

Online citation: Chen, Pan and Alexander T. Vazsonyi. 2010. "Hedonic Calculus: Does Self-Restraint Desire Matter?" *Western Criminology Review* 11(3):29-44. (<http://wcr.sonoma.edu/v11n3/Chen.pdf>).

Hedonic Calculus: Does Self Restraint Desire Matter?

Pan Chen
University of Chicago

Alexander T. Vazsonyi
Auburn University

Abstract: *Tittle, Ward, and Grasmick (2004) developed the idea of "self-control desire" as a key in understanding variability in crime and deviance, above and beyond low self-control (ability). The current study investigated the interplay between self-control ability, self-control desire, and deviance. Both self-control ability and self-control desire had independent effects on a variety of deviance measures; in addition, the interactive effects between the two were also significant. Results also indicate that the measure of self-control desire is composed of two different dimensions, namely punishment-avoiding self-control desire, a construct that shares conceptual similarities with perceived sanctions, and reward-seeking self-control desire. The independent and interactive effects of punishment-avoiding self-control desire and self-control ability on deviance were supported in the current study. However, reward-seeking self-control desire was unrelated to deviance once the effects by punishment-avoiding self-control desire and self-control ability were controlled. Follow-up analyses on the interaction effects indicate that the relationships between self-control ability and deviance were weaker for people with higher levels of self-control desire; in addition, the effects by self-control ability were not significant at high levels of self-control desire. Similarly, self-control ability was also found to attenuate the relationships between self-control desire and deviance; self-control desire did not predict deviance at high levels of self-control ability.*

Keywords: self-control theory, self-control ability, self-control desire, perceived sanctions

INTRODUCTION

Self-Control Theory (Gottfredson and Hirschi 1990) proposes that individuals low in self-control are at greater risk to engage in deviant and criminal behaviors as they lack capability to consider the future consequences of their behaviors and to delay gratification. Specifically, Gottfredson and Hirschi (1990) identified six traits of low self-control including 1) impulsivity, 2) the desire to take risks, 3) a preference for physical activity rather than mental activity, 4) a preference for simple tasks rather than complex ones, 5) selfishness and lack of concern for the well-being of others, and 6) a bad temper. The theory continues to enjoy a tremendous amount of attention through empirical tests and remains one of the most highly cited recent conceptual developments in the criminological literature (e.g., Benda 2005; Burton, Cullen, and Evans 1998; DeLisi 2001; Evans et al. 1997; Gibbs, Giever, and Higgins 2003; Gibson, Schreck, and Miller 2004; Higgins and Tewksbury 2006; LaGrange and Silverman 1999;

Longshore 1998; Morris, Wood, and Dunaway 2006; Pratt and Cullen 2000; Wright et al. 1999). Previous research has documented that low self-control is not only associated with crime (e.g., DeLisi 2001; Longshore 1998), but also with analogous behaviors (e.g., Benda 2005; Gibson et al. 2004). These links have been consistently documented across a variety of samples, including in middle school and high school students (e.g., Benda 2005; Morris et al. 2006), college students (e.g., Gibbs et al. 2003; Gibson et al. 2004), adults (e.g., Evans et al. 1997), juvenile and adult offenders (e.g., DeLisi 2001; Longshore 1998), females and males (e.g., Higgins and Tewksbury 2006; LaGrange and Silverman 1999), as well as in individuals from different cultural and national contexts (e.g., Tittle and Botchkovar 2005; Vazsonyi and Belliston 2007; Vazsonyi et al. 2001; Wright et al. 1999). At the same time, critics have questioned the exclusive focus on the individual, thus neglecting potential external constraint and restraint mechanisms, including sanctions (Akers 1991; Grasmick et al. 1993; Nagin and Paternoster 1993).

The main tenet of Self-Control Theory is based on the concept of *hedonic calculus*, an idea first developed by Bentham (1970). He postulated that crimes and similar behaviors will be committed by individuals if pleasurable consequences of acts exceed painful ones. Thus, social forces, such as formal or informal sanctions, play an important role in this hedonic calculus. The theory also posits that engaging in deviant or criminal behaviors entails some risk of social, legal, and/or natural sanctions or consequences. Therefore, Gottfredson and Hirschi (1990) propose that the self-control-deviance/crime link is affected by calculations of such consequences. In addition, it is also quite likely that the informal and formal sanctioning systems have long-term effects on this hedonic calculus through the development of self-control ability (e.g., family socialization processes). Therefore, the theory acknowledges and highlights both internal and social restraint mechanisms in the understanding of deviance and crime. This includes sanctioning systems that would operate above and beyond a person's levels of self-control ability through the family, through friends, or through society at large. In this way, hedonic calculus is also consistent with the rational choice tradition, which proposes that individuals become involved in deviant behaviors if expected benefits exceed perceived costs. In conclusion, the hedonic calculus underlying Self-Control Theory includes both internal and social restraint mechanisms that are associated with and predictive of subsequent deviant and criminal behaviors, something Vazsonyi (2003) empirically documented in a cross-national comparative test based on samples from four countries.

Self-Control Desire versus Self-Control Capacity

Tittle and colleagues (2004: 147-148) developed the novel idea to differentiate between "self-control desire" and "self-control capacity".

As noted before, those who can control themselves may not always want to do so; instead, they may sometimes deliberately choose to commit criminal acts. And, people who simultaneously lack the capacity for strong self-control and who possess little desire to control themselves may be especially prone to criminal conduct, while those with strong capacity for self-control and with great interest in exercising that self-control may be especially unlikely to offend. Logically, then, self-control ability and interest in exercising self-control should interact in producing misbehaviors.

They conceptualized self-control desire as one's interest to exercise self-restraint in the face of temptation. In contrast to self-control capacity, self-control desire is an individual, internal characteristic that is responsive to immediate, external social stimuli. Findings from their work provide

evidence that both self-control desire and self-control capacity were significant predictors of deviant and criminal behaviors; in fact, they exerted independent, cumulative, and interactive effects. Thus, Tittle and colleagues (2004) concluded that self-control desire was fundamentally sensitive to the social context and may reflect the influences of both formal and informal sanctions as perceived by the individual. Tittle and colleagues (2004) identified six indicators of self-control desire, namely 1) self-pride for refraining from offending, 2) perceived levels of praise they will receive (from people whose opinion they value) for refraining from offending, 3) perceived likelihood of losing respect (from people whose opinion they value) for committing deviant behaviors, 4) perceived chance of getting caught for engaging in deviant behaviors, 5) perceived levels of guilt for engaging in deviant behaviors, and 6) moral beliefs about the wrongfulness of deviant behaviors. These indicators were selected as they were proposed by a number of different theories (e.g., social learning and social control theories) to influence an individual's desire to exercise self-restraint in the face of temptation. Despite the fact that Tittle and colleagues (2004) treated the construct of self-control desire as a single factor model, a closer study of how they assessed this construct reveals two underlying dimensions. One of the dimensions assesses self-control interests stimulated by desire to gain rewards for not engaging in deviant behaviors (i.e., receiving praise or feeling proud of oneself), and therefore is reward-seeking self-control desire. The other dimension assesses self-control interests driven by desire to avoid risks or costs of committing deviant behaviors (i.e., losing respect, getting caught, feeling guilty, and feeling morally wrong), namely punishment-avoiding self-control desire.

Cochran, Aleksa, and Chamlin (2006) replicated Tittle et al.'s (2004) work based on a sample of college students and found that self-control ability and self-control desire were separate dimensions of self-control and that these two dimensions had independent as well as interactive effects on deviance (academic dishonesty). One potential limitation of this work is that it exclusively focused on academic dishonesty in college students. It is also important to note that this work did not include items of "pride" and "praise" in the measures of self-control desire. Thus, it only provided additional support for the effects of punishment-avoiding self-control desire on deviance, a dimension that is not distinct from perceived sanctions, a construct that has been widely discussed in deterrence work.

The effects by sanctioning systems on deviance and crime are well established in deterrence work. Sanctions alter an actor's calculations of the potential risks and benefits which in turn may support or prevent the commission of deviant or criminal acts. Some of the original empirical work indicates that legal sanctions have a deterrent effect on deviant or criminal behaviors (e.g.,

Anderson, Chiricos, and Waldo 1977; Cochran, Aleksa, and Sanders 2008; Jensen, Erickson, and Gibbs 1978; Wright et al. 2004). Grasmick and Bursik (1990) extended this by proposing that internalized norms and attachment to significant others may operate as potential punishment to decrease the expected utility of crime. They proposed that a person's conscience (internalized norms such as moral beliefs) may develop a sense of guilt or shame when actors consider something morally wrong; in addition, embarrassment may also result vis-a-vis friends and families whose opinions are valued. Thus, they hypothesized that conscience and embarrassment function as informal sanctions that work together with legal sanctions to decrease the likelihood of norm violations. Based on a random sample of adults, they found that although the effect by embarrassment was not significant, perceived shame and perceived legal sanctions inhibited the likelihood of engaging in illegal behaviors (tax cheating, petty theft, and drunk driving). More recently, Grasmick and Kobayashi (2002) also found additional supporting evidence based on a Japanese sample. Again, perceived shame explained most of the variability in deviance, and embarrassment had no significant effect.

Based on the original work by Grasmick and Bursik (1990), Vazsonyi (2003) tested a similar idea, namely whether both low self-control (ability) and perceived sanctions (perceived guilt, shame, and legal consequences) had independent and additive effects in the prediction of deviance. Based on samples of adolescents from four countries, he found that perceived sanctions impacted the decision to commit deviant behaviors in individuals who were identified as being low in self-control. This finding was consistent for both male and female youth as well as for youth from the four countries (i.e., Hungary, the Netherlands, Switzerland, and the United States). In addition, above and beyond low self-control effects, perceived sanctions predicted a variety of deviant behaviors. These findings supported the original theoretical propositions of Self-Control Theory, namely that mechanisms other than self-control ability also impact whether an individual chooses to engage in norm violating behaviors or not. The interplay between the effects of perceived sanctions and low self-control on deviance or criminal behaviors has also been examined and supported in a number of later studies (e.g., Schoepfer and Piquero, 2006; Svensson, Pauwels, and Weerman 2010; Wright et al. 2004).

In sum, self-control desire is not theoretically novel. Its punishment-avoiding dimension is not distinct from the construct of perceived sanctions, as they both assess the influences of the perceived risks and costs on deviant behaviors. Different from the construct of perceived sanctions, self-control desire as measured by Tittle et al. (2004) also includes a reward-seeking dimension which assesses the influences of perceived rewards on one's deviant or criminal behaviors. Previous theoretical and

empirical work has widely discussed and examined the independent and additive effects of low self-control and perceived sanctions, or punishment-avoiding self-control desire, in the prediction of deviance or criminal behaviors. However, it remains unclear whether two different dimensions underlie the construct of self-control desire. As a matter of fact, findings from the original work by Tittle et al. (2004) imply that the construct of self-control desire may not be unidimensional.¹ We were intrigued by the self-control desire concept proposed by Tittle and colleagues (2004), but also interested in trying to understand whether this construct is composed of a reward-seeking and a punishment-avoiding dimension. Related to that, we would also like to explore whether reward-seeking self-control desire predicts deviance and interacts with self-control ability in the same way as punishment-avoiding self-control desire does. Therefore, the current study had two main goals:

- (1) A replication of the work by Tittle et al. (2004), who identified self-control desire as a key part of the decision to engage in deviant behaviors. More specifically, the study sought to predict deviance with both self-control desire and self-control ability, as well as the interaction between these two constructs, because it was hypothesized that self-control desire and self-control ability would moderate the effects of each other on deviance.
- (2) The study also aimed to address whether the construct of self-control desire, as proposed by Tittle et al. (2004), could be decomposed into reward-seeking self-control desire and punishment-avoiding self-control desire, and if so, whether both components of self-control desire predict measures of deviance along with self-control ability independently and interactively.

METHODS

Sample

The data for the current study were collected from a convenience sample of college students using an anonymous online self-report survey that was approved by a university IRB. A snowball sampling technique was used to recruit participants. Students age 19 or older enrolled in social science undergraduate classes at a major university in the southeastern United States were invited to participate in the study for extra credit; they were also allowed to invite their friends to participate for a modest additional credit. The final study sample included $N = 324$ late adolescent college students (60% females), with a mean age of 20.7 years.

Measures

The survey included measures of age, sex, general demographic characteristics, self-control ability, self-control desire, and deviance.²

Age. Age was measured by an item that recorded a participant's month and year of birth. For age calculations, the 15th day of each respective month was used.

Sex. A single item asked the sex of the participants: "What is your gender?" Responses were given as 1 = male and 2 = female.

Socioeconomic Status. Socioeconomic status (SES) was assessed by both the type of employment performed by the primary wage earner in the family and family income. Six categories modified from Hollingshead's (1975) original nine categories were used to assess the primary wage earner's work type. The condensed descriptions include the following: 1 = owner of a large business, executive; 2 = owner of a small business, professional; 3 = semiprofessional, skilled laborer; 4 = clerical staff; 5 = semiskilled laborer; and 6 = laborer or service worker. Participants also rated their family's approximate total annual income from the following five choices: 1 = \$20,000 or less, 2 = \$20,000 to \$35,000, 3 = \$35,000 to \$60,000, 4 = \$60,000 to \$100,000, 5 = \$100,000 or more. Due to the differences in the metrics of the response, we developed an SES score by averaging the standardized scores of each item. The correlation between the Hollingshead scale and family income was $r = .31$.

Family Structure. Family structure was measured by a single item: "Which of the following home situations best applies to you?" Participants chose one of the following seven categories: 1 = biological parents, 2 = biological mother only, 3 = biological father only, 4 = biological mother and stepfather, 5 = biological father and stepmother, 6 = biological parent and significant other, and 7 = other. Family structure was recoded as biological parents versus others for data analyses.

Self-Control Ability. Grasmick et al.'s (1993) low self-control scale was used to assess self-control ability which included 24 items rated on a 5-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, 5 = strongly agree. In order to better compare with Tittle et al.'s (2004) study, the responses for all items were reverse coded and labeled as self-control. A self-control ability score was computed by averaging the responses to all 24 items, where a high score indicated high self-control ability and a low score indicated low self-control ability ($\alpha = .86$).

Self-Control Desire. Self-control desire was measured by a 30-item scale developed by Tittle et al. (2004). Six sets of five items were given with a series of descriptions of deviant behaviors that include gambling, theft, drunk driving, tax cheating and physical assault. Six questions were posed for each of the five deviance indicators: (1) "Generally, in most situation my feelings of pride in

myself would be increased if...", (2) "Would most of the people whose opinions you value lose respect for you if...", (3) "Would most of the people whose opinions you value express praise for you if...", (4) "Do you think you would get caught if...", (5) "Generally, in most situations, I would feel guilty if...", (6) "It is always morally wrong to...". Each item was rated on the following scale: 1 = strongly disagree, 2 = disagree, 3 = neither disagree nor agree, 4 = agree, 5 = strongly agree. The overall self-control desire was computed by averaging the responses to all items ($\alpha = .94$). In addition, the average of responses to all items in question 1 and question 3 was calculated and labeled as reward-seeking self-control desire ($\alpha = .92$). The average of responses to all items in other questions was calculated and labeled as punishment-avoiding self-control desire ($\alpha = .93$).

Deviance. A 55-item Normative Deviance Scale (NDS; Vazsonyi et al. 2001) was used to measure deviance. The current investigation examined five subscales on the NDS (vandalism, $\alpha = .86$; drug use, $\alpha = .88$; school misconduct such as cheating on school tests or skipping school, $\alpha = .79$; theft, $\alpha = .76$; assault, $\alpha = .71$), as well as the total deviance scale, which also includes items that assess alcohol use and general deviance (mean of all 55 items, $\alpha = .95$). Participants rated lifetime deviance, "Have you ever ..." Response categories included: 1 = never, 2 = one time, 3 = 2-3 times, 4 = 4-6 times, and 5 = more than 6 times.

Plan of Analysis

Four analytic steps were used. First, factor analyses were conducted to examine whether self-control ability and self-control desire are two distinct constructs and whether the measure of self-control desire includes two factors (i.e., reward-seeking self-control desire and punishment-avoiding self-control desire). The second step replicated the regression analyses from Tittle et al.'s (2004) study to examine the effects of self-control desire, self-control ability, and the interaction between self-control desire and self-control ability in the prediction of deviance measures. The third step employed regressions to test the independent effects by punishment-avoiding self-control desire and reward-seeking self-control desire. In the final step, the significant interaction effects were further explored using the online computational utility provided by Preacher, Curran, and Bauer (2006).

RESULTS

Demographic and Scale Information

Table 1 includes descriptive information on key demographic variables in the current study, while Appendix 1 includes descriptive statistics on the main

Table 1. Demographic Variables (Percentages; N=324)

Demographic Variables		Males	Females	Total
Sex		40.1	59.9	100.0
Age	Mean age (years)	21.0	20.6	20.7
Family Structure	Two biological parents	80.0	77.8	78.7
	One biological parent (only)	9.2	10.3	9.9
	One stepparents and one biology parent	8.5	8.2	8.3
	Other (e.g., biological parent and significant other etc.)	2.3	3.6	3.1
Family Income	\$20,000 or less	1.5	0.5	0.9
	\$20,000 to 35,000	3.8	2.1	2.8
	\$35,000 to 60,000	13.8	12.4	13.0
	\$60,000 to 100,000	39.2	35.1	36.7
	\$100,000 or more	41.5	50.0	46.6
Hollingshead's SES Scale	Laborer or service worker	0.8	1.1	1.0
	Semiskilled laborer	2.5	1.1	1.7
	Clerical staff	8.3	6.7	7.4
	Semiprofessional, skilled laborer	17.4	11.8	14.0
	Small business owner, professional	47.1	50.6	49.2
	Big business owner, executive	24.0	28.7	26.8

study scales, including reliability estimates, namely measures of self-control ability, measures of self-control desire developed by Tittle et al. (overall self-control desire, reward-seeking self-control desire, and punishment-avoiding self-control desire), and measures of deviance.

Factor Analysis of Self-Control Desire and Self-Control Ability

Tittle et al. (2004) conducted an Exploratory Factor Analysis (EFA) and found two factors based on all items part of the self-control desire and self-control ability measures. Results showed that 23 of the 30 self-control desire items loaded (greater than 0.48) on factor 1, but not on factor 2. On the other hand, 21 of the 24 self-control ability items loaded well on factor 2 (greater than 0.30), but poorly on factor 1. We replicated the EFA analyses used by Tittle et al. (2004) and present our findings in Appendix 2; findings show that all 30 self-control desire items loaded well (greater than 0.52) on factor 1, but poorly on factor 2 (less than 0.17). In contrast, all 24 self-control ability items loaded better on factor 2 (greater than 0.28) than on factor 1 (less than 0.14). This suggested that

the two constructs are empirically distinct, and thus findings are consistent with those reported by Tittle and colleagues (2004).

Tittle et al. (2004) used a composite scale of all self-control desire items based on additional analyses. However, a consideration of item content and wording provided some conceptual indication of two potential self-control desire factors. To test this, an EFA on all self-control desire items was conducted, and two factors were specified a priori. As shown in Appendix 3, the pride and praise items loaded (greater than 0.53) on factor 2 but less well on factor 1 (less than 0.39). The remaining items loaded (greater than 0.53) on factor 1 and to a lesser extent on factor 2 (less than 0.40). This provided some empirical support for the idea that perceived rewards, particularly pride and praise, for not engaging in deviant or criminal behavior, may in fact be conceptually distinct from items that seem to tap perceived sanctions or constraint mechanisms. Therefore, in the following analyses, we first tested the potentially additive or redundant effects of self-control desire (total scale) and self-control ability on deviance measures. Next, we further examined self-control desire by separately testing for the effects of each

identified dimension, namely what we term reward-seeking self-control desire (i.e., pride and praise) and punishment-avoiding self-control desire (conceptually related to perceived sanctions). The correlation statistics between measures of self-control ability, self-control

desire (including both total scale and sub-scale scores), and deviance are reported in Table 2. Findings provided evidence of significant negative relationships between measures of self-control ability as well as self-control desire and deviance.

Table 2. Correlation between Measures of Self-Control Ability, Self-Control Desire, and Deviance (N=324)

Measures	Total Deviance	Vandalism	Drug Use	School Misconduct	Theft	Assault
Self-control ability	-.36***	-.31***	-.27***	-.41***	-.25***	-.22***
Self-control desire	-.42***	-.35***	-.34***	-.33***	-.31***	-.34***
Reward-seeking SCD	-.20***	-.18***	-.16**	-.16**	-.18**	-.15**
Punishment-avoiding SCD	-.47***	-.39***	-.38***	-.37***	-.34***	-.40***

Note. ** $p < .01$, *** $p < .001$. SCD = self-control desire.

Effects by Self-Control Desire

Consistent with the work by Tittle and colleagues (2004), we tested a model that included both self-control ability and self-control desire in the prediction of a variety of deviance constructs. Table 3 provides the findings from these analyses; all analyses included age, sex, family structure, and SES as covariates.³ The first two rows include findings from analyses that separately considered the effects by self-control ability and self-control desire, net the effects by control variables. Findings from these analyses are consistent with previous work; both self-

control ability and self-control desire had effects in the prediction of six deviance measures used in this study. The second panel in Table 3 provides the results of regression models that included self-control ability, self-control desire, and the interaction term between the two. Both self-control ability and desire had independent effects in the prediction of deviance; in addition, a significant interaction effect was found for four of the six deviance measures (i.e., total deviance, vandalism, school misconduct, and assault).⁴

Table 3. Multiple Regressions Predicting Deviance with Self-Control Desire and Self-Control Ability (N=324)

Predictor	Vandalism		Drug use		School Misconduct		Theft		Assault		Total Deviance	
	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
Individual Effects^a												
Self-Control Desire	-.22***	.05	-.29***	.06	-.25***	.06	-.26***	.06	-.20***	.05	-.34***	.05
Self-Control Ability	-.25***	.05	-.26***	.05	-.39***	.05	-.22***	.05	-.14**	.05	-.33***	.05
Interaction Analyses^b												
Self-Control Desire	-.20***	.05	-.21***	.05	-.34***	.05	-.18**	.05	-.09*	.05	-.27***	.05
Self-Control Ability	-.18**	.05	-.25***	.05	-.19***	.05	-.22***	.06	-.18**	.05	-.29***	.05
SC Desire X SC Ability	.15**	.05	.09	.05	.14**	.05	.10	.05	.16**	.05	.15**	.05
R ²	.11		.13		.19		.10		.07		.21	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. SC = self-control. All predictors were centered. Control variables include: SES, family structure, age and sex.
^aRegression coefficients are from analyses that only included each independent variable by itself, net the effects by control variables.
^bRegression coefficients are from analyses that included both independent variables and their interaction term, net the effects by control variables.

Effects by Reward-Seeking and Punishment-Avoiding Self-Control Desire

This set of models examined whether the reward-seeking (pride and praise) and punishment-avoiding self-control desire dimensions had unique and/or redundant effects on deviance measures. The initial model tested the effects by punishment-avoiding self-control desire, self-control ability, and an interaction term. Table 4 includes the findings from these analyses; both punishment-

avoiding self-control desire and self-control ability uniquely predicted deviance measures. In addition, the interaction term was significant in the models predicting vandalism, school misconduct, assault, and total deviance. Net the effects by control variables, punishment-avoiding self-control desire, self-control ability, and the interaction term together explained 9% or more of the variance in deviance in these four models; they also explained 15% of the variance in drug use and 11% in theft.

Table 4. Multiple Regression Predicting Deviance by “Punishment-Avoiding” Self-Control Desire and Self-Control Ability

Predictor	Vandalism		Drug use		School Misconduct		Theft		Assault		Total Deviance	
	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
Punishment-Avoiding Self-Control Desire	-.20***	.05	-.30***	.06	-.23***	.05	-.25***	.06	-.22***	.05	-.35***	.05
Self-Control Ability	-.18***	.05	-.20***	.05	-.33***	.05	-.17**	.05	-.07	.05	-.25***	.05
Punishment-Avoiding SCD X SCA	.16**	.05	.08	.05	.12*	.05	.07	.05	.17**	.05	.14**	.05
R²	.12		.15		.20		.11		.09		.23	

* $p < .05$, ** $p < .01$, *** $p < .001$. SCD = self-control desire. SCA= self-control ability. All predictors are centered. Control variables include: SES, family structure, age and sex.

The next set of models included both reward-seeking self-control desire and self-control ability. Findings are included in Table 5. Controlling for all other variables in the model, reward-seeking self-control desire had a significant effect on five of the six deviance measures,

with the exception of assault. Net the effects by control variables, reward-seeking self-control desire, self-control ability, and the interaction term explained 3% (assault) to 17% (school misconduct) variance across the six deviance measures.

Table 5. Multiple Regression Predicting Deviance by “Reward-Seeking” Self-Control Desire and Self-Control Ability (N=324)

Predictor	Vandalism		Drug use		School Misconduct		Theft		Assault		Total Deviance	
	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
Reward-seeking self-control desire	-.10*	.05	-.11*	.05	-.10*	.05	-.14*	.05	-.07	.05	-.14**	.05
Self-Control Ability	-.24***	.05	-.25***	.05	-.37***	.05	-.21***	.05	-.13*	.05	-.32***	.05
Reward-seeking SCD X SCA	.10*	.05	.09	.05	.13**	.05	.13*	.05	.09	.05	.14**	.05
R²	.08		.08		.17		.08		.03		.14	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. SCD = self-control desire. SCA= self-control ability. Control variables include: SES, family structure, age and sex.

Independent Effects by Reward-Seeking and Punishment-Avoiding Self-Control Desire

This set of models tested whether reward-seeking self-control desire and punishment-avoiding self-control desire had independent effects on deviance measures controlling for each other as well as self-control ability. The results are shown in Table 6. It is worth noting that when entered together with punishment-avoiding self-control desire in the models, reward-seeking self-control desire did not have

a significant effect on any of the six deviance measures. However, the effects by the punishment-avoiding self-control desire remained significant for all six deviance measures, net the effects by reward-seeking self-control desire. Findings imply that punishment-avoiding self-control desire had independent effects on all six deviance measures, whereas the effects of reward-seeking self-control desire appeared to be redundant.

Table 6. Multiple Regressions Predicting Deviance by “Reward-Seeking” Self-Control Desire, “Punishment-Avoiding” Self-Control Desire, and Self-Control Ability (N=324)

Predictor	Vandalism		Drug use		School Misconduct		Theft		Assault		Total Deviance	
	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
Reward-seeking self-control desire	.01	.06	.05	.06	.03	.06	-.02	.06	.07	.06	.05	.05
Punishment-avoiding Self-Control Desire	-.21***	.06	-.33***	.06	-.24***	.06	-.24***	.07	-.27***	.06	-.37***	.06
Self-Control Ability	-.18***	.05	-.20***	.05	-.33***	.05	-.18***	.05	-.07	.05	-.25***	.05
Reward-seeking SCD X SCA	-.00	.06	.01	.06	.06	.06	.10	.06	-.03	.06	.04	.05
Punishment-avoiding SCD X SCA	.16**	.06	.08	.06	.09	.06	.02	.06	.19***	.06	.13*	.05
R²	.12		.15		.20		.11		.09		.23	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. SCD = self-control desire. SCA = self-control ability. All predictors are centered. Control variables include: SES, family structure, age and sex.

Interpretation of the Interaction Effects

To explore the significant interactions between measures of self-control desire and self-control ability, we interpreted the interaction effects using methods outlined by Preacher et al. (2006). Briefly, this method is based on calculation of simple slopes of the focal variable at different levels of the moderator variable and on estimation of the region of the moderator variable within which the focal variable’s effects are significant (i.e., the significant region). We first examined the moderation effects of self-control desire (both the total scale and punishment-avoiding self-control desire) on the relationships between self-control ability and measures of deviance. The regression coefficients of self-control ability (i.e., the simple slopes) were estimated at a low level of self-control desire (i.e., one standard deviation below the

sample mean), at the mean level of self-control desire (the sample mean), and at a high level of self-control desire (i.e., one standard deviation above the sample mean). The estimated simple slopes and significant regions are reported in Table 7. Relationships between self-control ability and measures of deviance were significant at the specified low level of self-control desire. However, effects of self-control ability on measures of deviance became weaker or non-significant for individuals with higher levels of self-control desire (i.e., the mean level or one standard deviation above the mean). Estimations of the significant regions indicate that relationships between self-control ability and measures of deviance were not significant for individuals with very high levels of self-control desire.

Table 7. Regression Coefficients for the Effects by Self-Control Ability at Different Levels of Self-Control Desire (N=324)

Dependent Variables	Self-control ability coefficients at different levels of total self-control desire			Significant region
	-.66 (One SD below mean)	0 (Mean)	.66 (One SD above mean)	
Vandalism	-.26***	-.14***	-.03	-2.69 to .22
School Misconduct	-.73***	-.53***	-.33**	-2.69 to .90
Assault	-.23***	-.09	.05	-2.69 to -.04
Deviance	-.49***	-.32***	-.15	-2.69 to .64

Dependent Variables	Self-control ability coefficients at different levels of punishment-avoiding self-control desire			Significant region
	-.69 (One SD below mean)	0 (Mean)	.69 (One SD above mean)	
Vandalism	-.36***	-.21***	-.05	-2.90 to .34
Assault	-.22***	-.07	.09	-2.90 to -.13
Deviance	-.43***	-.30***	-.18*	-2.90 to .71

Note. * $p < .05$, ** $p < .01$, *** $p < .001$. Centered self-control desire ranges from -2.69 to 1.11. Centered punishment-avoiding self-control desire ranges from -2.90 to 1.05. Significant regions indicate the ranges of self-control desire and punishment-avoiding self-control desire within which the effects by self-control ability are significant.

In the next step, moderation effects of self-control ability on the relationships between self-control desire (both the total scale and punishment-avoiding self-control desire) and measures of deviance were explored using the same steps mentioned above. Simple slopes and significant regions of self-control desire are exhibited in Table 8. Findings provide evidence of significant negative relationships between self-control desire and measures of

deviance at the low and mean levels of self-control ability, although the relationships at the mean level of self-control ability were weaker than those at the low level of self-control ability. The effects of self-control desire on vandalism and assault (also the effect of total self-control desire on school misconduct) were not significant at the high level of self-control ability. The relationships between self-control desire and total deviance at the high level of

Table 8. Regression Coefficients for the Effects by Self-Control Desire at Different Levels of Self-Control Ability (N=324)

Dependent Variables	Total self-control desire coefficients at different levels of self-control ability			Significant region
	-.48 (One SD below mean)	0 (Mean)	.48 (One SD above mean)	
Vandalism	-.26***	-.14***	-.03	-1.36 to .22
School Misconduct	-.36***	-.21***	-.07	-1.36 to .27
Assault	-.23***	-.12***	-.02	-1.36 to .21
Deviance	-.37***	-.25***	-.13*	-1.36 to .51

Dependent Variables	Punishment-avoiding self-control desire coefficients at different levels of self-control ability			Significant region
	-.48 (One SD below mean)	0 (Mean)	.48 (One SD above mean)	
Vandalism	-.27***	-.17***	-.06	-1.36 to .27
Assault	-.29***	-.18***	-.07	-1.36 to .39
Deviance	-.40***	-.31***	-.22***	-1.36 to .82

Note. * $p < .05$, *** $p < .001$. Centered self-control ability ranges from -1.36 to 1.48. Significant regions indicate the ranges of self-control ability within which the effects by self-control desire and punishment-avoiding self-control desire are significant.

self-control ability were significant but weaker than those estimated at the low and mean levels of self-control ability. Finally, the significant region estimations indicate that the relationships between self-control desire and total deviance were not significant for individuals with very high levels of self-control ability.

DISCUSSION

The current study focused on theoretically salient links between self-control ability, self-control desire, and a variety of deviance measures. In addition to replicating the work by Tittle et al. (2004), the current study also explored whether self-control desire as measured by Tittle and colleagues (2004) is composed of a reward-seeking and a punishment-avoiding dimension, with the latter overlapping conceptually and empirically with perceived sanctions. In support of the work by Tittle and colleagues (2004), the following important findings were made. First, both self-control ability and self-control desire had independent effects on each deviance measure, namely vandalism, drug use, school misconduct, theft, assault, and total deviance. In addition, the interaction between self-control ability and self-control desire significantly predicted vandalism, school misconduct, assault, and total deviance. This finding largely confirms that self-control ability, which can be considered as a relatively stable intra-individual characteristic, and self-control desire, a primarily social constraint mechanism dependent on the context, are both important constructs in the understanding of and prediction of a variety of deviance indicators.

Second, factor analyses provided evidence that self-control desire was composed of two different dimensions or constructs, namely a reward-seeking self-control desire dimension as well as a punishment-avoiding one. While the former seems related to positive feelings about not violating social norms, the latter is conceptually consistent with perceived sanctions that are associated with perceived risks or costs of deviant behaviors by the actor. Thus, both effects by reward-seeking self-control desire and punishment-avoiding self-control desire were tested separately. Analyses which tested both dimensions together provided evidence of some similar findings as made about the effects by self-control desire, namely that punishment-avoiding self-control desire had independent effects on each deviance measure, and that the interaction between punishment-avoiding self-control desire and self-control ability had significant effects on vandalism, assault, and total deviance. However, the reward-seeking self-control desire dimension did not predict deviance when considered together with punishment-avoiding self-control desire.

Candidate explanations for these findings seem to be a function of how these constructs were assessed. The items that measured pride assessed whether an individual

perceived feelings of pride when they refrained from engaging in deviant conduct, while the items that measured praise assessed an individual's perceived likelihood of receiving praise from engaging in deviant behaviors. It is plausible that these items are more salient and account for more variability in individuals who regularly exhibit deviant behaviors. On the other hand, these constructs might be less salient in conforming individuals who would simply not endorse items that assess feeling good about not doing something wrong. Thus, the current study completed on college students, presumably largely conforming individuals, shows that elements consistent with the perceived sanctions part of self-control desire most consistently account for variability in deviant behaviors. Thus, it is also possible that measures tapping the reward-seeking dimension of self-control desire might explain more variability in a sample that can be characterized as less conforming. Therefore, the effect of reward-seeking self-control ability on deviance and its interactive effects with self-control desire need to be explored by future studies using different samples.

Finally, additional analyses on the interaction effects between self-control ability and self-control desire (both the total scale and the punishment-avoiding dimension) indicate that self-control desire and self-control ability attenuate the effects of each other on measures of deviance. Specifically, the relationships between self-control ability and measures of deviance were stronger for individuals with lower levels of self-control desire. More importantly, it was found that the effects of self-control ability on deviance were not significant at very high levels of self-control desire. Similar patterns were also observed for the moderation effects of self-control ability on the relationships between self-control desire and deviance. Tittle and colleagues (2004) found that self-control capability was most effective when the individual's self-control desire was low but its effect was greatly reduced when self-control desire was high. Therefore, findings of the current study replicate the ones from the original work by Tittle et al.'s (2004). The interaction patterns discovered in the current study are also consistent with the findings from the previous work on perceived sanctions. For example, Wright et al. (2004) found that perceived sanctions had greatest impact on criminally prone individuals. Similarly, Cochran et al. (2008) reported that the observed effects of perceived sanctions on academic dishonesty were stronger among those with low self-control than among those of moderate self-control.⁵ In addition, a number of studies on moral beliefs (e.g., Schoepfer and Piquero, 2006; Svensson et al., 2010) also provided evidence that low self-control has a stronger effect on criminal behaviors for individuals with low levels of morality than for individuals with high levels of morality. These findings highlight the importance of considering the interplay between self-control ability and

perceived sanctions or self-control desire in future work on deviance or criminal behaviors.

The current study is the first to explore the dimensions underlying the construct of self-control desire and to examine the effects of self-control desire by dimensions. While findings from the current study provide insights into the understanding of the structure and functions of self-control desire, a number of study limitations require mention. First, the sample used was a convenience sample of college students with a comparatively high level of SES. While convenience sampling is economic and efficient, the participants sampled are generally not representative of diverse adolescent populations. Therefore, findings from the current study should not be generalized to non-college and/or low-SES samples of adolescents. In addition, college students may have particularly high levels of self-control ability, and thus, perhaps also low levels of deviant behaviors. Next steps in the work necessarily involve testing some of these ideas on samples of individuals who are highly prone to criminal behaviors, and thus, who have relatively low levels of self-control. In addition, because only cross-sectional data were used in the current effort, causality cannot be inferred; future work needs to endeavor to test some of these ideas related to effects by self-control ability and self-control desire or perceived sanctions in longitudinal data sets. Fourth, the self-control ability measures (the Grasmick et al. scale) used in the current study has been challenged empirically. For example, DeLisi, Hochstetler, and Murphy (2003) examined the dimensionality of the scale and found that it was not unidimensional and failed to meet most goodness-of-fit statistics. In addition, previous scholars did not reach agreement on the use of modification indices to refine the scale (e.g., Longshore, Stein, and Turner 1998; Piquero and Rosay 1998). Therefore, future work should explore the effects by self-control ability and its interactive effects with self-control desire using more refined measures of self-control ability. Finally, it is important to note that the constructs of low self-control and self-control desire have been increasingly linked to related processes in psychology, neuropsychology, or genetics. For instance, it was proposed that self-control ability should be viewed as a part of executive functioning (Beaver, Wright, and Delisi 2007). Beaver et al. (2007) found that measures of neuropsychological deficits were related to variability in self-control ability. Therefore, future research should consider incorporating relevant elements from the psychological or neuropsychological domains into the research on self-control ability and/or self-control desire.

Endnotes

¹ In their study, the self-control desire items formed more than one factor with an eigenvalue greater than one, but they decided to proceed with a one factor model based on differences in adjacent eigenvalues.

² Race/ethnicity was not assessed in the current study as the majority of students enrolled at Auburn University in the year the data were collected was European American (European American: 83%; African American: 8%; American Indian or Alaskan: 1%; Asian or Pacific Island: 2%; Hispanic: 2%; Other: 5%). Therefore, we did not complete analyses by race or control for it, due to the very small number of ethnic and racial minorities. We also did not expect that group membership would have any impact on study findings, consistent with self-control theory.

³ These variables were used as control variables in all regression analyses.

⁴ In order to avoid the problem of multicollinearity, self-control ability and measures of self-control desire were centered using the sample mean in all regression analyses with interaction terms.

⁵ The observed differences were found to be non-significant in the follow-up z-test for the equality of regression coefficients. However, Cochran and colleagues tested the interaction effects between low self-control and perceived sanctions by dividing the samples into three groups (i.e., a low self-control group, a moderate self-control group, and a high self-control group) and comparing the effects by perceived sanctions between the three groups. This method is distinct from the more rigid analyses used in the current study (i.e., testing the interaction effects by including self-control ability, self-control desire, and their interaction in the same model). This might explain why Cochran and colleagues found invariance of the perceived sanction effects at different levels of low self-control.

References

- Akers, Ronald L. 1991. "Self-Control as a General Theory of Crime." *Journal of Quantitative Criminology* 7:201-211.
- Anderson, Linda S., Theodore G. Chiricos, and Gordon P. Waldo. 1977. "Formal and Informal Sanctions: A Comparison of Deterrent Effects." *Social Problems* 25:103-114.
- Beaver, Kevin M., John P. Wright, and Matt DeLisi. 2007. "Self-Control as an Executive Function: Reformulating Gottfredson and Hirschi's Parental Socialization Thesis." *Criminal Justice and Behavior* 34:1345-1361.
- Benda, Brent B. 2005. "The Robustness of Self-Control in Relation to Form of Delinquency." *Youth & Society* 36:418-444.

- Bentham, Jeremy. 1970 [1789]. *An Introduction to the Principles of Morals and Legislation*. London, UK: The Athlone Press.
- Burton, Velmer S. Jr., Francis T. Cullen, and T. David Evans. 1998. "Gender, Self-Control, and Crime." *Journal of Research in Crime and Delinquency* 35:123-147.
- Cochran, John K., Valentina Aleksa, and Mitchell B. Chamlin. 2006. "Self-Restraint: A Study on the Capacity and Desire for Self-Control." *Western Criminology Review* 7:27-40.
- Cochran, John K., Valentina Aleksa, and Beth A. Sanders. 2008. "Are Persons Low in Self-Control Rational and Deterable?" *Deviant Behavior* 29:461-483.
- DeLisi, Matt. 2001. "Designed to Fail: Self-Control and Involvement in the Criminal Justice System." *American Journal of Criminal Justice* 26:131-148.
- DeLisi, Matt, Andy Hochstetler, and Daniel S. Murphy. 2003. "Self-Control behind Bars: A Validation Study of the Grasmick et al. Scale." *Justice Quarterly* 20: 241-263.
- Evans, T. David, Francis T. Cullen, Velmer S. Burton Jr., R. Gregory Dunaway, and Michael L. Benson. 1997. "The Social Consequences of Self-Control: Testing the General Theory of Crime." *Criminology* 35:475-501.
- Gibbs, John J., Dennis Giever, and George E. Higgins. 2003. "A Test of Gottfredson and Hirschi's General Theory Using Structural Equation Modeling." *Criminal Justice and Behavior* 30:441-458.
- Gibson, Chris, Christopher J. Schreck, and Mitchell J. Miller. 2004. "Binge Drinking and Negative Alcohol-Related Behaviors: A Test of Self-Control Theory." *Journal of Criminal Justice* 32:411-410.
- Gottfredson, Michael R. and Travis Hirschi. 1990. *A General Theory of Crime*. Palo Alto, CA: Stanford University Press.
- Grasmick, Harold G. and Robert J. Bursik Jr. 1990. "Conscience, Significant Others, and Rational Choice: Extending the Deterrence Model." *Law & Society Review* 24:837-861.
- Grasmick, Harold G. and Emiko Kobayashi. 2002. "Workplace Deviance in Japan: Applying an Extended Model of Deterrence." *Deviant Behaviors* 23:21-43.
- Grasmick, Harold G., Charles R. Tittle, Robert J. Bursik Jr., and Bruce J. Arneklev. 1993. "Testing the Core Empirical Implications of Gottfredson and Hirschi's General Theory of Crime." *Journal of Research in Crime and Delinquency* 30:5-29.
- Higgins, George E. and Richard Tewksbury. 2006. "Sex and Self-Control Theory: The Measures and Causal Model May be Different." *Youth and Society* 37:479-503.
- Hollingshead, August B. 1975. "A Four-Factor Index of Social Status." *Unpublished manuscript*, Yale University, New Haven, CT.
- Jensen, Gary F., Maynard L. Erickson, and Jack P. Gibbs. 1978. "Perceived Risk of Punishment and Self-Reported Delinquency." *Social Forces* 57:57-58.
- LaGrange, Teresa C., and Robert A. Silverman. 1999. "Low Self-Control and Opportunity: Testing the General Theory of Crime as an Explanation for Gender Differences in Delinquency." *Criminology* 37:41-72.
- Longshore, Douglas. 1998. "Self-Control and Criminal Opportunity: A Prospective Test of the General Theory of Crime." *Social Problems* 45:102-113.
- Longshore, Douglas, Judith A. Stein, and Susan Turner. 1998. "Reliability and Validity of a Self-Control Measure: Rejoinder." *Criminology* 26: 175-182.
- Morris, Gregory D., Peter B. Wood, and R. Gregory Dunaway. 2006. "Self-Control, Native Traditionalism, and Native American Substance Use: Testing the Cultural Invariance of a General Theory of Crime." *Crime and Delinquency* 52:572-598.
- Nagin, Daniel S. and Raymond Paternoster. 1993. "Enduring Individual Difference and Rational Choice Theories of Crime." *Law and Society Review* 27:467-496.
- Piquero, Alex R. and Andre B. Rosay. 1998. "The Reliability and Validity of Grasmick et al.'s Self-Control Scale: A Comment on Longshore et al." *Criminology* 36:157-173.
- Pratt, Travis C. and Francis T. Cullen. 2000. "The Empirical Status of Gottfredson and Hirschi's General Theory of Crime: A Meta-Analysis." *Criminology* 38:931-964.
- Preacher, Kristopher J., Patrick J. Curran, and Daniel J. Bauer. 2006. "Computational Tools for Probing Interactions in Multiple Linear Regression, Multilevel Modeling, and Latent Curve Analysis." *Journal of Educational and Behavioral Statistics* 31: 437-448.
- Schoepfer, Andrea and Alex R. Piquero. 2006. "Self-Control, Moral Beliefs, and Criminal Activity." *Deviant Behavior* 27:51-71.
- Svensson, Robert, Lieven Pauwels and Frank M. Weerman. 2010. "Does the Effect of Self-Control on Adolescent Offending Vary by Level of Morality? A

Test in Three Countries." *Criminal Justice and Behavior* 37:732-743.

Tittle, Charles R. and Ekaterina V. Botchkovar. 2005. "The Generality and Hegemony of Self-Control Theory: A Comparison of Russian and US Adults." *Social Science Research* 34:703-731.

Tittle, Charles R., David A. Ward, and Harold G. Grasmick. 2004. "Capacity for Self-Control and Individuals' Interest in Exercising Self-Control." *Journal of Quantitative Criminology* 20:143-172.

Vazsonyi, Alexander T. 2003. "The General Theory of Crime in the European Context: Revisiting Hedonic Calculus." *Kolner Zeitschrift fur Soziologie und Sozialpsychologie* 43:337-355.

Vazsonyi, Alexander T. and Lara M. Belliston. 2007. "The Family→Low Self-Control→Deviance: A Cross-

Cultural and Cross-National Test of Self-Control Theory." *Criminal Justice and Behavior* 34:505-530.

Vazsonyi, Alexander T., Lloyd E. Pickering, Marianne Junger, and Dick Hessing. 2001. "An Empirical Test of a General Theory of Crime: A Four-Nation Comparative Study of Self-Control and the Prediction of Deviance." *Journal of Research in Crime and Delinquency* 38:91-131.

Wright, Bradley R. E., Avshalom Caspi, Terrie E. Moffitt, and Ray Paternoster. 2004. "Does the Perceived Risk of Punishment Deter Criminally-Prone Individuals? Rational Choice, Self-Control, and Crime." *Journal of Research in Crime and Delinquency* 41:180-213.

Wright, Bradley R. E., Avshalom Caspi, Terrie E. Moffitt, and Phil A. Silva. 1999. "Low Self-Control, Social Bonds, and Crime: Social Causation, Social Selection, or Both?" *Criminology* 37:479-514.

About the authors

Pan Chen is a Postdoc at the Department of Psychiatry and Behavioral Neuroscience at the University of Chicago. She received her Ph.D. in Human Development and Family Studies at Auburn University (2009). Her research interests include adolescent problem behaviors and deviance, cross-cultural comparisons of adolescent behaviors, and contextual influences on adolescent development. Email: pchen2@yoda.bsd.uchicago.edu

Alexander T. Vazsonyi is Professor of Human Development and Family Studies at Auburn University. His research interests include etiological risk factors in adolescent problem behaviors and deviance, criminological theory, and the cross-cultural/cross-national comparative method in the study of human development and behavior. He currently serves as the Editor-in-Chief of *The Journal of Early Adolescence*. Email: vazsonyi@auburn.edu

Contact information: Alexander T. Vazsonyi, Auburn University, Department of Human Development and Family Studies, 284 Spidle Hall, Auburn, AL 36849; Phone: (334)844-4091; Fax: (334)844-4515; Email: vazsonyi@auburn.edu.

<i>Appendix 1. Scale Information</i>						
Scales	Items	α	Min.	Max.	Mean	SD
Self-Control Ability	24	.86	2.17	5.00	3.52	.48
Self-Control Desire	30	.94	1.20	5.00	3.89	.66
Reward-seeking SCD	10	.92	1.00	5.00	3.77	.88
Punishment-avoiding SCD	20	.93	1.05	5.00	3.95	.69
Total Deviance	55	.95	1.00	4.04	1.75	.58
Vandalism	8	.86	1.00	4.63	1.34	.55
Drug Use	9	.88	1.00	5.00	1.84	.95
School Misconduct	7	.79	1.00	4.71	1.82	.75
Theft	7	.76	1.00	3.71	1.28	.47
Assault	6	.71	1.00	3.50	1.28	.47

Note. SCD = self-control desire

<i>Appendix 2. Exploratory Factor Analysis for Self-Control Ability Items and Self-Control Desire Items</i>		
Self-Control Desire Items	Factor 1	Factor 2
Generally, in most situations my feelings of pride in myself would be increased if:		
1. I did not participate in illegal gambling on a sporting event.	.63	-.04
2. If I refrained from physically hurting another person on purpose.	.64	-.02
3. If I refrained from taking something from someplace worth less than \$20 ...	.59	.03
4. If I did not drive an automobile while under the influence of alcohol.	.60	.03
5. If I did not fail to report certain income or claim an undeserved deduction ...	.65	-.01
Would most of the people whose opinions you value lose respect for you if:		
6. You gambled illegally on a sporting event or other situation.	.58	-.07
7. You physically hurt another person on purpose.	.70	-.16
8. You took something from someplace worth less than \$20 ...	.72	-.14
9. You drove an automobile while under the influence of a moderate amount of alcohol.	.66	-.09
10. You failed to report certain income or claimed an undeserved deduction ...	.67	-.08
Would most of the people whose opinions you value express praise for you:		
11. For not participating in illegal gambling on a sporting event or other situation.	.61	.17
12. If you refrained from physically hurting another person on purpose.	.59	.12
13. If you refrained from taking something from someplace worth less than \$20 ...	.62	.16
14. If you did not drive an automobile while under the influence ...	.57	.16
15. If you did not fail to report certain income or claim an undeserved deduction ...	.64	.14
Do you think you would get caught if:		
16. You gambled illegally on a sporting event or other situation.	.54	.06
17. You took something from someplace worth less than \$20 that did not belong to you.	.52	-.06
18. You drove an automobile while under the influence of a moderate amount of alcohol.	.57	.01
19. You failed to report certain income or claimed an undeserved deduction ...	.53	.01
20. You physically hurt another person on purpose.	.61	-.08

Appendix 2, continued...

Self-Control Desire Items	<i>Factor 1</i>	<i>Factor 2</i>
Generally, in most situations, I would feel guilty if:		
21. I failed to report certain income or claimed an undeserved deduction ...	.72	-.20
22. I gambled illegally on a sporting event or other situation.	.70	-.20
23. I drove an automobile while under the influence...	.68	-.20
24. I physically hurt another person on purpose.	.69	-.21
25. I took something from someplace worth less than \$20 that did not belong to me.	.68	-.21
Morality:		
26. It is always morally wrong to gamble illegally.	.55	-.17
27. It is always morally wrong to physically hurt another person on purpose.	.54	-.08
28. It is always morally wrong to drive while under the influence of alcohol.	.54	-.15
29. It is always wrong to steal, no matter what the value of the item is.	.61	-.16
30. It is always morally wrong to cheat on your income tax.	.66	-.22
Low Self-Control Items		
1. I often act on the spur of the moment without stopping to think.	.03	.52
2. If things I do upset people, it's their problem not mine.	-.18	.50
3. I like to test myself every now and then by doing something a little risky.	-.03	.58
4. Sometimes I will take a risk just for the fun of it.	-.02	.54
5. I frequently try to avoid projects that I know will be difficult.	.06	.47
6. I sometimes find it exciting to do things for which I might get into trouble	-.21	.53
7. I dislike really hard tasks that stretch my ability to the limit.	.04	.53
8. If I had a choice, I would almost always rather do something physical than something mental.	.06	.43
9. I often do whatever brings me pleasure here and now, even at the cost of some distant goal.	-.10	.56
10. I almost always feel better when I am on the move than when I am sitting and thinking.	.08	.31
11. Excitement and adventure are more important to me than security.	-.12	.51
12. I try to look out for myself first, even if it means making things difficult for other people.	-.15	.50
13. I'm more concerned with what happens to me in the short run than in the long run.	-.14	.63
14. I will try to get things I want even when I know it's causing problems for other people.	-.23	.59
15. When things get complicated, I tend to quit or withdraw.	-.01	.46
16. I like to get out and do things more than I like to read or contemplate ideas.	.14	.28
17. I'm not very sympathetic to other people when they are having problems.	-.19	.46
18. I seem to have more energy and a greater need for activity than most other people my age.	.00	.29
19. The things in life that are easiest to do bring me the most pleasure.	.05	.49
20. I don't devote much thought and effort to preparing for the future.	-.09	.49
21. I lose my temper pretty easily.	-.05	.44
22. Often, when I am angry at people, I feel more like hurting them than talking to them about why I am angry.	-.16	.55
23. When I'm really angry, other people should stay away from me.	-.05	.43
24. When I have a serious disagreement with someone, it's usually hard for me to talk calmly about it without getting upset.	.02	.37

Appendix 3. Exploratory Factor Analysis of Tittle's Self Control Desire Items				
Self Control Desire Items	Tittle et al. F1	Tittle et al. F2	F1	F2
Generally, in most situations my feelings of pride in myself would be increased if:				
1. I did not participate in illegal gambling on a sporting event.	.66	.00	.39	.54
2. If I refrained from physically hurting another person on purpose.	.54	.01	.34	.61
3. If I refrained from taking something from someplace worth less than \$20 ...	.48	-.00	.29	.59
4. If I did not drive an automobile while under the influence of alcohol.	.53	-.00	.35	.53
5. If I did not fail to report certain income or claim an undeserved deduction ...	.66	.16	.37	.59
Would most of the people whose opinions you value lose respect for you if:				
6. You gambled illegally on a sporting event or other situation.	.66	.00	.53	.29
7. You physically hurt another person on purpose.	.50	.12	.63	.35
8. You took something from someplace worth less than \$20 ...	.48	.17	.62	.40
9. You drove an automobile while under the influence of a moderate amount of alcohol.	.57	.00	.61	.31
10. You failed to report certain income or claimed an undeserved deduction ...	.62	.00	.58	.35
Would most of the people whose opinions you value express praise for you:				
11. For not participating in illegal gambling on a sporting event or other situation.	.72	-.19	.14	.80
12. If you refrained from physically hurting another person on purpose.	.57	-.16	.06	.89
13. If you refrained from taking something from someplace worth less than \$20 ...	.62	-.20	.08	.90
14. If you did not drive an automobile while under the influence ...	.57	-.26	.05	.86
15. If you did not fail to report certain income or claim an undeserved deduction ...	.70	-.13	.13	.87
Do you think you would get caught if:				
16. You gambled illegally on a sporting event or other situation.	.57	-.01	.53	.18
17. You took something from someplace worth less than \$20 that did not belong to you.	.51	-.00	.57	.11
18. You drove an automobile while under the influence of a moderate amount of alcohol.	.57	-.12	.63	.09
19. You failed to report certain income or claimed an undeserved deduction ...	.56	-.00	.60	.06
20. You physically hurt another person on purpose.	.42	-.01	.63	.18