strongly Disagree_____Strongly Agree

91. You should look out for yourself before you worry about anyone else.

Strongly Disagree_____Strongly Agree

92. I believe rules were made to be broken.

Strongly Disagree_____Strongly Agree

93. Doing the right thing is always more important than getting what you want.

Strongly Disagree_____Strongly Agree

94. I often act on the spur of the moment without stopping to think.

Strongly Disagree_____Strongly Agree

95. I devote much thought and effort to preparing for the future.

Strongly Disagree_____Strongly Agree

96. I often do what brings me pleasure here and now, even at the cost of some distant goal.

Strongly Disagree_____Strongly Agree

97. I am more concerned with what happens to me in the short run than the long run.

Strongly Disagree_____Strongly Agree

98. I frequently try to avoid projects that I know will be difficult.

Strongly Disagree_____Strongly Agree

99. When things get complicated, I tend to quit or withdraw.

Strongly Disagree_____Strongly Agree

100. The things in life that are easiest to do bring the most pleasure.

Strongly Disagree_____Strongly Agree

101. I dislike really hard tasks that stretch my abilities to the limit.

Strongly Disagree_____Strongly Agree

102. I like to test my self every now and then by doing something a little risky.

Strongly Strongly
Disagree_____Agree

103. Sometimes I will take a risk just for the fun of it.

Strongly Strongly
Disagree_____Agree

104. I sometimes find it exciting to do things for which I might get in trouble.

Strongly Strongly
Disagree_____Agree

105. Excitement and adventure are more important to me than security.

Strongly Strongly
Disagree_____Agree

106. If I had a choice, I would almost always rather do something physical than mental.

Strongly Strongly
Disagree_____Agree

107. I almost always feel better when I am on the move rather than sitting and thinking.

Strongly Strongly
Disagree_____Agree

108. I seem to have more energy and greater need for activity than most other people my age.

Strongly Strongly
Disagree_____Agree

109. I try to look out for myself first, even if it means making things difficult for other people.

Strongly Disagree_____Strongly Agree

110. I'm not very sympathetic to other people when they are having problems.

Strongly Disagree_____Strongly Agree

111. If things I do upset people, it's their problem not mine.

Strongly Disagree_____Strongly Agree

112. I will try to get things I want even when it is causing problems for other people.

Strongly Disagree_____Strongly Agree

113. I lose my temper very easily.

Strongly Disagree_____Strongly Agree

114. Often when I'm angry at people, I feel more like hurting them than talking about why I am angry.

Strongly Disagree_____Strongly Agree

115. When I'm really angry, other people better stay away from me.

Strongly Disagree_____Strongly Agree

116. When I have a serious disagreement with someone, it's usually hard for me to talk calmly about it without getting upset.

Strongly Disagree_____Strongly Agree

PART III

Please read the following scenario carefully and imagine yourself in the situation.

It is late Sunday night. After checking with everyone you know for the kind of batteries you need for a recording device to complete an important assignment due on Monday morning, you go to a convenience store.

You get to the store just about closing time, and you discover that you do not have enough cash to pay for the batteries. You know you've reached the limit on your credit card, your debit card balance is zero, and the store doesn't accept checks.

The clerk is busy getting ready to close, and you don't see any video cameras or other security devices. You've heard that a number of students have taken small items from the store, and they didn't get caught. You can easily slip the batteries into your pocket and buy a candy bar with the little cash you have to avoid suspicion. You have to quickly decide whether or not to take the batteries.

1. I would definitely take the batteries.

Strongly Disagree_____Strongly Agree

2. List up to seven "bad things" that might happen if you were to take the batteries. Please rate the importance of each "bad thing" from lowest to highest.

1. _____

Lowest Importance_____Highest Importance

2. _____

Lowest Importance_____Highest Importance

3. _____

Lowest Importance_____Highest Importance

4. _____

Lowest Importance_____Highest Importance

5. _____

Lowest Importance_____Highest Importance

Lowest Importance_____Highest Importance

6. _____

Lowest Importance_____Highest Importance

7. _____

Lowest Importance _____ Highest Importance

(Use additional space below and on back of this page if you need more space).