

Self-Restraint: A Study on the Capacity and Desire for Self-Control

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Abstract. *Using self-report survey data on academic dishonesty from a sample of undergraduate college students, this study indirectly tests and extends a recent and novel reconceptualization of self-control offered by Tittle, Ward, and Grasmick (2004). In their reconceptualization, Tittle and his colleagues distinguish the capacity/ability for self-control from a desire/interest to exercise such restraint. We find, as did they, that these are indeed two separate dimensions of self-regulation, each with independent effects on deviant behavior, but each conditioning the effects of the other as well. Moreover, we also find that the cross-product of these two dimensions interacts with opportunity to predict the frequency of academic dishonesty.*

Keywords: academic dishonesty; self-control; self-restraint; capacity for self-control; desire to exercise self-control

Introduction

Beginning in the decade of the 1990s, theoretical criminology has experienced an exciting level of growth and development that easily rivals all previous eras; we are currently in a period of much theoretical ferment in which older theories have been revitalized and new theories have been set forth (Cullen, Wright, and Blevins, 2005). Among the contributions to this theoretical growth are Braithwaite's (1989) theory of reintegrative shaming, Bursik and Grasmick's (1993) systemic model, Gottfredson and Hirschi's (1990) general theory of crime, Messner and Rosenfeld's (1994) institutional anomie theory, Sampson and Laub's (1993) age-graded control theory, Tittle's (1995) control balance theory, Akers' (1998) social structural social learning theory, Agnew's (1992) general strain theory, Cullen's (1994) social support theory, Moffitt's (1993) developmental taxonomy, and Colvin's (2000) integrated theory of chronic criminality.

Recently Charles Tittle, David Ward, and Harold Grasmick (2004) added to this literature with their study "Capacity for Self-Control and Individual's Interest in Exercising Self-Control" in the *Journal of Quantitative Criminology*. In this study, Tittle and his colleagues make a compelling case that Gottfredson and Hirschi's (1990)

general theory of crime could be improved "by recognizing that individuals' capacity for self-control is distinct from their interest in restraining themselves" (2004:144). In the current paper, we replicate and extend their study.

As originally conceptualized by Gottfredson and Hirschi (1990:232), low self-control is argued to be "the individual-level cause of crime." That is, low self-control is theorized to be the primary explanation for criminal behavior; the effects of all other theoretical constructs employed by criminologists to explain criminal conduct (e.g., weak social bonds, peer influences, strains, psychopathy, poor socialization, etc.) are spurious. While several scholars have issued critiques of the theory (Akers, 1991; Barlow, 1991; Benson and Moore, 1992; Cohen and Vila, 1996; Geis, 2000; Reed and Yeager, 1996; Tittle, 1991), it has also attained considerable empirical support. Low self-control consistently has been found to be a modest correlate of both crime (Evans et al., 1997; Grasmick et al., 1993; Paternoster and Brame, 1998; Pratt and Cullen, 2000) and analogous acts of deviant behavior, including substance use/abuse (Arneklev et al., 1993; Cochran, Wood, and Arneklev, 1994; Gibbs and Geiver, 1995; Keane, Maxim, and Teevan, 1993; Nakhaie, Silverman, and LaGrange, 1999; Piquero and Tibbetts, 1996; Sorenson and Brownfield, 1995; Vazsonyi et al., 2001; Winfree and Burnat, 1998; Wood, Pfefferbaum, and Arneklev, 1993),

academic dishonesty/deviance (Arneklev, Cochran, and Gainey, 1998; Cochran et al., 1998; Gibbs and Geiver, 1995; Gibbs, Geiver, and Martin, 1998), gambling (Arneklev et al., 1993; Jones and Quisenberry, 2004), risky sex (Jones and Quisenberry, 2004; Paternoster and Brame, 1998; Wood et al., 1993), and non-illicit thrill/adventure seeking (Jones and Quisenberry, 2004). These effects have been observed across samples of adults (Avakame, 1998; Evans et al., 1997; Grasmick et al., 1993), college students (Cochran et al., 1998; Gibbs and Geiver, 1995; Sellers, 1999), and adolescents (Brownfield and Sorenson, 1999; Junger and Tremblay, 1999), across experimental (Finkel and Campbell, 2001), longitudinal (Polakowski, 1994; Paternoster and Brame, 1998), and cross-sectional designs (Evans et al., 1997; Grasmick et al., 1993; Nagin and Paternoster, 1993), for those with official criminal backgrounds (Longshore, 1998; Longshore and Turner, 1998), and from various countries (Nakhaie et al., 1999; Vazsonyi et al., 2001; Wright et al., 1999).

While consistently found to be a correlate of acts of force or fraud and/or analogous acts, the effects of self-control are, at best, modest with associations (i.e., effect sizes) rarely exceeding .30 (Pratt and Cullen, 2000). As such, a considerable amount of the systematic variation in misbehavior remains unaccounted by self-control and Gottfredson and Hirschi's (1990) general theory of crime is not "as potent as the authors...contend" (Tittle et al., 2004:145).

In fact, several studies have compared the predictive efficacy of self-control against measures from rival criminological theories, particularly social learning theory (Evans et al., 1997; Winfree and Bernat, 1998), strain theory (Burton et al., 1998), and social bonding/control theory (Brownfield and Sorenson, 1993; Evans et al., 1997; Wright et al., 1999). These studies consistently find significant effects of self-control independent of these rival theories; however, these studies also consistently find significant independent effects for these rival theories as well (Pratt and Cullen, 2000).

Finally, as Tittle and his colleagues note (2004:145), the predictive efficacy of self-control on misbehavior may be contingent on a variety of other variables not incorporated into Gottfredson and Hirschi's (1990) original conceptualization; these include gender (Keane et al., 1993; Burton et al., 1998; LaGrange and Silverman, 1999), age (Burton et al., 1999), family, school and peer relations (Nakhaie et al., 1999), neighborhood context (Lynam et al., 2000), and emotions (Giner-Sorolla, 2001). Tittle and his colleagues (2004:145) suggest an additional variable which may also condition the effects of self-control and misbehavior and which was also not

fully incorporated into Gottfredson and Hirschi's (1990) original conceptualization, namely individuals' interest in controlling themselves.

Tittle and his colleagues (2004) make a case that self-control (also known as self-restraint or self-regulation) is comprised of both the capacity or ability to exercise self-control, discussed above, and the desire to exercise this ability. They note that while Gottfredson and Hirschi (1990) did not make this distinction, other scholars have; toward these ends, they cite Baumeister, Heatherton, and Tice (1994), Baumeister (1997), Finkel and Campbell (2001), Jackson, MacKenzie, and Hobfoll (2000), and Trope and Fishbach (2000). As such, Tittle et al. (2004:146) suggest that "some people may have a strong capacity for self-control but may not always want to exercise it, while others may have weak self-control ability but have such a keen interest in controlling their deviant impulses that they end up conforming." In addition, they recognize "people who simultaneously lack the capacity for strong self-control and who possess little desire to control themselves [and thus] may be especially prone to criminal behavior, while those with strong capability for self-control and with a great interest in exercising that self-control may be especially unlikely to offend" (Tittle et al., 2004:147-148). With self-report data from a sample of adults from Oklahoma City, OK, they observe that (1) measures of self-control capacity and the desire to exercise self-control form independent/orthogonal factors, (2) scales derived from these factors independently and modestly predict adult criminal/deviant behavior, (3) the capacity for self-control and the desire/interest to exercise self-control have significant interactive effects on adult criminal/deviant behavior, and (4) the effects of the capacity for self-control on adult criminal/deviant behavior (Gottfredson and Hirschi's conceptualization of low self-control) are conditional upon levels of subjects' desire to exercise self-control.

Tittle et al. (2004) have made what could prove to be a very interesting and important contribution to the continuing theoretical growth and development of criminology. The scope of this contribution, however, will remain speculative until the theoretical propositions developed by Tittle and his colleagues are submitted to additional empirical testing. The purpose of the current study is to test and extend their work. With self-report survey data from a sample of college students, our study very closely approximates both the measurement qualities of Tittle et al. (2004) and their findings. In addition, this study extends Tittle et al. (2004) in two important ways. First, we examine the predictive efficacy of these two dimensions of self-regulation on academic dishonesty, a

different form of fraudulent misbehavior than those studied by Tittle and his colleagues. Secondly, we are also able to examine the conditioning effects of opportunity to cheat on the predictive power of self-regulation.

Methods

The data for this study were derived from a non-random sample of adult (i.e., 18 years of age or older) undergraduate students enrolled in all upper-division sociology classes at the University of Oklahoma during the spring of 1993. While these data are now dated, they were used by Cochran and his colleagues (Cochran et al., 1998; Cochran et al., 1999) in their successful tests of Gottfredson and Hirschi's self-control theory (1990) and Grasmick and Bursik's (1990) deterrence/rational choice model which comprise key elements of the capacity/ability for self-control and interest/desire to exercise self-control. Moreover, the timeliness of these data is not relevant to a test of Tittle et al.'s (2004) thesis.

Despite the limitations associated with our sampling technique, we feel that our sample is sufficiently representative to permit cautious generalizations. All undergraduate students at the University of Oklahoma at the time of this data collection were required to take twelve credit-hours of upper-division electives. Because most upper-division sociology courses, unlike other courses in the College of Arts and Sciences at the University of Oklahoma, did not require any prerequisites, these courses were open to any students needing to fulfill their upper-division elective requirement. This, in addition to the fact that these courses address highly relevant and interesting social issues like marriage and family, crime and justice, and race and gender, made them especially appealing to a large proportion of the student body. As such, this sample was fairly representative of undergraduate students within the College of Arts and Sciences at the University of Oklahoma during this semester. The sample is about 52 percent female, 24 percent minority, and 58 percent junior/senior status.

The research was conducted through the use of a self-administered questionnaire requiring approximately thirty to forty-five minutes to complete. Participation in the study was voluntary, and both the anonymity of the respondents and the confidentiality of their responses were strictly guaranteed. Moreover, signed, informed consent was obtained prior to the administration of the questionnaire, and prior approval for the study was obtained by the University of Oklahoma's Institutional Review Board.

The survey was given to all students attending each upper-division sociology class offered during the spring

1993 academic semester. The total unique enrollment (i.e., no student counted more than once) in all these classes was 732, but only 448 usable surveys were obtained. The rather low response rate (61 percent) was attributed to a combination of absenteeism, incomplete surveys, ineligibility of minor students, and students' decisions not to participate. Nonetheless, this response rate is similar to those reported in other studies using similar techniques with college samples (Gibbs and Giever, 1995; Lanza-Kaduce, 1988).

Finally, these data are cross-sectional in nature. Moreover, other than the capacity/ability for self-control, all variables in these data were not measured in a manner that would allow logical inferences regarding the temporal/casual ordering of phenomena. Hence, we strongly caution the reader against making any conclusions of a causal nature. However, our findings can and should be interpreted in conjunction with and comparison to those produced by Tittle et al. (2004) and other relevant studies.

Dependent Variable

We employ a measure of academic dishonesty as the dependent variable in this study. Academic dishonesty, for the purposes of this study, is defined as using deceit (fraud) in academic work. It is a form of "analogous" non-criminal behavior, an act of fraud undertaken in pursuit of self-interest, and thus is suitable for testing Gottfredson and Hirschi's (1990) general theory of crime. Forms of academic dishonesty include cheating during an exam or on a homework assignment, paying for or being paid for cheating, plagiarism, lying about academic work, etc. All of these items are expressly prohibited under the University of Oklahoma's code of student conduct and some could be prosecuted as felonies or misdemeanors under Oklahoma criminal law.

Our measure is a composite of self-reported frequencies of seventeen forms of academic dishonesty engaged in over the past twelve months. The 17 items comprising this composite measure were operationally consistent with the "unethical academic behavior scale" developed by Calabrese and Cochran (1990). These items were entered into a principal components factor analysis for the purpose of index construction. The 17 items produced six factors with eigenvalues greater than 1.00; however, a scree discontinuity test suggested that a single-factor solution fit the data well (reproducing 22 percent of the variation among these seventeen items). Loadings on this single factor ranged from .22 to .73. The additive index produced from these 17 items has a Cronbach's alpha

reliability coefficient of .73. Eighty-three percent of the student respondents admitted to at least one act of academic dishonesty during the twelve-month period prior to data collection.

Capacity/Ability for Self-Control

Tittle et al. (2004) make a case that individuals' capacity for self-control (also referred to as self-control ability) is conceptually and empirically distinct from their interest to restrain themselves (also referred to as self-control desire). Tittle et al. (2004:147) assert that Gottfredson and Hirschi's (1990) conceptualization of low self-control says "nothing about the trait or characteristics of self-control *per se*" (emphasis in original); instead Gottfredson and Hirschi simply "catalog the various ways in which individuals differ in their *behavioral tendencies* or preferences" (emphasis in original). Tittle et al. (2004:147) further assert that "when Gottfredson and Hirschi (1990) do directly discuss the quality, or trait, they call low self-control, their statements suggest that it consists mainly of the lack of *capability* for controlling behavior." Thus, this conceptualization of low self-control is said to more closely reflect what Tittle et al. (2004:151) refer to as the ability to exercise self-control. To measure self-control ability, Tittle and his colleagues (2004:151) recommend the use of cognitive scales, which measure individuals' "tendencies to behave in certain ways or of expressions of certain preferences." As such, they used the Grasmick et al. (1993) cognitive scale more commonly used in tests of Gottfredson and Hirschi's (1990) general theory of crime. We used a very similar scale as well.

The capacity/ability for self-control was operationalized by asking respondents to indicate how strongly they agreed or disagreed with a series of 31 Likert-type statements (1=strongly agree, 4 = strongly disagree) designed to reflect each of the six components of low self-control: impulsivity, preference for simple tasks, risk-taking, physicality, self-centeredness, and hostility. These items are similar to those developed by Grasmick et al. (1993) and Wood et al. (1993) and were successfully validated by Cochran et al. (1998). Several items were reverse coded and all items were transformed into z-scores prior to scale construction. These 31 items were then entered into a principal components factor analysis. While seven factors revealed eigenvalues greater than 1.00, the scree discontinuity test suggested that a single-factor solution fit these data best; item factor loadings on this first factor ranged in value from .21 to .62. Respondents capacity/ability for self-control was operationalized as an additive scale comprised of these 31 standardized items each

weighted prior to summation by its factor loading (alpha reliability = .85). High scores on this scale indicate high levels for the capacity/ability to exercise self-control.

Interest in/Desire to Exercise Self-Control

Tittle and his colleagues (2004:151) note that while the capacity to exercise self-control, once formed, is entirely in the person and lacks any connection to the social environment or to situational contexts, the desire to exercise self-restraint has strong linkages with the social environment and situational contexts. Given the recency of the idea of self-control desire and the resulting absence of direct measures of this concept, Tittle et al. (2004) utilized a number of indicators from other theoretical perspectives which, when combined, produce an indirect approximation of their construct of self-control desire. These include measures of their subjects' (a) self-pride for choosing to exercise restraint from offending, (b) perceptions of the severity of informal sanctions they would anticipate from people whose opinions they value should they engage in various deviant acts, (c) perceptions of the level of praise from people whose opinions they value for exercising self-restraint, (d) perceptions of the likelihood of getting caught should they engage in various deviant acts, (e) assessment of how guilty they would feel if they engaged in various deviant acts, and (f) level of moral condemnation or moral beliefs about the wrongfulness of various deviant acts.

We employed a similar inventory of indirect measures of self-control desire. While our data lack measures of self-pride and praise from others for exercising self-restraint, it does contain measures of the other indicators used by Tittle et al. (2004) and adds an additional indicator. Thus, our measure of the desire to exercise self-control is also a composite measure (i.e., a weighted additive scale) comprised of five sub-scales. However, we must acknowledge that not only are our measures indirect, but, as with Tittle et al. (2004), our measures of the desire to exercise self-control can also be construed as factors imported from other theoretical perspectives (e.g., rational choice, social control, social learning). Because these measures are asked to carry a great deal of conceptual weight in our analyses, readers should be cautioned that our findings are not conclusive, but may, nonetheless, be rather provocative. After all, these measures do reflect what one would expect of a person with a strong desire to exercise self-control, and should the measures perform as expected, then our findings may be useful in showing that the Tittle et al. (2004) findings are somewhat robust. Moreover, as others have pointed out, many of

the independent variables used in tests of criminological theories are conceptually and/or empirically indistinct from concepts representing other theoretical perspectives (Agnew, 1995; Akers, 1985, 1990; Akers and Cochran, 1985; Conger, 1976, 1980). For instance, beliefs regarding crime are an element of the social bond, but they are also definitions from social learning theory (Akers and Cochran, 1985; Elliott, Huizinga, and Ageton, 1985; Marcos, Bahr, and Johnson, 1986). Likewise, perceptions about the consequences of crime are components of expected utility from rational choice and are also components of differential reinforcement in social learning theory (Akers, 1990). The current situation with Tittle et al. (2004) and our operationalization of the desire to exercise self-control is no different. Until more direct measures are available, we must rely upon such indirect measures when testing this element of self-restraint.

The first sub-scale comprising our measure of self-control desire is a set of items measuring respondents' perceptions of the likelihood that they "would get caught by your professors" if they were to engage in each of six forms of academic dishonesty. Responses were fixed along a four-point ordinal scale ranging from "definitely would not get caught" (coded 1) to "definitely would get caught" (coded 4). These items were standardized into z-scores and then entered into a principal components factor analysis. The results suggested a single-factor solution (only one factor with an eigenvalue greater than 1.00); this factor accounted for 51 percent of the total variation among these items with factor loadings ranging from .69 to .76. The alpha reliability estimate for the additive scale comprised of these six items was .80.

The second sub-scale comprising self-control desire is a set of six items measuring respondents' perceptions of "how big of a problem" it would be "if most of the people whose opinions matter to you lost respect for you" because you had engaged in each of six different forms of academic dishonesty. Response options to these six items were also fixed along a four-point ordinal scale: "no problem at all" (coded 1), "a fairly small problem" (coded 2), "a fairly big problem" (coded 3), and "a very big problem" (coded 4). These six items were also transformed into z-scores prior to entry into a principal components factor analysis. The results of this analysis revealed only one factor with an eigenvalue greater than 1.00; this factor accounted for 77 percent of the total variation among these six items, and factor loadings ranged from .84 to .91. The additive scale comprised of these six items had an alpha reliability of .94.

The third set of items comprising our measure of self-control desire measures respondents' sense of guilt

or shame associated with engagement in various acts of academic dishonesty. Respondents were asked "How big of a problem would feeling ashamed of yourself be for you if you" engaged in each of six different acts of academic dishonesty. Response categories were exactly the same as those for the "lost-respect" items described above. As before, these six items were transformed into z-scores and entered into a principal components factor analysis. Once again a single-factor solution is observed; this factor accounts for 66 percent of the total variation among these items. Factor loadings ranged from .78 to .84 and the alpha reliability for the additive scale comprised of these six items was .90.

The fourth set of items comprising self-control desire includes measures of respondents' level of moral condemnation for academic dishonesty. Each student was asked to indicate the degree to which they agree or disagree with the following statements: (1) "I feel that it would be wrong for me to cheat on an exam for any reason," (2) "I feel that it would be okay to cheat if the professor had not done an adequate job teaching the course" (reverse coded), (3) "I feel it would be okay for me to cheat on an exam that I didn't have time to study for" (reverse coded), and (4) "I would cheat to avoid getting a poor or failing grade" (reverse coded). Response categories were fixed along a four-point Likert scale (1 = strongly agree to 4 = strongly disagree). Again these items were transformed into z-scores prior to entry into a principal components factor analysis. The results of the factor analysis revealed a single-factor solution, which accounts for 68 percent of the total variation among these items. Factor loadings ranged from .81 to .84, and the additive scale comprised of these indicators had an alpha reliability of .84.

The fifth component of our measure of respondents' desire to exercise self-control is a reduced form version of the California Personality Inventory (CPI) socialization scale; an additive combination of 40 true/false items (alpha reliability = .63) which reflects the degree of social maturity and integrity of the respondent. It measures the extent to which the individual has internalized conventional attitudes, social norms, and values (Groth-Marnat, 1984). This additive scale was transformed into z-scores.

Finally, desire for self-control is a composite measure (i.e., a second-order factor) made-up of these five sub-scales (alpha reliability = .90). A principal components factor analysis of these five sub-scales produced a single-factor solution which explained about 44 percent of the total variation among these five sub-scales. Factor loadings ranged from .54 to .85. Prior to summing, the five sub-scales were weighted by the values of their factor

loadings. High scores on this scale are indicative of a strong desire to exercise self-restraint.

Analytic Plan

As did those of Tittle and colleagues (2004), our analyses follow a multi-step process. First, we assess the degree to which the capacity for self-control and the desire to exercise self-control are indeed separate dimensions of self-control. To do so, we subject the various components of both scales to a principal components factor analysis. Second, we employ multiple regression techniques to assess the relative and interactive effects of both the capacity/ability for self-control and the desire to exercise self-control on respondents' self-reported frequency of academic dishonesty. Third, following the procedures suggested by Aiken and West for the presentation of interactive effects (1991), we center our component measures of self-control ability and desire in order to examine the nature of any significant interactions between them and academic dishonesty. Fourth, we portray these interactive effects for four different types/subgroups of respondents representing different combinations of self-control capacity/ability and self-control desire. Finally, we examine the degree to which the effects of self-restraint (itself a cross-product of the capacity for self-control and the desire to exercise self-control) are conditioned by the opportunity to cheat. In all of our regression models, we control for respondents' age (in years), sex (0=female, 1=male), race/ethnicity (0=racial/ethnic minority, 1=white), and class standing (five-point ordinal scale: 1=freshman to 5=graduate student).

Results

Tittle and his colleagues (2004:153-156) differentiate the desire to exercise self-control from Gottfredson and Hirschi's (1990) concept of self-control, which Tittle and colleagues view as reflecting one's ability or capacity for self-regulation. While the capacity for self-control is conceptualized as a "completely stable or 'inherent' quality," the desire to exercise self-control is both internally and externally driven. While "a desire to exercise self-control probably has some kinship with personality, it is also different in being more responsive to immediate social stimuli" (Tittle et al., 2004:153). As such, the capacity for self-control and the desire to exercise self-control are viewed as distinct dimensions of self-restraint/self-regulation.

Table 1 presents the results of a principal components factor analysis with an oblique rotation on the various

scales and sub-scales which comprise our measures of respondents' capacity/ability for self-control and their desire/interest to exercise self-control. Doing so allows us to address whether or not the desire for self-control is distinct from the capacity for self-control as Tittle and his colleagues (2004) have argued and to match their analytic strategy. From this analysis, two oblique factors with eigenvalues greater than 1.00 emerged. Factor 1 (eigenvalue = 2.160), accounting for 36 percent of the total variation among these scales and sub-scales, is best represented by the sub-scales for our measure of respondents' desire to exercise self-control. Each of these sub-scales has a factor loading of .45 or higher while the scale representing respondents' capacity/ability for self-control loads onto this factor at only .01. Conversely, Factor 2 (eigenvalue = 1.234), which accounts for 20 percent of the total variation among these scales and sub-scales, is best represented by respondents' capacity/ability for self-control (loading = .83); the desire for self-control sub-scales either load poorly on this factor (moral condemnation, informal social sanctions, and feeling ashamed), load negatively on this factor (feeling ashamed, and likelihood of getting caught), or load similarly on Factor 1 (CPI socialization scale). Thus, this analysis largely confirms the distinctive nature of a capacity for self-control and a desire to exercise self-control as Tittle et al. (2004) have argued.

Pearson's zero-order correlations between capacity for self-control, desire to exercise self-control, and our measure of academic dishonesty are presented in Table 2. Both a capacity/ability for self-control and the desire to exercise self-control are modestly and inversely associated with academic dishonesty ($-.26 < r < -.32, p < .0001$). In addition, respondents' capacity for self-control is moderately and positively associated with their

Table 1. Principal Components Factor Analysis of Capacity/Ability for Self-Control and Desire to Exercise Self-Control

	Factor loadings	
	Factor 1	Factor 2
Capacity/ability for self-control:		
G&H Cognitive Scale	0.011	0.828
Desire to exercise self-control:		
CPI socialization scale	0.454	0.510
Moral condemnation of cheating	0.627	0.207
Feeling ashamed for cheating	0.855	-0.025
Informal social sanctions for cheating	0.667	0.103
Likelihood of getting caught for cheating	0.634	-0.470
Eigenvalue	2.160	1.219
Proportion of variation	0.360	0.203

Table 2. Pearson’s Zero-Order Correlations between Academic Dishonesty, Capacity for Self-Control, and Desire to Exercise Self-Control

	Academic dishonesty	Capacity for self-control
Capacity for self-control	-0.265 ($p < .0001$)	
Desire to exercise self-control	-0.323 ($p < .0001$)	0.479 ($p < .0001$)

desire to exercise self-control ($r = .48, p < .0001$). These findings suggest that these two dimensions of self-regulation, while correlated with one another, are sufficiently independent of one another as to be empirically non-redundant; moreover, both dimensions of self-restraint effectively inhibit academic dishonesty.

Table 3 presents the results of Ordinary Least Squares regression models testing the joint or interactive effects of the capacity for self-control and a desire to exercise self-control on academic dishonesty. Two models are presented; an additive effects model (MODEL 1) and an interactive effects model (MODEL 2). Across both models, our results are the same; the capacity/ability for self-control and the desire to exercise self-control exhibit statistically significant, independent, inverse effects on academic dishonesty. Diagnostics for these models indicate that there is no concern about problematic levels of collinearity (VIFs < 4.00). More importantly, the desire to exercise self-control and the capacity/ability for self-control interact to aid in the self-regulation of academic dishonesty in a manner consistent with the prediction of Tittle and his colleagues (2004). However, the explanatory power of these models is quite modest ($R^2 \leq .128$).

The significant interactive self-regulatory effects of the capacity for self-control with a desire to exercise

self-control on academic dishonesty observed in Table 3 are illustrated in Tables 4 and 5. In Table 4, the columns represent the magnitude of the effects of the capacity/ability for self-control on academic dishonesty when the desire to exercise self-control is one standard deviation below the mean, at the mean (-0.043), and one standard deviation above the mean. In Table 5, the columns represent the magnitude of the effects of the desire to exercise self-control on academic dishonesty when the capacity for self-control is one standard deviation below the mean, at the mean (-.004), and one standard deviation above the mean. The effects of the capacity for self-control weaken as the desire for exercising self-control increases; its effects on academic dishonesty are quite strong under conditions of a low desire for exercising self-control (-.369), more modest at average levels of self-control desire (-.234), and weak when the desire for self-control is strong (-.099). Thus, “[b]eing able to restrain oneself apparently helps people actually restrain themselves ... [h]owever, when people strongly desire to exercise self-restraint, self-control ability apparently has much less predictive power” (Tittle et al., 2004:164). Hence, unlike the contentions of Gottfredson and Hirschi (1990), the effects of capacity for self-control are not uniform; instead, these effects depend on individuals’ level of interest in exercising self-restraint. Moreover, the effects of such an internal capacity for self-control are almost irrelevant when one’s desire for self-restraint is strong.

Similarly, the effects of the desire to exercise self-control dampen as the capacity for self-control increases. Its effects are quite strong under conditions of a low or average capacity for self-control (-.472 and -.352, respectively) and are more modest at low levels of self-control capacity (-.234). Thus, desiring to exercise self-constraint is effective in actually helping people to restrain themselves; however, when people lack such

Table 3. OLS Regression Models of the Relative and Interactive Effects of Respondents’ Capacity for Self-Control and Desire to Exercise Self-Control on Academic Dishonesty*

	Model 1			Model 2		
	b	SE	p	b	SE	p
Capacity/ability for self-control	-.236	.084	.0025	-.235	.083	.0026
Desire to exercise self-control	-.371	.074	.0001	-.352	.074	.0001
Capacity * desire				.015	.007	.0231
Intercept	9.226			8.723		
R^2	.120			.128		

* All models control for respondents’ age (in years), sex (0=female, 1=male), race/ethnicity (0=racial/ethnic minority, 1=white), class standing (five-point ordinal scale: 1=freshman to 5=graduate student)

Table 4. The Effects of Capacity for Self-Control on Academic Dishonesty at Different Levels of Desire to Exercise Self-Control**

	Levels of desire to exercise self-control:		
	One SD below mean	Mean	One SD above mean
Academic dishonesty scale	-.369 *	-.234 *	-.099 *

* $p < .05$

** All models control for respondents' age (in years), sex (0=female, 1=male), race/ethnicity (0=racial/ethnic minority, 1=white), class standing (five-point ordinal scale: 1=freshman to 5=graduate student).

Table 5. The Effects of Desire to Exercise Self-Control on Academic Dishonesty at Different Levels of Capacity for Self-Control**

	Levels of capacity for self-control:		
	One SD below mean	Mean	One SD above mean
Academic dishonesty scale	-.472 *	-.352 *	-.232 *

* $p < .05$

** All models control for respondents' age (in years), sex (0=female, 1=male), race/ethnicity (0=racial/ethnic minority, 1=white), class standing (five-point ordinal scale: 1=freshman to 5=graduate student).

an ability, even a strong desire to do so has only modest efficacy.

Up to this point, our findings have closely paralleled those reported by Tittle et al. (2004). That is, the elements which comprise the measures of respondents' capacity/ability for self-control and of their desire to exercise self-control form two separate dimensions of self-restraint. Scales produced from these elements of self-restraint are moderately correlated with one another, and are each modestly associated with respondents' self-reported frequency of academic dishonesty. Not only do these two dimensions of self-restraint evidence main effects, they also yield significant interaction effects, such that strength in one dimension dampens the efficacy of the other at inhibiting academic dishonesty. It is at this juncture that our findings depart slightly from those of Tittle and his colleagues. Whereas Tittle et al. (2004:164-165) observed declines in the mean level of offending for all seven offense measures as subject sub-groupings moved from low ability/ low desire to high ability/low desire to low ability/high desire and to high ability/high desire, the mean level of offending (i.e., academic dishonesty) follows a slightly different pattern in these data.

As is evident in Table 6, rather than a downward, stair-step or monotonic decreasing pattern of mean offending frequencies across these four sub-groupings, we observe that mean levels of academic dishonesty are much lower for the two sub-groups expressing above average capac-

ity/ability for control, regardless of their level of desire to exercise control (mean frequencies of 5.0 and 6.0), than they are for the two sub-groups expressing below average capacity, again regardless of their level of desire to exercise such control (mean frequencies of 13.2 and 14.0). Note that the two sub-groups expressing above average levels of capacity for self-control not only have smaller mean frequencies of cheating, they also have less variation about these means (standard deviations of 7.7 and 11.0 versus 14.9 and 17.4). We reserve discussion of this pattern for the discussion section of this manuscript.

In their original test of this thesis, Tittle and his colleagues (2004) identify the lack of any measures of criminal opportunity as a weakness of their study; our data, however, do provide at least one measure of opportunity for academic dishonesty: total credit hours enrolled (opportunity). To test the effects of opportunity/

Table 6. Means and Standard Deviations of Academic Dishonesty Across Sub-Groups of Self-Restraint

Sub-groups of self-restraint	Academic dishonesty	
	Mean	SD
Low capacity & low desire (n=164)	13.2	14.9
High capacity & low desire (n=145)	5.0	7.7
Low capacity & high desire (n=52)	14.0	17.4
High capacity & high desire (n=86)	6.0	11.0

temptation on the relationship between both the capacity for self-control and the desire to exercise self-control on academic dishonesty, we first create a new composite measure we call self-restraint. Self-restraint is the cross-product of capacity and desire for self-control. We employ self-restraint as the cross-product of capacity and desire for self-control without including the main effects of these two component scales, because self-restraint is conceptualized as such by Tittle et al. (2004). Moreover, doing so for conceptually or theoretically sound purposes has been employed in analogous ways by others (see Grasmick and Bursik, 1990, Cochran et al., 1999). We then test a series of models regressing our measures of academic dishonesty onto self-constraint (centered), opportunity (student credit hours currently enrolled, transformed to z-scores and centered), and the cross-product of self-restraint (centered) with opportunity (centered) (see Table 7).

As is often the case with secondary data, our measure of opportunity is admittedly oblique and of limited face validity. The more courses one takes (credit hours), the more likely opportunities for cheating will present themselves; however, there is no necessary correspondence. Actual opportunities to cheat will likely vary with the diligence of the instructors, the nature of course assignments, the size of the class, etc. Clearly, it would have been much better to have measured perceived opportunities directly. Once again, given our reliance upon secondary data, this is the best we can do.

Across both models presented in Table 7, self-restraint is a significant ($p = .0001$) inhibitor of academic dishonesty. Likewise, across both models presented in Table 7, an opportunity to cheat, measured as students' credit hours enrolled, is significantly and positively associated with academic dishonesty. Diagnostics for Model 1 indicate no problematic levels of collinearity ($VIFs \leq$

4.00). Moreover, self-restraint does appear to reduce the influence of opportunities for academic dishonesty (see parameter estimates for the cross-product term of self-restraint and opportunity in Model 2; it is negative in value and approaches statistical significance). Again, the explanatory power of these models is quite limited ($R^2 \leq .094$).

Discussion

This study indirectly tests and extends an earlier study by Tittle et al. (2004). Tittle and his colleagues conceptualize self-control (also known as self-restraint or self-regulation) as a two-dimensional construct comprised of a capacity for self-control and a desire to exercise self-control. The capacity for self-control is conceptualized directly consistent with Gottfredson and Hirschi's (1990) concept of self-control, a "totally 'in the person' [and] lacking connection with future social environments or situational contexts" (Tittle et al., 2004:151). A desire to exercise self-control, while also an individual characteristic, is conceptualized to have "strong linkages with the immediate social world" (Tittle et al., 2004:151). These two dimensions of self-regulation are hypothesized to have both independent and interactive effects on criminal/deviant behavior. Tittle and his colleagues (2004) found that indicators of a capacity for self-control and of the desire to exercise self-control form separate, orthogonal factors, that separate scales comprised of these indicators independently predict self-reported criminal behavior, and that these two scales condition the effects of one another on criminal conduct.

Using self-report survey data from a sample of college students, we have replicated and extended the Tittle et al. (2004) study. We, too, find with very similar indicators (1) that the capacity for self-control and the desire to

Table 7. OLS Regression Models of the Relative and Interactive Effects of Respondents' Level of Self-Restraint and Opportunity to Cheat on Academic Dishonesty*

	Model 1			Model 2		
	b	SE	p	b	SE	p
Self-restraint	-3.106	.515	.0001	-3.059	.515	.0001
Opportunity to cheat	1.750	.595	.0017	3.800	1.445	.0045
Self-restraint* opportunity				-.824	.530	.0603
Intercept	16.508			16.449		
R ²	.089			.094		

* All models control for respondents' age (in years), sex (0=female, 1=male), race/ethnicity (0=racial/ethnic minority, 1=white), class standing (five-point ordinal scale: 1=freshman to 5=graduate student)

exercise self-control form independent, orthogonal factors, (2) that scales comprised of the items that load most strongly on these factors are modestly correlated with one another, (3) that each of these two scales is independently associated with students' self-reported frequency of academic dishonesty, such that those with a higher capacity for self-control and those with a stronger desire to exercise self-control are significantly less likely to report acts of academic dishonesty, and (4) that the effects of these two dimensions of self-regulation on academic dishonesty interact, such that a desire to exercise self-control conditions the effects of self-control capacity *and* that the capacity for self-control also conditions the effects of a desire to exercise self-control.

Our study extends the work of Tittle and his colleagues (2004) in two important ways. First we expand the theoretical scope of their study by testing it against data on a different form of deviant behavior derived from a different sample: academic dishonesty among college students. More significantly, we also were able to examine the extent to which the predictive efficacy of self-regulation, itself the cross-product of self-control capacity and desire, is conditioned by levels of opportunity. With regard to the latter, we found that the effects of self-regulation on academic dishonesty were moderated by opportunity, which was measured by student workload (i.e., credit hours enrolled).

One somewhat anomalous finding did emerge from our analyses relative to those of Tittle and his associates (2004). That is, in their sub-group analyses (see their Table VI on page 164), they report a consistent stair-step pattern of reduced mean frequencies of criminal offending from those with both a low capacity and low desire for self-control to those with both high capacity and high desire. We, however, found that the lowest mean frequencies of academic dishonesty were observed for both of the two "high capacity" sub-groups regardless of the level of desire for self-control (see Table 6). Thus, a high capacity for self-control effectively inhibits cheating, an effect that is only modestly enhanced by a strong desire to exercise self-control. Conversely, a high desire to exercise restraint inhibits cheating most appreciably when coupled with a capacity to do so. Tittle and his colleagues find a somewhat similar pattern for three of their sub-group analyses (i.e., those for theft, assault, and a six-item index of acts of force or fraud).

Neither the Tittle et al. study (2004) nor our replication and extension of it is without obvious limitations. Nevertheless, Tittle and his colleagues have introduced a very intriguing reconceptualization of self-control which they were able to support empirically. So, too, have we.

We now invite others with access to other data sets to continue this line of inquiry. Importantly, the scholarly community should seek to do what Tittle et al. (2004) and we have failed to do; that is, to develop direct measures of the desire to exercise self-control. Relatedly, there may be an issue of causality between the capacity for self-control and the desire for self-control. As one of the reviewers pointed out, many of the items that comprise our (and the Tittle et al. 2004) measure of the desire to exercise self-control theoretically and, perhaps, empirically could be the consequence of one's capacity for self-control (see also Piquero and Tibbetts, 1996).

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