# GOTTFREDSON AND HIRSCHI'S CONCEPTUALIZATION OF SELF-CONTROL: A CRITIQUE OF MEASURES AND PROPOSALS FOR CHANGE*

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## ABSTRACT

This paper argues that there is a pressing need to improve upon existing measures of Gottfredson and Hirschi's (1990) conceptualization of self-control in order to more accurately test the theory and situate this construct in the larger body of work on self-control and decision-making. With the goal of pushing operationalizations of self-control in new directions, I discuss the theory, highlighting the definition of self-control as the "the tendency to consider (see) the long-term consequences of one's [potential] acts" (Hirschi and Gottfredson, 2008: 220). This is followed by an examination of the weaknesses of the two primary approaches to measuring self-control: attitudinal and behavioral. To redirect work on self-control theory, I argue for a renewed focus on the core cognitive aspect of self-control, turning to psychological work on time perspective for ideas. Finally, I consider how we might join psychological research on self-control to criminological work and the implications this would have for our understanding of crime.

## GOTTFREDSON AND HIRSCHI'S CONCEPT OF SELF-CONTROL: A CRITIQUE OF MEASURES AND PROPOSALS FOR CHANGE

*"[Marcus's] idea is to measure self-control according to the tenets of the theory. I think that…is something we don't do often enough. We tend to ask: What do Gottfredson and Hirschi say?...We should ask what their theories say. Hell, Gottfredson and Hirschi… might have gotten it wrong. Theories have their own life and logic." ~ Hirschi (2002:xxxiv)*

In the twenty-two years since its inception, Gottfredson and Hirschi's (1990) self-control theory (hereafter SCT) has sparked an extraordinary amount of scholarly interest. A General Theory of Crime was the most widely cited work in the top 20 criminology journals in the first five years following its publication (Cohn and Farrington, 1999), and by the end of 2011, the book had been cited more than 4,500 times (Google Scholar, 12/30/11). Hundreds of empirical articles testing aspects of SCT have been published. For the most part, researchers have interpreted the results of their studies as being consistent with, if not providing strong support for, the theory (see reviews in Gottfredson 2006; Pratt & Cullen 2000). Scholars have argued, for example, that low "self-control" is one of the "best," "strongest," and "most reliable" predictors of criminal and delinquent behaviors (e.g., Pratt and Cullen, 2000; Antonaccio and Tittle, 2008); "its relationship to delinquent involvement is a 'fact' for which extant theories must take account" (Unnever et al., 2003: 483); and "future research omitting self-control from its empirical analyses risks being misspecified" (Pratt and Cullen, 2000: 952).

A number of criticisms have accompanied the apparent empirical success of SCT. In particular, there has been a nagging concern about the measurement of the core concept of low self-control, a concern that has recently been deemed the "most pressing and continually unresolved issue of the theory" (Piquero, 2008: 26). Unfortunately, this measurement issue has oft been reduced to a debate between behavioral and attitudinal measures, with Gottfredson and Hirschi preferring

the former and others, including those who see tautology as an issue, preferring the latter (e.g., Akers, 1991; Meier, 1995). In published tests of SCT, which occur with incredible regularity, caveats about measures are invariably included (e.g., Brownfield and Sorenson 1996; Grasmick et al. 1993); yet use of existing measures continues unabated.

This paper contends that the debate over the superiority of attitudinal versus behavioral measures skirts a more fundamental problem. Rather than being a nagging concern, there is a serious disconnect between SCT's conception of self-control and most existing operationalizations of it. SCT's version of self-control is inconsistent with and/or dubiously related to measures predominant in current research. Given that theory testing relies on adequate measurement, this measurement problem obscures the meaning of existing tests of SCT, thereby undermining the claim that Gottfredson and Hirschi's conception of self-control is one of the strongest correlates of crime (see also Marcus 2004). Thus, the present paper argues that we need to temper the supportive language regarding the empirical validity of SCT, rethink the measurement of low self-control, and more clearly capture and isolate SCT's central construct.

To be sure, scholars developing new measures of self-control, particularly initial efforts, should be commended for their efforts (Grasmick et al. 1993; ). These measures were consistent with some of Gottfredson and Hirschi's writings and important for the discipline in facilitating the commencement of tests of a significant theory of crime. Clearly, whatever is captured in the most common measures of self-control *is* one of the strongest known correlates of crime (e.g., Pratt & Cullen 2000). The question this paper asks is whether existing measures of self-control capture the cognitive construct at the heart of the SCT. It answers that they do not, arguing that existing measures have not been shown to be valid indicators of Gottfredson and Hirschi's (1990) concept. Some measures are inconsistent with the basic assumptions of SCT and, hence, are not valid, while others rely on assumptions that researchers are presumably testing (the problem of tautology; Akers,

1991; Tittle, 1995).[1] Thus, this paper argues that before SCT's conception of self-control can be considered one of the strongest correlates of crime, new measures need to be developed that more directly assess this central concept. Given the importance of this construct for the field of criminology, this is an important undertaking.

It is not enough that a theory is consistent with known facts about crime; it must also supply a mechanism for explaining these facts. The mechanism at the heart of SCT is "self-control," defined as "the tendency to consider (see) the long-term consequences of one's [potential] acts" (Hirschi and Gottfredson, 2008: 220). According to the theory, those who are more likely to commit crimes do not consider future consequences; those who tend to refrain from committing crimes do. At present, based on empirical validity, SCT's version of self-control does not deserve the status of one of the strongest known correlates of crime. SCT's version of self-control is not alone in this regard, as other dominant theories in criminology specify mechanisms that are rarely tested directly (e.g., differential association theory's sum of delinquent definitions or labeling theory's internalization of negative self-concept). No other criminological theory's causal mechanism, however, receives the vaunted support that self-control does, nor do many alternative theories have such radical implications for policy or practice (see, e.g., Geis 2008; Piquero 2010). As such, testing the mechanism underlying SCT and getting it right is arguably more urgent for SCT.

Further clarifying the concept of self-control in SCT is important for another reason. Much of the research on SCT occurs in a criminological vacuum. There is a wealth of excellent research in psychology on self-control, time perspectives, and related concepts, which is not being incorporated into most criminological thinking, theory, or research (see Baumeister et al., 2004; de Ridder et al.,

[1] It is certainly the case that self-control may be captured to some degree in these measures. But, to what degree and how does it coexist with constructs or factors inconsistent with SCT, such as preferences for risk? Measures of risk-taking, an element of the most common measures, likely captures some of Gottfredson and Hirschi's concept of self-control, but is potentially equally or more influenced by preferences for risky activities (a motivating factor) and one that has been deemed a personality trait by other theories (e.g., Zuckerman 2007).

2012 for reviews).[2] Psychological research on self-control (a.k.a., self-regulation) is usually mistakenly used in criminology as support for SCT, whereas the more relevant research assessing time perspectives has generally been ignored (e.g., Strathman et al., 1994). To be sure, it is not the position of this paper that psychological theories or measures of self-control are superior to criminological ones, but merely to urge for clarification of the criminological version to facilitate meaningful dialogue between other versions and theories. As discussed in more detail below, psychological conceptions of self-control and related constructs that are interpreted as support for SCT are often based on different conceptualizations undergirded by different assumptions. Thus, clarifying SCT and self-control has implications for linking important criminological work to non-criminological work on time perspectives, distinguishing psychological self-control from SCT's version of self-control, and highlighting areas of overlap.

For these reasons this paper undertakes a clarifying and refocusing mission, with the goal of directing future research towards new measurement approaches. First, I clearly delineate Gottfredson and Hirschi's version of self-control. This detail is necessary both because my criticisms of existing operationalizations of self-control are grounded in the logic of the theory, rather than particular interpretations, including those encouraged by Gottfredson and Hirschi. Next, I describe limitations of existing attitudinal and behavioral approaches. This is followed by a call for a renewed focus on the cognitive aspect of self-control and a new measurement strategy turning to psychological research on time perspectives for direction and ideas. Finally, I consider how we might join psychological research on self-control with criminological research on self-control and the implications this would have for understanding crime.

[2] To be clear, it is not the position of this paper that psychological research on self-control is superior to criminological research on self-control, or that psychological research on self-control is flawless. The lines of research have different aims, and, yet, it is counterproductive for this research to exist largely in isolation from each other, and when combined, to be combined in misguided ways.

Notably, this paper concerns itself with the adequacy of measures of low self-control based on the theory, rather than focusing on the accuracy of the theory, including its assertions about human nature, empirical reality (e.g., stability and versatility), and their resulting implications. Furthermore, while I primarily engage with the original presentation of the theory, clarifications, responses to criticisms, and additional insights by the theory's creators are also incorporated into the discussion. The focus, however, is on the "life and logic" of the theory.

## SELF-CONTROL THEORY[3]

Gottfredson and Hirschi (1990, hereafter G&H) ground their theory in several empirical assertions: (1) that the age-crime curve is invariant and therefore inexplicable (Hirschi and Gottfredson, 1983), (2) individuals vary in their propensities to crime ("criminality"), (3) criminality exists independently of crime, (4) criminality is stable, and (5) offenders do not specialize in particular offenses. Thus, the theory is grounded in the assumptions of crime instability (as a function of age and opportunities only), stable criminality, and versatility. G&H argue that existing theories cannot account for these facts and thus they attempt to develop a new theory that is consistent with these facts and (their view of) the nature of crime.

Rejecting the legal definition, G&H (p.15) define crime as "acts of force and fraud undertaken in the pursuit of self-interest." Following the classical tradition, the theory assumes that humans are rational and pleasure-maximizing actors.[4] "In this view, all human conduct can be understood as the self-interested pursuit of pleasure or the avoidance of pain" (p.5). Thus, human action is determined by hedonic calculus, and people choose to commit acts (crime or non-crime) because the perceived benefits outweigh the perceived costs. Although the theorists emphasize

[3] Unless otherwise noted, the citations reference Gottfredson and Hirschi's (1990) original presentation of the theory.
[4] G&H apparently take the rationality assumption further than the classical theorists did to mean that humans accurately calculate costs and act based on available information. Thus, according to their formulation, humans are rational in the sense that individual behavior is determined by hedonic calculus as well in the sense that individuals are accurate calculators given the information available (given individual's view of the consequences).

individual choice in their theory ("Control theory is a choice theory" G&H 1995:33) the classical theory of human action to which they subscribe stipulates that individual action is determined by hedonic calculus.

Next the theory asserts that criminal acts provide immediate gratification (pleasure) to all but risk more severe long-term punishment ("In all cases, the behavior [crime] produces immediate short-term pleasure to the actor…" p.83). Importantly, SCT assumes that the perception and appreciation of the short-term consequences of acts is invariant across individuals. ("There will be little variability among people in their ability to see the pleasures of crime" p.95). As such, the short-term consequences of crime, which are uniformly seen as pleasurable, motivate all individuals towards the act: "The motive to crime is inherent in or limited to immediate gains provided by the act itself" (p.256). Therefore, as a constant, positive motivation is no longer a necessary element of the theory; short-term, situational motivation to crime is assumed to be ubiquitous. According to the theory, we are all equally (highly) attracted to the immediate, obvious pleasures to be gained from theft, physical assault, rape, and tax evasion. If long-term consequences of behavior were removed, then presumably we would all engage in these immediately gratifying acts.

Focusing on only the short-term consequences of crime, makes the question "why don't we do it?" problematic. However, criminal behavior has both short- and long-term consequences. Due to various sanction systems, including penal/political sanctions, moral (social), religious, and physical sanctions, the criminal act is objectively more costly in the long run ("in all cases, the behavior tends to entail long-term costs"; p.83).[5] Thus, a full appreciation of the consequences of crime results in the pain of crime outweighing the pleasure. Accordingly, criminal acts should be avoided. Since we are rational, utility-maximizing creatures and objectively crime provides more pain than gain, we

[5] G&H identify a class of behaviors that produce immediate gratification at the risk of more costly long-term costs, which are referred to in the literature as "analogous behaviors," for example, smoking, overeating, driving four-wheelers at high rates of speed; however, criminal acts are unique and united by the fact that they involve the risk of long-term negative consequences by the state. ("In our theory the defining feature of crimes is their long-term costs, their negative consequences." (Hirschi and Gottfredson, 2008:220)).

should all choose conformity. (This is, of course, consistent with the fact that most of us choose non-crime in most situations.) Given this state of reality, the theory's explanandum becomes: Why do people choose to act in ways that cause more pain than pleasure? "The mystery is, rather, how some people can ignore or misapprehend the automatic consequences of their behavior, both positive and negative, and thus continue to act as though these consequences did not exist" (Hirschi and Gottfredson 1994:206).

What explains this non-pleasure maximizing behavior (crime) given a pleasure-maximizing choice? G&H looked at the common element in a variety of behaviors and "concluded that the acts that tend to be found together in the behavior of offenders have a common feature: they carry for the individual involved in them the risk of long-term negative consequences. This characterization….suggested a property of individuals as the source and explanation of differential involvement…" (1995:251). To explicate this seemingly non-rational and non-hedonistic behavior, SCT highlights individual differences in time perspectives when considering consequences at the point of decision making. The theory proposes that while perceptions of the short-term consequences of behavior are invariant across individuals, between-individual differences exist in perceptions of long-term consequences. Therefore, the theory's explanans is that variation in the extent to which individuals consider the long-term costs of potential actions accounts for between-individual variation in perceptions of pleasures and pains and thus the choice of crime or non-crime. According to SCT, this individual variation is a continuum. At one end of the spectrum are individuals whose cost-benefit calculations are based on relatively immediate consequences; at the other end are those who consider the full consequences of behavior. Therefore, the former individuals often choose crime because it is immediately gratifying and its (potential) painful consequences are largely distant and not within the realm of their hedonic calculations, whereas the later avoid crime because they are able to appreciate that crime is not utility maximizing. This

individual variable (time perspective in considering the negative consequences of actions) allows pleasure-maximizing individuals to engage in objectively more costly acts because their perceptions of pleasures and pains are limited to immediate consequences. Thus, offenders remain hedonistic and rational, but are myopic; their actions are based on short-term rationality.

According to SCT, time orientation when considering the consequences of actions is *the* primary variable accounting for differential propensities to crime. In other words, individuals vary in their propensities to crime largely as a function of the size of the window of time with which they concern themselves in calculating consequences of behaviors. The theorists label this variable "self-control." "Low self-control" is defined as the "tendency of individuals to pursue short-term gratification without consideration of the long-term consequences of their acts" (1990: 177) or "the tendency to…ignore the long-term consequences of one's acts" (1993). Low self-control is therefore hypothesized to be criminality, and this is the central hypothesis of SCT.

Although self-control is the sole *individual*-level variable accounting for variation in crime, it is not the only variable responsible for the occurrence of criminal events. "Although we argue that self-control is a general cause of crime, we do not argue that it is the sole cause of crime. Indeed, our analysis of delinquent and criminal acts argues that 'lack of restraint' is only one of several conditions necessary and collectively sufficient for such acts to occur. These other conditions are usually called 'opportunity' factors" (Hirschi and Gottfredson 1995: 140).

Since self-control is the primary variable accounting for differential propensities to crimes, what is not relevant to individuals' propensities to commit force or fraud is everything else. This includes differential motivation (preferences or aversions); beliefs about the legitimacy of rules or norms; tendency to feel "social emotions" (guilt, shame, sympathy, empathy, love); opportunities and abilities to satisfy wants and desires legitimately; relationships with others (after age 8), including discrimination, abuse, or nurturance; and habits. Since self-control is the only significant individual

factor that distinguishes criminals from law-abiders, the offender is "just as forgiving, as unarmed, as lacking in nefarious plans, or as remorseful and self-critical" as non-offenders (Felson and Osgood, 2008: 163).

What accounts for individual-variation in consideration of future consequences? According to the theory, short-term rationality is humans' natural disposition. Self-control is learned through early childhood socialization, primarily from the family. In addition, the theory proposes that once established (usually by ages 6 to 8), self-control is relatively resistant to change. "Our theory asserts that following childhood the population can be meaningfully ranked in terms of self-control, the tendency to consider or ignore the long-term consequences of one's acts" (Hirschi and Gottfredson, 1995:263). Presumably, the theory implies that decision-making habits, neural pathways, or other unspecified cognitive mechanisms responsible for the degree to which individuals consider long-term consequences of actions when calculating pleasures and pains are cemented in late childhood. According to the theory, then, "all that is required to reduce the crime problem to manageable proportions is to teach people early in life that they will be better off in the long run if they pay attention to the eventual consequences of their current behavior" (Hirschi & Gottfredson 2003:289).

In distinguishing crime from criminality, G&H (1990, 1989) take pains to note that criminality (predisposition to acts of force and fraud) does not require crime (acts). This allows them to argue that crime declines with age, but criminality remains relatively stable. Crimes occur, according to the theory, when individuals with low self-control encounter opportunities for crime. Therefore, low self-control is necessary for the occurrence of crimes but not sufficient. In the words of G&H (1990:137):

> "crimes are short-term, circumscribed events that presuppose a peculiar set of necessary conditions (e.g., activity, opportunity, adversaries, victims, goods)….Accordingly, self-control is only one element in the causal configuration leading to a criminal act, and criminal acts are, at best, imperfect measures of self-control…it follows that low-self-control can exist without crime."

Low self-control plus "a peculiar set of necessary conditions" (i.e., opportunity) results in crime. Indeed, Hirschi and Gottfredson (1993: 49) minimize the significance of opportunity for the theory in predicting the frequency of offending arguing, "In the view of the theory, opportunities to commit one or another crime or analogous acts are ubiquitous," which would make opportunity a constant like motivation and transform the crime event equation to being a function of self-control, making SCT a theory of crime and criminality.[6]

In sum, then, SCT proposes that individual variation in the tendency to commit criminal acts (criminality) is a function of "self-control," defined as time orientation in the consideration of consequences of potential actions at the point of decision making. Self-control is learned in early childhood primarily through parental socialization and is stable thereafter. After early childhood, individuals who did not develop self-control are likely to engage in crime and analogous behavior given the opportunity.

Hundreds of studies have been conducted to test these central propositions of the theory, so one would expect that we would have clear evidence by which to adjudge the empirical adequacy of the theory. Yet few, if any, existing measures definitively capture the "essence" of self-control, its "focus on the time orientation of the actor" at the point of decision-making (Hirschi, 2002: xxxv). Given this state of affairs, the empirical adequacy of the central proposition of SCT—that "low self-control" is a major cause of crime—is still uncertain. As I discuss below, despite creativity in measurement strategy and adherence to directives from G&H about self-control, existing measures are flawed either because they capture individual variables other than self-control or utilize (often behavioral) measures that might measure self-control but might not, as they require one to assume that self-control is the underlying mechanism. Obviously, neither approach is satisfactory.

[6] Hirschi and Gottfredson (e.g., 1993: 50) do note that opportunities to commit specific crimes are limited; thus the occurrence of specific types of crime will be influenced by opportunities.

## AN ASIDE ON VALIDITY

Most existing measures of self-control have questionable validity despite the ostensibly validating results of several empirical examinations of construct validity (e.g., Longshore et al., 1996, Marcus 2003; Piquero and Rosay, 1996). A measure is valid if variation in the attribute causes variation in the scores on the measure (Boorsboom et al., 2004). The emphasis is on causation, not correlation, and substance or meaning, not empirical relations. Construct validity is not established or confirmed by statistical procedures no matter how complex or intricate. "Validity is not complex, faceted, or dependent on nomological networks and social consequences of testing. It is a very basic concept and was correctly formulated, for instance, by Kelley (1927:14) when he stated that a test is valid if it measures what it purports to measure" (Boorsboom et al., 2004: 1061). Thus, a measure of "self-control" for the purposes of testing SCT is valid if variation in time perspective in the consideration of action consequences at the point of decision-making causes variation in the measures.

## SOURCES OF CONFUSION

*"Imprecise construct definitions [by G&H] led to inadequate measurement and finally essentially meaningless discussions around its theoretical value [the empirical status of SCT]."* ~Marcus (2004: 34)

There are several reasons for the general misunderstanding and/or unsatisfactory operationalization of self-control. Perhaps most significant is the aforementioned fact that G&H did not provide an operational definition of their central construct in the original presentation of the theory or even general guidance on how to measure self-control (e.g., Akers, 1991; Barlow, 1991). In addition, G&H's (1990, 1993, 1994) unique style of theorizing, which at times is equivocal, convoluted, and contradictory (though persuasive), has produced considerable confusion (Schulz, 2006). For example, G&H assert "In our view, the best indicators of self-control are the acts we use self-control to explain: criminal, delinquent, and reckless acts" (Hirschi and Gottfredson, 1993:49). Yet,

the theorists also argued that "criminal acts are, at best, imperfect measures of self-control," and "low-self-control can exist without crime" (G&H: 137).

The misleading section on the nature of self-control is perhaps the foremost source of confusion about the concept of self-control. This section, which Marcus (2003: 38) notes, "unfortunately reads like a cookbook for the development of a self-control measure," is incompatible with the logic of SCT for several reasons, including the inductive logic they used to identify these "elements of self-control."

G&H's adoption of the classical tradition's assumptions regarding human nature and action, of course, provides no explanatory power, as both crimes and non-crimes are pleasurable, given that "the existence of any item of behavior is prima facie evidence that its benefits exceed its costs" (p.9). Taking a different approach towards theorizing, G&H (p.12-13) sought to make the hedonistic nature of humans objectively predictive of acts by identifying the objective characterizations of pleasure-producing acts, as Bentham (1789) had done long before. These characteristics were derived partially from Bentham, but the bulk appears to be a result of the theorists' subjective perceptions of the nature of pleasurable acts, such as crime.[7] Leaving pains out of consideration, G&H declare that pleasurable acts have three primary elements: immediate consequences (propinquity), mental and physical ease, and risk or excitement. (Of course, those who enjoy knitting, physical exercise, and crossword puzzles may have issue with their characterization of pleasure-producing acts.) These characteristics are (without explanation or pause) equated with the characteristics of crime, though later they explain why: "the use of force of fraud is often easier, simpler, faster, more exciting, and more certain that other means of securing ones ends."

[7] It would be more accurate to say that these characteristics are their subjective perceptions of the characteristics of the modal acts of crime (Matsueda, 2008) or perhaps those committed by the "typical criminal" that makes up the bulk of those imprisoned (Reiman, 1979). Certainly, these are not the characteristics of crimes that are committed by corporations, governments, powerful individuals, or highly successful criminals.

Note the disjointed logic: (subjectively) determining objective characteristics of pleasure, equating these with the characteristics of criminal acts, and then making the pursuit of these characteristics indicators of crime. Notably, these characteristics are incompatible with the theory's assertions that the sole characteristic uniting crimes is that they carry for the individual involved in them the risk of long-term political sanctions (G&H: 1990:10; Hirschi & Gottfredson 2008:220). G&H then used these assertions about crime and pleasure to derive the personality characteristics of offenders by translating their perceived characteristics of crime to personality characteristics. Given that criminality is the individual characteristic(s) responsible for crime, G&H equated these personality characteristics with criminality. Finally, because they propose that low self-control is criminality (the central proposition of the theory), they declare that these characteristics are consequences low self-control.

In the section entitled "elements of self-control," these characteristics are clearly delineated and include: (1) a 'here and now orientation' or an inability to delay gratification, (2) preference for easy or simple pleasures as well as a lack of "diligence, tenacity, or persistence in a course of action," (3) preference for adventure versus caution (risk-taking), (4) preference for physical activity over mental or cognitive activity, (5) self-centeredness and indifference or insensitivity to the needs and suffering of others, and (6) "minimal tolerance for frustration and little ability to respond to conflict through verbal rather than physical means" (89-90). "In sum," G&H (p.90) argue, "people who lack self-control will tend to be impulsive, insensitive, physical (as opposed to mental), risk-taking, short-sighted, and nonverbal, and they will tend therefore to engage in criminal and analogous acts."

These "elements" of low self-control are incompatible with the logical framework of the theory (see also Marcus 2004). The only individual difference relevant to variation in the propensity to crime, according to SCT, is time orientation—not preferences or motivations, which dominate this list, or personality traits, such as temper or inability to verbalize. Indeed, G&H are adamant that

individual preferences have no place in a theory of crime because crimes are universally desirable. "The theory requires that crime be understood without reference to motives or benefits" (Hirschi and Gottfredson, 2008: 221). The idea that low self-control is multifaceted and includes more than the tendency to consider consequences, including differences preferences (sources of pleasure) or pains (differential responsively to the pain of others), which implies differential motivation to acts and differential weighing of costs and benefits cannot be rectified within the logical framework of SCT (Marcus 2004). Even Hirschi (2004:541-542) acknowledged the problems with this section and approach:

> "Being unhappy with theories that begin with offenders and infer from them the nature of crime, we decided, in a moment of madness, to reverse the process. Our discussion of the 'elements of self-control' in a large part follows….Thus, we discovered the Big Five (plus one), introduced a language I did not understand, *championed ideas contracting our theory*, and otherwise muddied the waters. But this state of affairs was not immediately recognized. On the contrary, our exercise was seen as a set of directions for constructing measures of self-control, and much research and analysis have flowed from it….Fortunately, in this case at least, truth is indeed the daughter of time, and we can now see the errors introduced by our excursion into psychology *and* by the measures of self-control stemming from it" (first emphasis added).

An additional source of confusion is the ascription of the label "self-control" to the tendency to consider the long-term consequences of actions in decision-making. An argument could be made that "self-control" in SCT is a misnomer. As others have noted, including Hirschi (2004) himself, the term self-control had long been used in psychology prior to SCT, and the accepted meaning of the term was not "the tendency to consider the long-term costs of one's actions." That tendency most closely fits the idea in psychology of "consideration of future consequences" (Stratham et al., 1994) and is closely aligned with the personality trait known as "narrow impulsivity," whereas "self-control" (a.k.a., "self-regulation") refers to "something we do….rather than something we are….Exercising, or failing to exercise, self-control is part of the process of choice when an individual responds to environmental stimuli" (Wikström and Trieber 2006:243).

Self-control, in its much broader and more widely accepted usage, in other words, refers to an individual's ability to restrain from behavior that is tempting *because* one appreciates that the behavior is potentially costly (e.g., Baumeister et al., 2007; Duckworth and Kern 2011; Tangney et al., 2004).[8] Ability to see long-term consequences is not the focal aspect of this widely accepted understanding of self-control. To use an example for comparison, in G&H's version of self-control, people have low self-control; therefore they engage in behaviors, such as extramarital affairs, because they do not think of the potential long-term consequences of such behaviors, such as the pains to one's partner and family, the damage to one's reputation, the potential loss of custody or time with children in the event of marriage dissolution, and the like. In the more widely accepted use of self-control, individuals realize that a certain behavior is costly and refrain from the behavior (exercise self-control) or engage in the behavior (self-control failure). Thus, in this example, people exercise self-control when they decide to forgo the tempting extramarital sex because they realize the potential costs of the behavior and choose the most rational outcome, or they fail at self-control when they realize the costs, but succumb to the temptation. Similarly, one fails at self-control and eats chocolate cake when on a diet, not because one does not know that the cake violates the rules of the diet, but because one does realize this and does not resist. Insofar as one does not realize that the behavior is costly in the broader understanding of self-control, there is no control of the self being exerted to resist immediate gratification at the risk of long-term costs.

In response to those who questioned the use of the term self-control in the theory, Hirschi and Gottfredson (1995) wrote: "We were cognizant of the long history of this concept in psychology, and of the similarity and differences in our use of this term and its use by others. It does not denigrate previous work to argue that our meaning of the term is in some respects different, having been derived from a particular conception of a set of deviant, criminal, and reckless acts.

[8] "Failed self-control ('weakness of the will') may be defined as occurring when the individual does not succeed in acting upon the option that appears most rational to him." (78).

Rather, it seems to us fair to say that some of the concern with previous uses of the term should focus on the differences between our concept and previous ideas as well as the similarities between our work and what is after all a strong research tradition in psychology (Mischel 1983; Block et al., 1988)." This response does not really provide much in the way of explanation or justification, but it is worth noting that neither Mischel (1983) nor Block et al. (1988) were cited in their book presentation of the theory, nor were most other well-known depictions of self-control or related concepts such as deliberation and impulsivity. Indeed, the considerable body of psychological research on self-control, impulsivity, and decision-making did not appear in their arguments. Moreover, this adoption and (mis)use of a term well-established in psychology flies in the fact of their criticism of "psychological positivism" for "creat[ing] what researchers regard as a new or distinct concept ….It then goes about measuring and explaining this concept without regard to the fact that the same concept exists in other disciplines, such as sociology. It is hard to see what is gained by this exercise. It is, however, easy to see what has been lost…" (p.68). It is not clear why the theorists used the term self-control, rather than coining a new term, though they note that the idea of self-control "came rather late in the process" and that "they tried other concepts but couldn't make them work" (Hirschi, 2004:xxxv, also G&H: 88).

Scientific concepts and definitions cannot be right or wrong, they can only be more or less useful (e.g., Cohen, 1989). However, as Mears and Stafford (2002:6) note, "scientific progress is measured by the extent to which research encourages appropriate comparisons and integration with other research and thus more accurate statements about what is or what is not known about social life." I would argue that it is not beneficial for the development of scientific knowledge to redefine established terms thereby linking existing concepts to a new definition. It hampers the accumulation of knowledge, reflecting a process of effective communication among researchers in diverse disciplines. The use of the label "self-control" for time orientation has produced confusion in

understanding and operationalizing the concept and difficulties in understanding the effects and development of the central causal mechanism in G&H's SCT.

For these reasons, it is quite understandable that confusion has surrounded the concept of self-control and measurement issues have surrounded the theory since researchers first began the process of falsification. In the early years, scholars were creative and innovative in their measurement of self-control measure the concept, noting that these were initial first steps at measurement and that future work needed to pay more attention to measurement and refine the measures proposed (e.g., Arneklev et al., 1993; Gibbs and Giever, 1995; Grasmick et al., 1993). But, these initial measures quickly gained momentum, precedence for their use was established, and they have remained widely used since. Rather than improving upon early measures, which provided an excellent starting point for revising and capturing measures of SCT's central construct, scholars have largely been content to accept these early measurement approaches as the standard against.

## SCRUTINIZING EXISTING MEASURES OF LOW SELF-CONTROL

Researchers have used a variety of indicators, combined in a variety of ways to measure SCT's concept of self-control (see Marcus, 2003; Pratt and Cullen, 2000; Tittle et al., 2003). The two primary approaches are attitudinal measures, in which respondents rate themselves on various statements ostensibly indicative of self-control, and behavioral measures that assess individual participation in behaviors theorized to result from self-control. Because these approaches are problematic for different reasons, they are discussed separately below.

### ATTITUDINAL MEASURES

Cognitive/attitudinal measures of low self-control are, without exception, grounded in G&H's discussion of the "elements of low self-control," which is surprisingly clear, but inconsistent with the theory (Marcus 2004). In constructing their measure of self-control (the most widely used

measure to date), Grasmick et al. (1993:7) stated: "In a section entitled, 'The Elements of Self—Control,' Gottfredson and Hirschi (1990:89-91) describe the 'nature' of low self-control….Our reading of Gottfredson and Hirschi's definition led to the identification of six components of the personality trait of low self-control, and…questionnaire items aimed at tapping each of these were developed."

Given that the list of elements on which they are based is incompatible with the theory, as discussed earlier, existing attitudinal measures are incompatible with the theory. While these measures may capture variation in time perspective in decision-making, it also captures many other factors irrelevant to G&H self-control (physicality) and other factors inconsistent with it (e.g., preferences and motivations). Measures based on the list of personality elements do not isolate the core construct and individual variable at the heart of the theory.

Focusing on the Grasmick et al. (1993) scale, one can see that few items tap into the idea of time orientation in decision-making.[9] This scale is not unique; indeed, most studies that utilize attitudinal measures contain one or two, and sometimes zero, items that tap into decision-making, much less time perspective of consequences in decision-making (e.g., Burt et al., 2006; Burton, et al., 1998; Evans et al., 1997*)*. For example, Gibbs and Giever's scale (1995) contains the item: "I usually consider the risks very carefully before I take any action," which on the face of it has good validity as a measure of consideration of consequences; however, their scale also contains the items such as "My social life is extremely important to me," and "Most classes are boring," items which lack validity as a measure of consideration of future consequences. On the other hand, some studies simply use measures of preferences for risk as the measure of self-control (e.g., Hay et al., 2010; Junger et al., 2001). And, while risk-taking may result from individuals not considering the potential

[9] It is worth noting that Grasmick and colleagues (1993: 17) stated: "We do not, however, wish to give the impression that we consider ours the definitive conclusion on this issue. We would encourage others to replicate our measure and develop other items...."

consequences of their actions and therefore not appreciating the risks, the questions focus more heavily on enjoyment or "liking" taking risks (capturing the personality characteristic of thrill-seeking) rather than whether individuals inadvertently engage in risky actions as a consequence of inadequate forethought.

The inadequacy of existing attitudinal scales is based on theoretical logic, not empirical relations. The fact that these measures are strongly related to crime neither provides support for the theory nor evidence of their adequacy as measures of self-control. The consistent and strong relations between the Grasmick et al. (1993) and similar attitudinal scales and crime might actually provide evidence contrary to SCT, as these relations suggest that preferences (motivations, e.g., thrill-seeking), temperament (irritability), and sensitivity to others or morality (sympathy, selfishness) *do* matter in crime causation (Marcus 2004). In particular, this work consistently demonstrates that preference for risk-taking is an important predictor of crime and analogous behaviors, as several studies have shown that this dimension in the element-scales is equally strong and sometimes stronger than the composite measures (e.g., Longshore et al., 1996; Piquero and Rosay, 1998; Wood et al., 1995). Arneklev and colleagues (1993:243) have noted that "low self-control stripped to its most predictive and efficient form, becomes risk-seeking," while Iovanni and Miller (2008: 130) suggested that "[g]iven the primacy of the risk-seeking component, low self-control may be….preference for risk seeking in disguise." These findings and conclusions are consistent with the idea of crime as a risky process that appeals to those who enjoy risks or thrill-seeking (e.g., Zuckerman, 2007).

In sum, most existing attitudinal measures are flawed indicators of SCT's concept of self-control because they focus on individual traits or characteristics that are discordant with the theoretical assumptions of SCT and do not go far enough in isolating time orientation in decision-

making. Most of these measures capture the elements identified by G&H, but the elements are not low self-control as defined by SCT.

### Behavioral Measures

A second, and less common, approach to measuring low self-control is through an assessment of behaviors (e.g., Evans et al., 1997; Tittle et al., 2003; Wright et al., 1994). Existing attitudinal measures of self-control may be invalid because they are measuring something other than low self-control (preferences, motivations, verbosity). Behavioral measures, on the other hand, lack validity because it is not clear what they are measuring other than overt behavior.

Perhaps surprising given the cognitive nature of their construct, Hirschi & Gottfredson 1993: 49; 1994) advocate for behavioral measures. Their preference is based on their certitude that they have identified the cause of crime and analogous behavior as well as their unconventional view of ideal measures: "As a general rule, the best measure is the measure that produces the best results—that is, best predicts the criterion, best accords with theoretical expectations. We therefore see no ethical deficiency in our preference for supportive measures" (Hirschi and Gottfredson, 2008:230). Thus, Hirschi & Gottfredson (1993: 53) argue that the best measures of self-control are the acts the theory is intended to explain: "With respect to crime, we have proposed such items as whining, pushing, and shoving (as a child); smoking and drinking and excessive television watching and accident frequency (as a teenager); difficulties in interpersonal relations, employment instability, automobile accidents, drinking, and smoking (as an adult)."

The most glaring problem with behavioral measures is that they do not allow one to test the mechanism at the heart of the theory. Behavioral measures of self-control can only be valid if it has been shown that self-control causes variation in the behaviors; in other words, if the proposition that low self-control is the cause of crime or analogous behaviors is true. At present, the empirical connection between low self-control and behavior (crime or non-crime) has not been established.

Changes in self-control do not necessarily cause changes in the behaviors in question. They may or they may not; the evidence is just not available. When using behavioral measures, researchers are essentially assuming that low self-control is the cause of (researcher determined more costly in the long-term than pleasurable in the short-term) behavior in order to test the idea that self-control is the cause of (theory assumed more costly in the long-term than pleasurable in the short-term) behavior (crime). This is the tautology problem that scholars have identified (Akers, 1991; Geis, 2000; Reed and Yeager, 1996; Tittle, 1991). As Meier (1995:168) notes, for example, "[u]sing such indicators of self-control, and then using self-control to explain the acts…makes testing a mere formality."

The most one is justified in inferring from such a test if the null hypothesis is rejected (i.e., if in fact the behavioral measure does predict crime) is support for the idea that a common cause underlies these behaviors. Importantly, *we do not know what this common cause is*; it could be deviant definitions, strain, hostile attribution biases, negative emotionality, psychopathology, weak social bonds, biological or genetic factors, and/or low self-control. It is an unanswered empirical question as to whether crime or other behaviors that promise short-term pleasure at the risk of more costly long-term consequences results from the time perspective mechanism identified in SCT. A correlation between analogous and criminal behaviors is consistent with the theory's assertion that those who commit crimes are also those who commit analogous behaviors, but does not support or refute the central idea "that people are differentially controlled by the long-term consequences of their acts" (Hirschi & Gottfredson, 1993: 53).

For these reasons, behavioral measures are not valid indicators of the cognitive theoretical mechanism at the heart of SCT. A theory whose explanatory mechanism is cognitive must first

empirically demonstrate the links between the cognitive mechanism and behavior before behavioral measures can be deemed valid indicators of the cognitive process.[10]

### *MARCUS'S SOLUTION: THE RBS*

While I concur with most of Marcus's (2003; 2004) general criticisms of the inadequacy of existing measures of self-control, I disagree with his solution. Marcus (2004) develops a new measure of self-control, which he argues overcomes the conceptual and operational deficiencies in previous measures and (in contrast to existing measures) is consistent with the logic of the theory. The new measure, called the Retrospective Behavioral Self-Control scale (RBS), has started appearing in published tests of SCT (e.g., Ward et al., 2010), which may indicate that it is gaining acceptance as a measure of low self-control. I argue that Marcus's (re)interpretation of the meaning of SCT's concept of self-control is specious. The RBS is based on an inaccurate conception of low self-control and thus lacks validity as a measure of it.

Marcus (2003; 2004) argues that the major problem plaguing previous measures is a flawed conception of self-control. Marcus interprets self-control as the common factor underlying behavior because it was deduced from behaviors. He states that low self-control is a "latent trait directly derived from the common variance between acts that share particular features but do not share others….self-control is nothing else than this covariance between the acts that comprise it" (Marcus 2004:37) Accordingly, he asserts that the only way to measure self-control is by isolating the "common trait variance" of the class of behaviors that "primarily offer some kind of short-term gratification, attractive to anybody, at the expense of possible long-term negative consequences" (p. 44). Obviously, this raises the issue of objectively determining which behaviors are more costly in the long term.

[10] Hirschi (2004: 542) admits that behavioral measures are problematic in a more recent piece: "According to the theory, criminal and delinquent acts are not self-perpetuating, but are made possible by the absence of an enduring tendency to avoid them. To find the nature of this tendency, we must look behind the acts it forbids."

In arriving at what he determines is an optimal and efficient measure, the RBS, Marcus (2004) delineates the conditions for a valid measure of low self-control, which are problematic in themselves and in their implementation, but a discussion of these is superfluous given that the RBS is based on a flawed conception of self-control. While Marcus (2003; 2004) advances a novel argument for utilizing behavioral measures, it is not consistent with SCT because it ignores the cognitive mechanism central to the theory, which allows hedonistic, rational actors to engage in behaviors that produce more pain than gain. G&H do not argue: There is a common cause underlying criminal and analogous behavior, but we do not know or do not care what it is. On the contrary, G&H explicate the mechanism underlying different propensities to criminal and analogous behaviors: time orientation in perceptions of costs and consequences in decision-making.

Self-control is not a behavior—though it is *proposed* to underlie behavior—and it has a definition and a role that is separable from behavior. This non-behavioral definition makes the theory testable and not tautological, even if we are still attempting to identify valid measures of this construct so it can be tested. In sum, given the present state of knowledge we need to reject behavioral measures and focus on the processes and mechanisms that are at the core of SCT, a topic which is the focus of the final section. But first, a brief foray into a recent "tinkering" of SCT by Hirschi.

## HIRCHI'S (2004) RECONCEPTUALIZATION

> *"I remain convinced that the befuddlement of a theorist, however profound, says nothing about the validity of his or her theories" (Hirschi 2002: xix).*

Recognizing the problems with the element-approach and the confusion that has surrounded the measurement of the core construct of SCT, Hirschi (2004: 542) rejected the "elements of self-control" and the measures stemming from it. He also recognized the problems in using behavioral measures of self-control. Having rejected both common approaches to measuring (low) self-control, Hirschi argued that what is needed is a greater focus on the idea that "self-control involves

cognitive evaluation of competing interests" and "an explanatory mechanism that retains elements of cognizance and rational choice" (p.542). Hirschi then determines that the way to accomplish this refocusing and operationalize low self-control is to abandon the instability assumption of his earlier social control theory and assume that social control and self-control are the same thing, such that measures of social bonds also measure self-control. According to Hirschi (2004: 543), all that is required to facilitate this is a shift definition of self-control from the tendency to consider long-term costs to "*the tendency to consider the full range of potential costs of a particular act*," which "moves the focus from the *long-term* implications of the act to its *broader* and often contemporaneous implications" (emphasis in original). Hirschi (2004) follows this reconceptualization by creating a new measure of low self-control (with items he utilized previously as measures of social bonding; Hirschi (1969)) and examines its correlation with delinquency.

This approach does seem to provide a valid measure—of social bonding—consistent with Hirschi's (1969) earlier social control theory ("A particular feature of the concept and measure of self-control I suggest here is that it positively identified people with strong bonds, thus making them the focus of attention" p.549). As a measure of "self-control," it fails to tap into cognitive aspects of decision-making and ignores incompatible assumptions of the two theories. At the heart of social bonding theory is the recognition that individuals respond to changes in external social factors and that change is common in the long-term (Sampson and Laub, 1993; Laub and Sampson, 2003) and the short-term (Horney et al., 1995). Assuming bonds are stable—as Hirschi does here—does not make them stable and alters a fundamental assumption of social control theory. Thus, Hirschi, a staunch opponent of combining theories because of their contradicting assumptions, engages in the type of theorizing he has rejected. Previously Hirschi (2002: xlii) noted: "The factual basis of self-control theory is not the factual basis of social control theory." Needless to say, for present purposes, the reconceptualization cannot be aligned with the basic premise of SCT that links

criminality solely to a lack of concern with long-term consequences of behavior, and therefore can be must be rejected as a solution to the measurement quandary.

## FUTURE DIRECTIONS

Thus far, I have limited my discussion to SCT, deriving a conceptualization of self-control, and problems with current approaches to measurement. Productive criticisms include proposed solutions. The two primary directions for future work that flow from the critiques offered in this paper are (1) developing valid measures of SCT's conception of self-control, and (2) identifying theoretical explanations for the robust link between existing measures of self-control and offending, given that many of these measures do not capture G&H self-control. Each is discussed in turn.

### DEVELOPING NEW MEASURES OF G&H SELF-CONTROL

Creating a more direct measure of self-control involves a renewed focus on the core cognitive element of SCT: time perspective in cost considerations at the point of decision-making. Capturing cognitive facets of decision-making is no facile task, as science has not yet progressed to a level where we can measure the window of time which individuals concern themselves through neurological imaging or some other such method. While scholars have used considerable ingenuity to develop current measures (e.g., Burton et al 1998; Grasmick et al., 1993; Gibbs and Giever, 1995; Tittle et al. 2003), we need to step outside our current way of thinking about self-control measurement to more directly operationalize its central construct in order to put its central proposition to test. Notably, the measurement alternatives below are starting points for consideration. These ideas are not being offered as perfect solutions to the problem of measurement, but rather as possible solutions and catalysts for thought and future efforts.

One starting point for new measures is in psychological work on time orientation, defined as "the behavioral predisposition to be more likely influenced by thoughts, emotions, and motivations for a distinct region of time," and theory and research suggests that an "individual's temporal

orientation is an individual difference variable that predicts various aspects of an individual's social behavior and the overall self-schema that may reliably drive and influence behavior" (Lasane and O'Donnell, 2005:14). There have been numerous strategies proposed to measure time orientation, beginning as early as the Thematic Apperception Test (TAT; Murry, 1938). A fairly recent conceptualization and direct measure of an aspect of time orientation bears striking resemblance to G&H's idea of "self-control." This is Strathman and colleagues' (1994) concept of Consideration of Future Consequences (CFC).

Strathman and colleagues (1994:743) define CFC as a stable individual difference variable representing "the extent to which people consider the potential distant outcomes of their current behaviors and the extent to which they are influenced by these potential outcomes." Strathman and colleagues (1994:743) argue that individuals low in CFC focus more on immediate needs and concerns, as opposed to more distant ones, and therefore, they act to satisfy these immediate wants and needs, such that at "the extreme end of this continuum, individuals may not even consider future consequences of their behaviors." The researchers developed a 12-item measure which assesses this individual variable, including items such as: "My behavior is only influenced by the immediate (i.e., a matter of days or weeks) outcomes of my actions," and "I only act to satisfy immediate concerns, figuring that I will take care of future problems that may occur at a later date." The CFC measure has been found to predict a number of outcomes that are consistent with SCT, including alcohol and tobacco use (Strathman et al., 1994); aggression, anger, and hostility (Joireman et al., 2003; 2004), willingness to obtain HIV testing (Dorr et al., 1999), and fiscally responsible behavior (Joireman et al., 2005). Additionally, individuals high in CFC report higher GPAs (Joireman, 1999; Peters et al., 2005), more frequent exercise (Ouellette et al., 2005) and better and longer sleep (Peters, Joireman, and Ridgeway, 2005), as well as being less susceptible to peer

pressure to drink (Reifman 2001, cited in Joireman et al., 2006) and less likely to engage in risky sexual behavior (Dorr et al., 1999).

Moreover, consistent with SCT, Joireman and colleagues (2003) found that individuals high in CFC were less likely than individuals low in CFC to express aggression only when they thought they would interact with the target at a later time. This finding is consistent with SCT propositions as it suggests that individuals high and low in self-control would not have different propensities to aggress when all relevant consequences are immediate, since both groups can perceive and appreciate those consequences. Thus, the construct captured in Strathman and colleagues' (1994) CFC holds promise for isolating the central variable in SCT.

While the CFC appears to have much potential for capturing G&H's version of "self-control," other potential approaches include focusing on individual differences in decision-making, as self-control is a component of decision-making. One approach researchers could take is to investigate differences in decision-making in hypothetical scenarios. For example, surveys could ask individuals what they would consider when deciding whether to go skydiving or bungee jumping. Would they would think about the possibility that the parachute might be faulty or they might lose consciousness and fail to open the chute. Some criminologists have already begun to make decision making the focal point of their measures following Hirschi's (2004) reconceptualization. Thus far, these examinations ask respondents to think about how many things they could consider in hypothetical scenarios (e.g., Piquero & Bouffard 2007; Higgins et al. 2008). It is important that researchers do not ask respondents how many things they *can* consider in imaginary situations, as the important variable is *whether* individuals consider the long-term consequences of actions in decision making, rather than their ability to do so when being encouraged in a hypothetical scenario. In addition, or alternatively, researchers might ask individuals about how they went about making

decisions for behaviors that they have considered in the past (e.g., driving after drinking, having sex without a condom, using psychedelic drugs).

Although I do not imply that these measures are without fault, I do posit that such measures improve upon most existing operationalizations because they attempt to directly tap into individuals' consideration of consequences at decision making, rather than inferring that this consideration underlies responses to attitudinal items or behaviors. While research will need to assess the psychometric and other properties of such measures, certainly the attention that self-control theory has received would make this a valuable undertaking. The central point is that while earlier measures were undoubtedly cutting edge for the time, we need to push measures in new directions. More attention needs to be paid to operationalizing self-control.

## WORKING WITH EXISTING TESTS OF SCT

When new or refined measures of self-control are created it will be important to assess their relationships with extant measures of self-control. It may be the case, though it is unlikely given prior research (e.g., Romero et al., 2003; Tittle et al., 2003), that time perspective in considering the consequences of actions is the underlying variable responsible for the scores on existing attitudinal and behavioral measures. This would indicate that extant measures are valid indicators of G&H self-control and the support for the central proposition of the theory is well deserved based on empirical relations. More likely, time perspective will overlap slightly with these personality characteristics (e.g., risk-taking, preference for physical over mental activities, impulsivity), but that they are distinct personality traits or characteristics.

Although an elaborate discussion of this possibility is premature, given that the results are not in, theoretical models do exist that could shed light on the associations between the attitudinal measures and offending. For example, there is a large body of recent research in psychology on thrill seeking and its broader form sensation-seeking (e.g., Zuckerman, 2007) that could provide a

theoretical linkage between the strongest component of the attitudinal scales and offending. This research suggests that individuals differ in their motivation to various acts based on the amount of stimulation or arousal that the behaviors provide.[11] Extant findings might also be explainable within psychological theories of self-control, which focus on "the efforts people exert to stimulate desired responses and inhibit undesirable ones" (de Ridder et al., 2012). There is a voluminous body of psychological work on self-control that differs from SCT that could provide theoretical explanations linking current measures of self-control to offending, including the discounting model (Ainslie 1975), hot-cool systems approaches (e.g., Mischel et al., 1989), and the strength model of self-control (e.g., Baumeister et al., 1994; Baumeister and Heatherton, 1996). Notably psychological models distinguish between state self-control, which varies across space and time and is therefore susceptible to situational influences such as mood, motivation, and previous attempts at self-control, and dispositional self-control, which is assumed to be a trait and therefore relatively stable across situations and time (de Ridder et al., 2012).

Psychologists have also proposed several theories linking personality to crime and other antisocial outcomes (e.g., Caspi et al. 1994; Cloninger, 1987; Eysenck, 1977; Krueger et al, 1994; Zuckerman, 2007). Many of these theories rely on trait-based personality models that overlap with the personality traits identified by G&H's (1990) "elements of self-control," and are captured in Grasmick et al. (1993) and similar measures, such as negative emotionality and constraint (e.g., Caspi et al. 1994). With a few exceptions, recent advances in personality theories and assessments have not been integrated with criminological theory (e.g., Romero et al., 2003). It is important that criminological theory and research on self-control not merely coexist with psychological theories, but coalesce with them to avoid re-inventing wheels that are already in motion and instead work to direct their relevance for understanding crime.

[11] Several studies have highlighted the need to consider motivation to offending in SCT (e.g., Grasmick et al. 1993; Tittle and Botchovar 2005).

# CONCLUSION

*"Theories are ruined by the imposition of concepts that embody incompatible or compromising assumptions" (Hirschi and Gottfredson 2008:217).*

I have argued that we have a problem with the conceptualization and therefore operationalization of self-control. Self-control is not a behavior; it is not composed of various personality elements, but rather is "the tendency to consider (see) the long-term consequences of one's [potential] acts" (Hirschi and Gottfredson, 2008: 220). I have also argued that this problem is serious, in that most extant measures of self-control are misguided, thus vitiating and obscuring their relevance for SCT. As such, it is quite premature to label G&H's version of self-control one of the strongest known correlates of crime. While the construct (or constructs) captured in the Grasmick et al.-type scales may be one of the strongest known correlates of crime and general misbehavior may be strongly predictive of criminal mischief, these findings do not directly support the proposition that SCT's self-control is the mechanism responsible for individual differences in offending.

Early efforts to measure Gottfredson and Hirschi's version of self-control were innovative, cutting edge for their time, and consistent with some of G&H's words. Despite scholars' own cautions that their measures were just early attempts to capture G&H's construct (e.g., Grasmick et al. 1993), these measures have gained precedence and acceptance and their use is largely unquestioned. Here, I have argued that existing and widely used measures are not valid measures of self-control given our current knowledge base, and it is unlikely that they are isolating the individual variable at the heart of Gottfredson and Hirschi's theory.

I have also argued that this measurement problem is important. As more studies appear each month ostensibly testing aspects of SCT related to offending, stability, and sources of self-control, they can only be as good as the measures they employ. Thus, while research contradicts aspects of SCT, indicating that self-control is influenced by a broader range of familial and community factors

(e.g., Hay, 2001; Pratt et al., 2004), has a strong biological component (e.g., Wright and Beaver, 2005; Beaver et al., 2008), and is not particularly stable (e.g., Burt et al., 2006; Hay and Forrest, 2006), the results may be quite different when more direct measures of time perspective in consideration of consequences are used. These studies are not feckless, as they have identified important precursors, development, and effects of this important, yet not theoretically defined, criminological construct; however, their findings are wrongly being interpreted both as support for and evidence contrary to SCT. What do we actually know about the effects of SCT's version self-control despite all these efforts? Not as much as we should. It is time to improve our measures of self-control so we can accurately test the theory and locate this concept in relation to psychological work on self-control and related constructs. It is imperative that scholars recognize and measure what Gottfredson and Hirschi are theorizing about so that we can accept and reject elements of SCT. Rather than linking every idea of self-control and crime under the SCT and control theory model, we can step outside this theory and acknowledge that other understandings and or facts of self-control may be important for crime causation for reasons other than Gottfredson and Hirschi theorize.

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