

## Motivation or Opportunity: Which Serves as the Best Mediator in Self-Control Theory?

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### ABSTRACT

*The roles of freedom (i.e., negative motivation) and opportunity are unclear in self-control theory. This study used self-report responses from undergraduates (n=317) to take a modest step in examining the role that freedom and opportunity play in self-control theory. Specifically, this study examined the mediating and moderating roles of freedom and opportunity in self-control theory. The findings from the study showed that freedom is a better mediating measure in the causal model than opportunity. Neither freedom nor opportunity were suitable as moderating measures in self-control theory. We conclude that criminologists should continue to develop measures of freedom and to use them as mediating measures in self-control theory.*

**KEYWORDS:** self-control theory; motivation; opportunity; and deviance.

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Gottfredson and Hirschi's (1990) *General Theory of Crime*, now known as self-control theory, is one of the most popular (Tibbetts and Gibson 2002; Agnew 1995) and highly contested criminological theories of its time. In recent years, criminologists have provided several criticisms of the theory, including its inability to explain white-collar crime (Simpson and Piquero 2003; Benson and Moore 1992); its tautological nature (Akers 1991); and its conceptual overlap with other leading crime theories (Akers 1991; Agnew 1995; Brezina 1998). While some research addresses the critics' arguments (see Pratt and Cullen 2000 for a meta-analysis), very little attention has been paid to the issue of overlapping concepts.

Agnew (1995) argued that the concepts contained in self-control theory overlapped with other leading crime theories, leaving criminologists with similar explanations of crime. This line of research is problematic because it allows criminologists to ineffectively pinpoint the causes of crime while simultaneously limiting the explanatory power of self-control theory. Criminologists can alleviate these problems by examining the motivational processes within self-control theory and will thus reveal results that are unique to self-control theory. Therefore, the current study advances Gottfredson and Hirschi's theory by examining the roles of opportunity and motivation in an individual's decision to commit crime. To accomplish this, the article will briefly discuss Gottfredson and Hirschi's theoretical perspective, the

problem of overlapping concepts, and responses (including motivation) to the problem of overlapping concepts.

### THEORETICAL PERSPECTIVE

Gottfredson and Hirschi's (1990) self-control theory begins with the underlying assumption that an individual is rational in his or her decision to commit a crime. Specifically, individuals will weigh the potential costs against the potential benefits in any decision to commit a crime. For Gottfredson and Hirschi (1990), crimes are acts of force or fraud that an individual will pursue because they provide maximum benefits with little effort. Therefore, individuals who pursue crime do so because it promises rewards with little threat of pain. Gottfredson and Hirschi (1990) equated an individual's attraction to committing crimes with their level of self-control.

According to Gottfredson and Hirschi, individuals with low self-control are unable to restrain themselves from the temptations of immediate satisfaction. Gottfredson and Hirschi argue that low self-control develops early in life and is the result of ineffective or inadequate socialization. Ineffective socialization includes weak or poor attachment, supervision, and discipline from parents before the child is eight years old. After the age of eight, the individual's self-control level will remain stable into and throughout adulthood. The empirical literature supports Gottfredson and Hirschi's claim that low self-control has a link to crime

or deviance. In fact, Pratt and Cullen's (2000) meta-analysis of more than twenty studies showed that low self-control is at least a moderate predictor of crime and deviance. Further, their research revealed that opportunity did not work well as a moderating variable in the model but showed its utility as an independent measure. In addition to Pratt and Cullen's (2000) meta-analysis, several studies have shown important support for the hypothesis that parental management is an antecedent to self-control (see Gibbs, Giever, and Higgins 2002; Higgins 2002; Gibbs, Giever and Martin 1998). Some studies on Gottfredson and Hirschi's theory find mixed results regarding the role of opportunity in the theory (Pratt and Cullen 2000). These studies used different measures for opportunity, such as the number of evenings per week the respondent went out for recreation (Burton et al. 1994; Evans et al. 1997; Longshore 1998; Burton et al. 1998; Burton et al. 1999), parental and adult supervision (LaGrange and Silverman 1999), number of credit hours (Cochran et al. 1998), association with criminal friends (Longshore, Stein, and Turner 1996; Longshore and Turner 1998), and access to target and cohabitation (Sellers 1999). Other studies examined self-control theory with parenting measures; however, their methods did not allow them to examine the causal model of the theory (see Hay 2001; Winfree and Bernat 1998; Cochran et al. 1998; Tittle, Ward and Grasmick 2003). Therefore, we can assume that the empirical literature supports Gottfredson and Hirschi's theory. However, it is not clear in the literature if support for Gottfredson and Hirschi's theory is not also support for other crime theories, because the concepts of these theories overlap.

### **Overlapping Concepts**

Overlapping concepts among crime theories is not new to criminology. In fact, several criminologists suggest that many of the leading crime theories use similar concepts and measures resulting in similar explanations of crime (Akers 1991; Conger 1976, 1980; Agnew 1995). For instance, in self-control theory, Gottfredson and Hirschi use three key concepts to explain why people engage in crime - - socialization, emotional control, and behavioral control. While these concepts are central to their theory, the concepts are also present in other leading crime theories (Agnew 1992, 1995; Akers 1985, 1991, 1998). For example, the emotional control aspect of self-control theory overlaps with strain theory. Gottfredson and Hirschi's (1990) concept of low self-control consists of several characteristics (i.e., impulsivity; an attraction to tasks that are simple, easy, risky, and physical; a lack of empathy; a lack of emotional control; and low tolerance for frustration). That is, individuals with low self-control cannot control their emotions or tolerate

frustration (see LaGrange and Silverman 1999; Grasmick et al. 1993; Arneklev et al. 1993; Tittle et al. 2003; Wood, Pfefferbaum, and Arneklev 1993). Low tolerance for frustration is also a characteristic that is central to strain theory. For instance, according to Agnew (1985, 1992), poor treatment creates stress and causes an individual to feel frustration. Stress and frustration may turn into anger, making crime a likely action to correct the frustration (see Agnew 1985, 1992, 2001; Paternoster and Mazerolle 1994; Mazerolle and Piquero 1998; Brody 2001). Thus, the overlap between strain theory and self-control theory lies in the individual's lack of emotional control.

Beyond the conceptual level, Agnew (1995) argued that the overlap between self-control and strain theory occurs operationally. For instance, the most commonly used scale to measure self-control is the Grasmick et al. (1993) scale (Delisi, Hochstetler, and Murphy 2003; Pratt and Cullen 2000), which contains four items that capture temper control. Criminologists used these items to represent anger in strain theory (see Mazerolle and Piquero 1998; Mazerolle and Maahs 2000). The operational overlap between strain theory and self-control theory is problematic, because it is difficult to distinguish one theory's findings from the other. In addition to strain theory, Gottfredson and Hirschi's self-control theory also overlaps conceptually with Akers' (1985, 1998) learning theory.

Akers (1991) suggested that learning theory can conceptually include Gottfredson and Hirschi's theory. For instance, Akers' (1998) description of social learning theory begins with socialization, where individuals learn behavioral control. This behavioral control Akers (1998) called "self-control." Although Akers (1998) did not specify the characteristics that made up his version of self-control, it came close to Gottfredson and Hirschi's conception of low self-control (Akers 1991). Thus, social learning theory and self-control theory present criminologists with a problem of overlapping concepts.

Criminologists recognize that overlapping concepts are an important issue in their examinations of crime theories. For instance, Brezina (1998) studied corporal punishment and showed that it overlaps conceptually. That is, caregivers develop distance from their children when they use this form of punishment, which has direct implications for social control and self-control theories. On the other hand, Brezina (1998) noted that corporal punishment was central to poor treatment, which would tie corporal punishment to strain theory. He further suggested that corporal punishment could reasonably be a form of behavior that defines violence as suitable, thereby tying the behavior to learning theory. Brezina (1998) was successful in showing that an indicator for one theory can reasonably be an indicator for other

theories. Therefore, the advancement of self-control theory relies on how criminologists choose to respond to the problems created by the overlapping concepts of crime theories.

### **Responses to Overlap**

Criminologists have responded to this overlap with two lines of thought and research. One response is a recent line of research in which criminologists tested how other theories condition the link between self-control and crime. For example, Gibson and Wright (2001) found that coworker delinquency (i.e., deviant peers) conditions the link between self-control and occupational delinquency. Continuing this line of research, others used low commitments to school (Tibbetts and Whittimore 2002), strain or frustration (Bichler-Robertson, Potchak and Tibbetts 2003), rational choice (Tibbetts and Myers 1999), and social bonds (Wright, Moffitt and Caspi 1998) as conditioning measures in self-control theory. But this response advances self-control theory; it does not help criminologists easily separate the independent effects of interacting theories.

In another line of thought, Agnew (1995) argued that criminologists should begin to address the problem of overlapping concepts by developing and using the theories' motivational parts. For Agnew (1995), motivation can take two forms. The first form, where forces push the individual into crime or deviance, is positive. The second form, where there is an absence of the forces that inhibit an individual from committing crime or deviance, is negative. Motivation is important to the advancement of crime theories; however, ideas about motivation often remain merely assumptions that go undeveloped and unstudied. Criminologists consider Gottfredson and Hirschi's (1990) self-control theory as just one of many control theories. Self-control theory assumes that individuals are free to commit crime. However, Agnew (1995) suggested that freedom (i.e., the individual senses that he or she has less to lose through deviance) is a necessary negative motivator for properly testing self-control theory, because it provides a direct examination of the theory's motivational part. That is, freedom allows an individual with low self-control to feel as though nothing is restraining him or her from committing crime or deviance. Therefore, those individuals act upon a need for immediate benefits, because they feel the freedom to do so.

Support for Agnew's (1995) line of thought can be found in the literature. Some argue that criminologists should include measures of the situation when studying crime theories (Mustaine and Tewksbury 2002; Birkbeck and LaFree 1993). Others, like Sheley (1980, 1983), argue that control theories, in general, wrongly assume that individuals feel free to commit crime.

Sheley goes on to suggest that criminologists should include cost measures from the deterrence or rational choice theories to represent freedom in examining these theories. Some criminologists suggest that including measures to represent freedom is an important advance of self-control theory (Grasmick et al. 1993; Nagin and Paternoster 1993; Gibbs et al. 1998; Gibbs et al. 2002; Higgins 2002). Grasmick et al. (1993) argued that criminologists should include situational measures when testing self-control theory. Some criminologists responded to the call for situational measures (Sorenson and Brownfield 1995; Tibbetts and Myers 1999) by using causal modeling. For instance, Forde and Kennedy (1997) supported respecifying self-control theory to contain proximate causes of crime in order to better understand criminal behavior. Piquero and Tibbetts (1996) responded to these calls by testing and supporting the mediating role of situational measures in self-control theory. Unfortunately, these criminologists do not conceptually define their situational measures as freedom.

The use of situational measures in self-control theory is not the issue, even though others (Gibbs et al. 1998; Gibbs et al. 2002; Higgins 2002) continue to ask criminologists to use these measures in their tests of the theory. Rather, the issue is defining the situational measures as negative motivation. Several criminologists argued that when testing self-control theory, criminologists should define situational measures as freedom (Gibbs et al. 1998; Gibbs et al. 2002; Higgins 2002). They agreed with Agnew (1995) that freedom represents negative motivation, which is a proper response to the problem of conceptual overlap when testing self-control theory. Including freedom in tests of self-control theory will alleviate the overlapping concepts issue and reveal results that are unique to self-control theory. Therefore, a compelling test of self-control theory will include freedom as negative motivation.

### **The Present Study**

The purpose of the present study is to take a modest step toward the advancement of self-control theory through the comparison of the mediating and moderating roles of opportunity and freedom. This study is significant for two reasons. First, this study goes beyond the previous research examining the causal model of self-control theory (Polakowski 1994; Gibbs et al. 1998; Gibbs et al 2002; Higgins 2002) by performing a direct test of all the measures of self-control theory. Second, this study advances self-control theory (Piquero and Tibbetts 1996; Forde and Kennedy 1997) by addressing the problem of overlapping concepts (Agnew 1995; Akers 1991; Conger 1976, 1980) through the use of situational measures that test the role of freedom as

negative motivation (Agnew 1995; Gibbs et al. 1998; Gibbs et al. 2002; Higgins 2002).

**METHOD**

This section presents the methods used for this study. Specifically, this section presents the procedures, sample, measures, and analysis.

**Procedures and Sample**

In the fall 2002 semester, we gave a self-report survey to several undergraduates enrolled in eight general education courses at an eastern college in the United States. We selected general education courses because they were open to all majors. After contacting all professors who taught general education courses at the college, we used those courses where the professor allowed us to give our 40-minute survey during class time. When we entered the classes, we announced the voluntary nature of the study to students who were in attendance that day. We also gave the students a cover letter explaining the project, how we planned to use the data, and how to contact us for more information about the study. Next, we asked the students if they would take part in the study. Out of all of the classes surveyed, six students refused to take part in the study, resulting in an overall sample of three hundred and twenty-six students. After listwise deletion for missing data, the final sample contained three hundred and seventeen ( $N=317$ ) completed surveys.

The gender composition of the final sample was 54.3 percent female and 45.7 percent male. The students' ages ranged from 18 to 48 ( $M=22\pm 4.14$ ). The racial distribution was as follows: 75.7 percent White, 16.7 percent African-American, and 7.6 percent Other (including Hispanic and Asian). The college's student body was 58 percent female and 42 percent male, with an average age of 26. The racial distribution was as follows: 84.7 percent white, 13.4 percent African-American, and 1.9 percent Other. Overall, the sample for this study was younger than the population of the college, contained more males, and had more African-Americans.

Although the sample provided a decent cross-section of the college's student body, the sample had limits. First, the sample was nonrandom, which potentially hindered the generalizability of our findings. However, Gottfredson and Hirschi (1990) presented their theory in relative terms; therefore, finding that the central measures have an association supports their theory. Second, criminologists often criticize samples of college students because they view the sample as contributing to "school criminology" (i.e., where students commit minor forms of deviance). But, recent studies have shown that college students perform behaviors similar to those in this study (Nagin and Paternoster 1993;

Piquero and Tibbetts 1996; Tibbetts 1997b; Gibbs et al. 1998). Third, we recognize that using a college student sample will restrict the variation in self-control. However, we believe that a regional college with liberal admissions policies will produce variation in self-control and the extra measures (i.e., freedom and opportunity) to find out the roles of these measures in the theory. The three arguments given previously in this paragraph should not suggest that these limits are not important; however, in our view, they should reduce the emphasis on them and thereby retain the merit of the study. In fact, college students provided several benefits for this study. Sampling college students made the study feasible for three reasons. First, sampling college students in class was an efficient means of collecting data because the classes contained 45 to 60 students. Second, most college students regularly take rather long survey instruments - - usually in the form of tests. This experience in taking surveys was a benefit to our study. Third, college students are literate and reasonably task persistent, which improves the completion rate of the surveys and possibly reduces measurement error. Therefore, it is our view that the use of such a nonrandom sample allowed us to test and expand an important theory in a time and cost-efficient manner.

**Measures**

To carry out the purpose of this study, it was necessary that we operationalize deviance, self-control, parental management, freedom, and opportunity. Table 1 presents the descriptive statistics for this study.

*Table 1. Means and Standard Deviations*

Variable	Mean	Std
Low self-control	200.83	67.63
Parental Management	293.77	74.65
Opportunity (Academic Dishonesty)	10.29	8.81
Opportunity (Driving Drunk)	8.32	2.71
Freedom (Academic Dishonesty)	137.49	125.98
Freedom (Driving Drunk)	128.04	111.37
Driving Drunk Intentions	9.15	8.42
Academic Dishonesty Intentions	8.52	7.16

**Deviance.** We operationalized deviance using two third-person scenarios. The two scenarios from Tibbetts (1997a) and Piquero and Tibbetts (1996) were about academic dishonesty and drunk driving (see Appendix A). The scenarios outlined specific contexts and settings that were familiar to students. In addition, we gave the character in each scenario a gender-specific name to further improve the students' ability to relate to the scenario. After reading the scenario, the students responded to three items: (1) the likelihood that they

would commit the act; (2) the likelihood that they would consider committing the act; and (3) the student's own intention to perform the act. The students recorded their responses on 10-centimeter lines,<sup>1</sup> anchored by "totally disagree" and "totally agree", which served as outcome measures in this investigation. Higher scores on the scale signaled stronger intents to perform the behavior. Intentions to commit academic dishonesty had high internal consistency (.84) and intentions to drink and drive had an acceptable internal consistency (.76). Principal components factor analysis and a scree test showed that both scales were unidimensional.<sup>2</sup> Table 1 showed that the respondents had intents to commit academic dishonesty and to drive drunk.

The scenario method of measuring deviance is important in criminology (Nagin and Paternoster 1993; Tibbetts 1997a, 1997b; Piquero and Tibbetts 1996; Tibbetts and Myers 1999) and in independent measures (Higgins 2002). In developing the scenarios, we were careful to design them around issues that were common for the students. However, the method does have some weaknesses.

One weakness of the method is the fact that respondents who expressed an intention to offend might not perform the behavior. However, some researchers (Fishbein and Ajzen 1975) argued that a high correlation between intentions and behavior was probable. In fact, meta-analytic studies show that intentions have a strong link with behavior (Godin and Kok 1996; Sutton 1998). In addition, Green (1989) found a high correlation ( $r=.85$ ) between future intents and future deviant behavior. Therefore, the scenarios provided a reasonable method for capturing the dependent variable for this study.<sup>3</sup>

**Freedom.** Freedom is an individual's view that he or she has less to lose by committing a crime (Agnew 1995; Sheley 1980, 1983). The freedom items captured the likelihood that students would react to each scenario (i.e., cheating and drunk driving) with a moral emotion that represents internal costs - - similar to Agnew (1995) and Sheley (1983). The emotions we examined were guilt, shame, and regret. Unlike other studies (Bachman, Paternoster and Ward 1992; Nagin and Paternoster 1993; Piquero and Tibbetts 1996; Tibbetts 1997a; Tibbetts and Myers 1999), the current study did not use a single direct measure to capture the students' moral view of the scenarios. Instead, we used an indirect measure of internal costs through emotions that several researchers usually label as moral emotions (Tangney 1995; Zahn-Waxler and Robinson 1995; Emde and Oppenheim 1995; Tangney and Dearing 2002; Janis and Mann 1977). This approach is not new to criminology. For example, Cochran et al. (1998) used an indirect approach to capture morals in a rational choice study.

Besides internal costs, we asked students to estimate the likelihood that four significant others (i.e., parents, friends, best female friend, and best male friend) would disapprove of their actions to capture external costs (see Agnew 1995; Sheley 1983). Students reported their responses to all the internal and external items on 10-centimeter lines anchored by the answer choices of "strongly agree" and "strongly disagree."

In addition, we asked students to provide their view of how problematic these four reactions would be for them. We anchored the 10-centimeter lines with the answer choices of "a big problem" and "not a problem at all." We combined the items for freedom into an index for each deviant act by multiplying the responses of these items. Typically, this measurement represents perceived costs. However, our measure represents freedom because the answer choices tried to capture the students' views of the absence of these costs. Therefore, when interpreting the measure of freedom, higher scores represent a greater view of freedom to commit crime.

This strategy for measuring freedom has support in the literature. For instance, Agnew (1995) argued that criminologists should measure freedom by using cost measures from the rational choice and deterrence perspective:

One can measure this intervening mechanism with many of the same questions used to measure the rational evaluation of crime. Control theorists, in particular, would focus on those measures dealing with the internal and external costs of crime. At the same time, they would discount many of the measures dealing with the benefits of crime. For the same reason, few people should experience a sense of moral righteousness from engaging in crime (although individuals low in control may experience a sense of excitement from crime) (Agnew 1995: 386).

Similarly, Sheley (1983) argued that measuring freedom should consist of external constraints (i.e., potential loss of attachments) and internal constraints (i.e., moral beliefs and emotions about the crime). Overall, the strategy employed in this study followed the guidance from Agnew and Sheley by capturing freedom as an individual's view of costs (i.e., internal and external) to perform deviance. The internal consistency for the academic dishonesty freedom index was acceptable (.70).<sup>4</sup> The internal consistency for the drunk-driving freedom index was high (.80). Each freedom index was unidimensional based on principal components factor analysis and a scree test. The respondents indicated that they felt free to drive drunk and to commit academic dishonesty (see Table 1).

**Opportunity.** Gottfredson and Hirschi (1990) argued that opportunity is necessary for crime. They

suggested that opportunity provided the conditions, in which an individual with low self-control will commit deviance. That is, Gottfredson and Hirschi (1990) suggested that opportunity is synonymous with access to or convenience in the mechanisms for the behavior.

Because of the specific nature of both deviance measures, we captured opportunity with two different measures. The opportunity measure for academic dishonesty (i.e., cheating) consisted of three items designed to capture how the student viewed access to exams, access to papers, and access to homework from others that had previously taken the same class. We believe that an individual is unable to cheat when he or she does not have access to the tools to cheat. This is in accord with Gottfredson and Hirschi (1990: 219) who stated that, "features of the target or victim are important determinants of crime." They go on to mention that one of the determinants is the accessibility or convenience of the target behavior. Thus, these are proper items of opportunity for this dependent measure. The students recorded their responses to the items on 10-centimeter lines that were anchored by the answer choices "not true at all" and "very true." We combined the three items into a composite measure of opportunity to commit academic dishonesty. Higher scores for this measure represent greater opportunity to cheat on exams. The internal consistency for this scale was .88 and was unidimensional based on principal components factor analysis and a scree test. The descriptive statistics showed that the respondents felt that they had opportunity to commit academic dishonesty (see Table 1).

We used three items to capture opportunities to drive drunk. These measures also captured an individual's access to alcohol, as well as the individual's access to driving when they had a chance to drink. The students estimated the number of times in the past year that they (1) got together with their friends informally, (2) went to taverns, bars, or nightclubs specifically to drink, and (3) went to parties or other social affairs where alcohol was available, all when they had a chance to drive. We used the same reason as the argument for cheating, that is, that these items capture the accessibility or convenience of drinking with a chance for the individual to drive. We asked the students to record their responses on 10-centimeter lines anchored by the answer choices of "never" and "almost every day." Higher scores for both behaviors reflected more opportunity to perform the behavior. The scale was unidimensional based on principal components factor analysis and a scree test, and its internal consistency was acceptable (.72). The descriptive statistics in Table 1 showed that the respondents felt that they had opportunity to drive drunk.

Some of the items in this study, like those for

cheating, are not typical measures of opportunity in self-control theory. A consistency in the self-control theory literature is that criminologists used different measures of opportunity. For instance, some studies used lifestyle measures (Forde and Kennedy 1997; Grasmick et al. 1993; Burton et al. 1998, 1999) and parental supervision measures (LaGrange and Silverman 1999) as opportunity in self-control theory. Other studies used the number of credit hours enrolled in classes (Cochran et al. 1998) and association with criminal friends (Longshore and Turner 1998) as opportunity in self-control theory. Without standard measures of opportunity, the items for this study partially follow Sellers (1999) in that we use access to the target as a measure of opportunity. Therefore, the opportunity measures are suitable, as they meet the standard of accessibility from Gottfredson and Hirschi.

**Low Self-Control.** Low self-control is an individual's inability to resist temptation to commit a crime (Gottfredson and Hirschi 1990). The characteristics of individuals with low self-control are "impulsive, insensitive, physical (as opposed to being verbal), risk-taking, shortsighted, and nonverbal" (Gottfredson and Hirschi 1990: 90). We operationalized low self-control using Giever's (1995) scale (see Appendix B).

The low self-control scale contained forty items that assessed current levels of low self-control. Giever (1995) designed this scale with the intent of gathering information about preferences, self-assessments, attitudes, and behaviors that reflected the extent to which individuals consider their actions. The scale captured the broad nature of self-control, rather than potentially unstable attitudes (Nunnally 1978), while using items relevant to the lives of college students. Respondents marked their agreement with each statement on a 10-centimeter line anchored by the items "totally disagree" and "totally agree" that developed a range from 0 to 400. Higher scores on the scale represented lower self-control. The internal consistency for this scale was high (.91) and principal components factor analysis and a scree test showed the scale was unidimensional. The descriptive statistics, in Table 1, showed that the respondents had low self-control.

Some may argue that this measure is problematic because it is an extension of the Grasmick et al. scale (1993), which raises concerns for not meeting the common standards for validity (see Arneklev, Grasmick and Bursik 1999; Piquero, MacIntosh, and Hickman 2000; DeLisi et al. 2003; Weibe 2003). Further, Piquero et al. (2000) using Item Response Theory (IRT) showed that the items did not form a single measure, and individuals' levels of self-control affect their responses to the items of the scale. However, tests of self-control theory continue to use the Grasmick et al.

scale, because research found that attitude measures of self-control provide similar effects to the behavioral measures (see Pratt and Cullen, 2000; Unnever, Cullen, and Pratt, 2003). Further, researchers have yet to place Giever's self-control measure under the same scrutiny as the Grasmick et al. scale. So far, research on Giever's scale has shown that it forms a unidimensional measure with high internal consistency (see Gibbs and Giever 1995; Gibbs et al. 1998; Gibbs et al. 2002; Higgins 2002), similar to the findings in this study.

**Parental Management.** To capture the parenting process described by Gottfredson and Hirschi (1990) - attachment, monitoring, recognition, and discipline - we used Giever's (1995) measure of parental management (see Appendix C). This measure consisted of forty items designed to capture supervision and discipline information within the entire household without focusing on a specific parental figure. To get close to the critical age, the measure captured parenting practices in the ninth grade. Students indicated how well these parenting practices represented their home by marking their response on a 10-centimeter line. The 10-centimeter line, which was anchored by the response categories of "not true at all" and "always true," creates a range of 0 to 400. Higher scores reflected greater parental management. The internal consistency of the scale was high (.92), and the scale was unidimensional as shown by principal components factor analysis and a scree test. Table 1 showed respondents' parents were not effective or efficient with their parental management tasks.

Three problems with the measurement strategy of parental management may become obvious. First, the students may present their parents in a positive light (e.g., social desirability). If this is the case, then the assumption is that the scale score reflects the central position of parents and of how parents applied the parental management tasks. Second, the validity of the response may be in question. On the other hand, McCrae and Costa (1988) used a sample of adults and found that assessments made by them up to seventy years later did, in fact, reflect the behaviors of their parents. Others (Rohner 1975, 1986, 1999) conducting retrospective studies found similar results to McCrae and Costa's using college student samples. Third, the information may not be precise because parents tell stories about themselves and their children that become part of the family's stories. For the current study, we did not obtain precise estimates (e.g., action-reaction patterns) because our interest was in the broad nature of how parents applied the parental management tasks. Addressing these limits is not to imply that systematic error and random error are not present. However,

McCrae and Costa (1988) suggested recollections of childhood do contain some pieces of truth and that retrospective studies of childhood are useful. Others (Gibbs et al. 1998; Higgins 2002) would agree with this assertion. They found promising results that support Gottfredson and Hirschi's theory from their retrospective studies. Therefore, this method of capturing how parents applied the parental management tasks in their child's early years is useful but not best.

### Analysis

The data analysis took place in two phases. The first phase consisted of developing the means and standard deviations for all the measures. The second phase consisted of developing the bivariate correlations and testing the utility of opportunity and freedom in the causal model of self-control theory using LISREL 8.52. It also includes testing the conditioning effects opportunity and freedom have on the link between self-control theory measures and deviance in regression analysis for each dependent measure.<sup>5</sup>

### RESULTS

Table 2 presents the bivariate correlations of the measures for academic dishonesty and drunk driving. The link between opportunity and academic dishonesty is not statistically significant, but the link between opportunity and drunk driving is present. Motivation significantly links to each of the deviance measures. Among the independent measures, the measures show moderate levels of shared variance in their expected directions. We interpret the correlations as suggesting no multicollinearity among the independent measures. With this information, we can now address the central purposes of this study.

### Analysis of Academic Dishonesty

Figure 1 presents the first model that examines the mediating roles of freedom and opportunity in Gottfredson and Hirschi's theory, with academic dishonesty as the dependent variable. We examine the fit between the model and the data with several indexes using the chi-square goodness of fit, which is not statistically significant ( $\chi^2 = 2.41$ ,  $df = 4$ ,  $p < .66$ ), suggesting that the model is a good fit of the data. However, chi-square can sometimes yield unreliable findings when the data come from a large sample, suggesting that researchers need to inspect more fit statistics to resolve the issue. The GFI (goodness of fit index) is .99; the CFI (comparative fit index) is .96; the NNFI (nonnormed fit index) is .90. These indexes suggest the model is a good fit of the data (see Gibbs et al. 2002 for a description and standards of fit indexes).

Table 2. Bivariate Correlations among Independent Measures for Academic Dishonesty and Driving Drunk

	Academic Dishonesty					Driving Drunk			
	1	2	3	4		1	2	3	4
1. Parental Management	--				1. Parental Management	--			
2. Low self-control	.27*	--			2. Low self-control	.27*	--		
3. Opportunity	.03	.16*	--		3. Opportunity	.06	.45*	--	
4. Freedom	.12	.32*	.11*	--	4. Freedom	.03	.31*	.16*	--
5. Academic Dishonesty	.18*	.50*	.09	.37*	5. Driving Drunk	.06	.34*	.21*	.48*

\* p < .05

LISREL 8.52 produces maximum likelihood estimates that criminologists can read as standardized regression coefficients. Figure 1 shows that parental management has a link with self-control that has a link with intent to commit academic dishonesty. Table 3 shows the decomposition of the standardized effects in Figure 1. Specifically, it shows that parental management has an indirect effect on intent to commit academic dishonesty through self-control and freedom. Unfortunately, the table shows that parental management does not have an indirect effect on intent to commit academic dishonesty through self-control and opportunity. However, the total effect of parental management on intent to commit academic dishonesty (.14) is larger than any indirect effect, which is attributed to the use of freedom.

Table 3 also shows that self-control has a direct effect on intent to commit academic dishonesty. Self-control does not have an indirect effect on intent to commit academic dishonesty through opportunity, but it does through freedom (.07). The total effect of self-control through freedom is .50, which is larger than any of the indirect effects, and suggests freedom is a useful mediator.

Table 4 presents the subsamples defined by freedom. In this subsample, parental management and opportunity are not significant. On the other hand, self-control is significant at the high and low levels of freedom suggesting that freedom conditions the link between self-control and intent to commit academic dishonesty. Because self-control is significant at both levels, it is important to find out if there is a significant

Figure 1. Self-Control Theory, Opportunity, and Freedom for Academic Dishonesty<sup>6</sup>

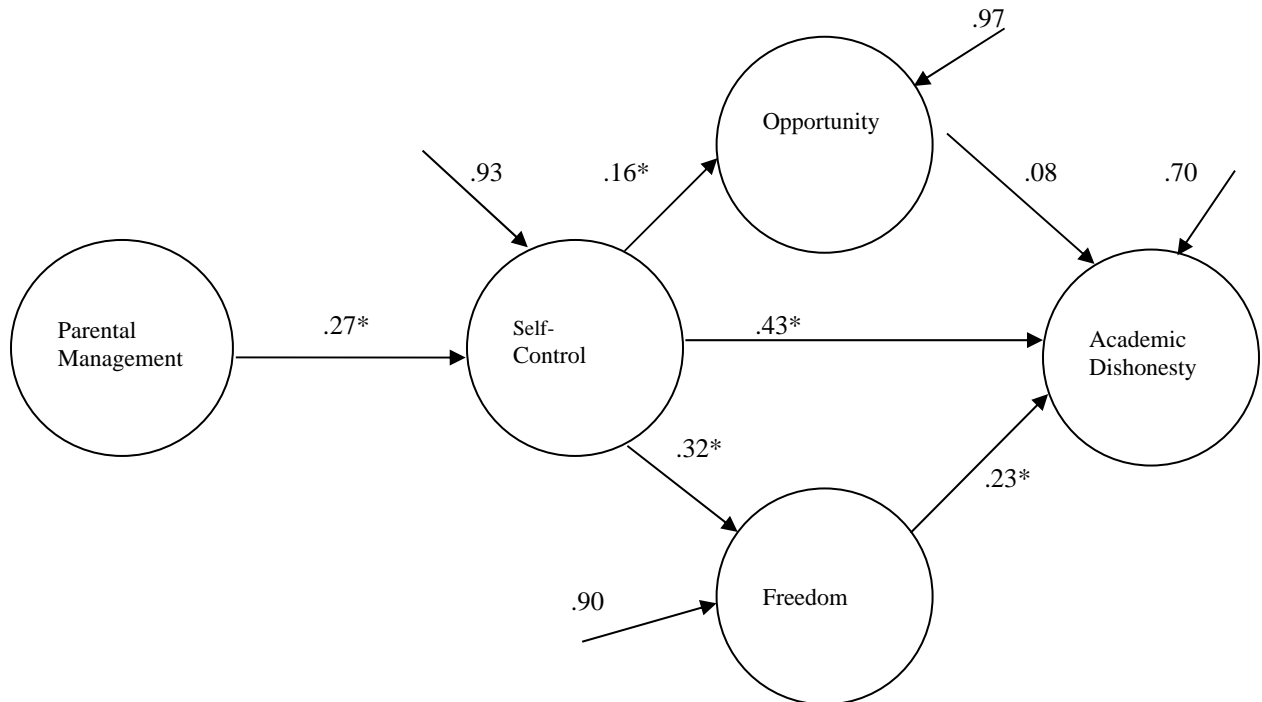




Table 3. Decomposition of Standardized Effects for Path Analysis

Variable	Intent to Commit Academic Dishonesty	Intent to Drive Drunk
<b>Parental Management</b>		
Direct Effect	--	--
Indirect Effect via Self-Control	.12*	.05*
Indirect Effect via Self-Control and Opportunity	.00	.00
Indirect Effect via Self-Control and Freedom	.02*	.03*
Total Effect	.14*	.08*
<b>Self-Control</b>		
Direct Effect	.43*	.18*
Indirect Effect via Opportunity	.00	.03
Indirect Effect via Freedom	.07*	.13*
Total Effect	.50*	.34*
<b>Opportunity</b>		
Direct Effect	.08	.06
<b>Freedom</b>		
Direct Effect	.23*	.41*

\* p < .05

difference between the links (i.e., coefficients) across groups. We used the z-test for comparison as recommended in the literature (see Paternoster et al. 1998). This test shows there are significant differences in the self-control links with intent to commit academic dishonesty at low and high levels of freedom ( $Z = 3.00$ ).

Also, Table 4 presents the estimations of each subsample defined by opportunity level. Similar to the freedom findings, low and high opportunity conditions the link between self-control and intent to commit academic dishonesty. Using the z-test to explore for significant differences in self-control across levels, the tests show that there are significant differences in the link self-control has on intent to commit academic dishonesty between individuals with low and high opportunity ( $Z = 3.00$ ). In addition, low opportunity conditions the link between freedom and self-control.

Table 5 presents the estimates defined by the opportunity and freedom levels subsample. The table shows that low opportunity and high freedom condition

the link between self-control and intent to commit academic dishonesty. The table shows that high opportunity and high freedom conditions the link between self-control and intents to commit academic dishonesty.

**Analysis of Drunk Driving**

Figure 2 presents a path analysis, using LISREL 8.52, examining the role of opportunity and freedom in Gottfredson and Hirschi's theory and using intent to drive drunk as the dependent measure. Similar to the academic dishonesty model, we examine the fit between the model and the data using the chi-square. For this model, the chi-square is statistically significant ( $\chi^2 = 15.35$ ,  $df = 4$ ,  $p < .05$ ), signaling a poor fit between the model and the data. Because chi-square provide unreliable results when samples are large, we examined the same fit indexes as before (GFI = .98, CFI = .95, NNFI = .90), which signal a good fit between the model and the data.

Table 4. Academic Dishonesty: Freedom and Opportunity Subsamples

Variable	Low Freedom			High Freedom			Low Opportunity			High Opportunity		
	b	$\beta$	SE	b	$\beta$	SE	b	$\beta$	SE	b	$\beta$	SE
Parental Management	-.01	-.04	.02	-.01	-.07	.01	-.01	-.06	.01	.00	.02	.02
Self-Control	.04*	.29	.02	.07*	.67	.01	.05*	.39	.01	.08*	.67	.02
Opportunity	.14	.16	.10	-.07	-.76	.07	--	--	--	--	--	--
Freedom	--	--	--	--	--	--	-.04*	-.22	.02	.01	.04	.02
R <sup>2</sup>		.11			.51			.23			.43	
N		72			77			64			86	

\*p<.05

Table 5. Academic Dishonesty: Opportunity by Freedom Subsamples

Variable	Low Opportunity/ Low Freedom			Low Opportunity/ High Freedom			High Opportunity/ Low Freedom			High Freedom/ High Opportunity		
	b	$\beta$	SE	b	$\beta$	SE	b	$\beta$	SE	b	$\beta$	SE
Parental Management	-.01	-.07	.03	.02	.15	.02	-.01	-.04	.02	-.01	-.11	.01
Self Control	.02	.19	.03	.10*	.88	.02	.04	.27	.02	.05*	.59	.01
R <sup>2</sup>	.05			.61			.08			.37		
N	22			42			48			35		

\* p < .05

Figure 2 shows support for Gottfredson and Hirschi's theory in several ways. The figure shows that parental management has a link with low self-control and that low self-control has a link with intent to drive drunk. Table 3, also, shows the decomposition of the standardized effects in Figure 2. Specifically, it shows that parental management has an indirect effect on the intent to drive drunk through self-control and freedom, but not through self-control and opportunity. The total effect of parental management on the intent to drive drunk is larger than any of the other indirect effects suggesting that using freedom as a mediating measure improves the model.

Table 3 also shows that self-control has a direct effect on the intent to drive drunk. Self-control does not have an indirect effect on the intent to drive drunk through opportunity. However, self-control does have an indirect effect on the intent to drive drunk through freedom. In addition, the total effect of self-control on the intent to drive drunk is .34.

Because the findings show that freedom has a mediating role in Gottfredson and Hirschi's theory, it is important to examine the role of freedom and opportunity for moderating effects. Table 6 presents the estimations for each subsample defined by freedom level and opportunity level. In these examinations, the only significant link with intent to drive drunk was with freedom in the opportunity level subsample. That is, the findings from these tests do not show that freedom or opportunity have important conditioning effects with low self-control. However, the relatively small size of the subsamples suggests caution when interpreting the coefficients.

Table 7 presents the estimates defined by four combinations of opportunity by freedom level subsamples. The table does not reveal any significant links between self-control and intent to drive drunk from any of the subsamples. Because of the relatively small sample sizes, caution should be used in interpreting the coefficients.

Figure 2. Self-Control Theory, Opportunity, and Freedom for Driving Drunk<sup>7</sup>

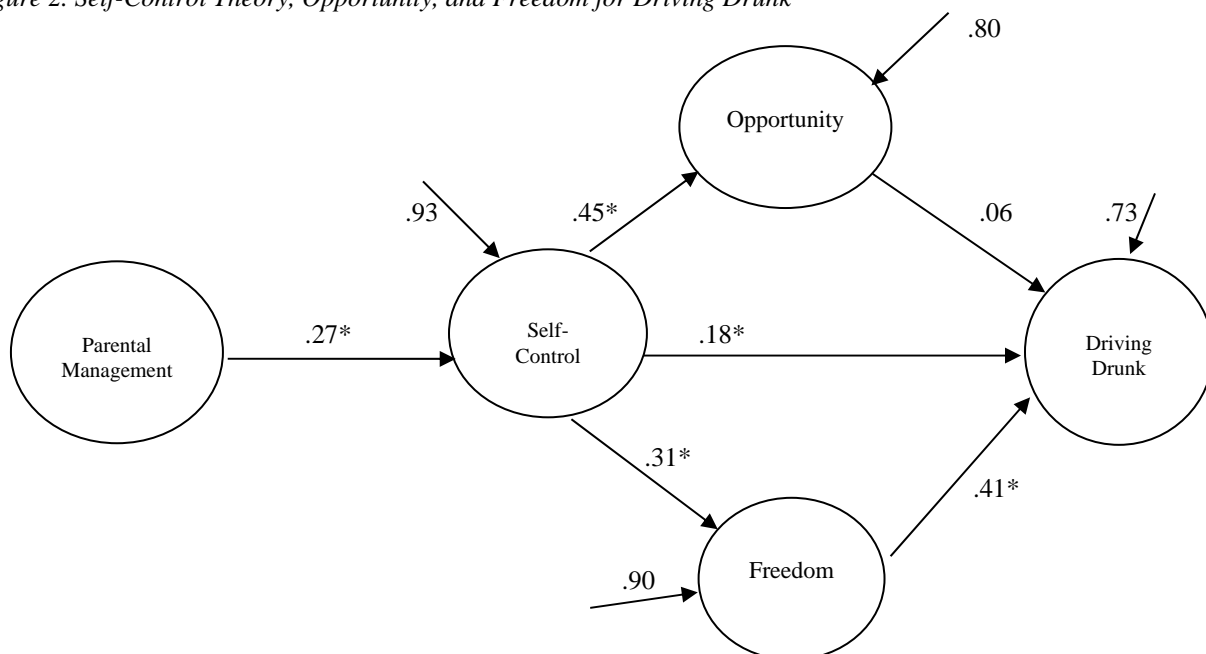


Table 6. *Drunk Driving: Freedom and Opportunity Subsamples*

Variable	Low Freedom			High Freedom			Low Opportunity			High Opportunity		
	b	β	SE	b	β	SE	b	β	SE	b	β	SE
Parental Management	-.01	-.16	.10	-.01	-.04	.02	-.01	-.10	.01	.00	-.02	.02
Self Control	.10	.10	.02	.03	.22	.02	.01	.07	.02	.01	.08	.02
Opportunity	.18	.06	.46	.54	.16	.44	--	--	--	--	--	--
Freedom	--	--	--	--	--	--	-.03*	-.42	.01	-.05*	.65	.01
R <sup>2</sup>	.06			.12			.24			.46		
N	86			66			76			76		

\* p < .05

**DISCUSSION**

The central purpose of this study was to examine the mediating and moderating roles of opportunity and motivation (i.e., freedom) in self-control theory. This study used an integrative approach by combining the theoretical arguments from Agnew (1995) on motivation with the theoretical arguments from Gottfredson and Hirschi (1990) to respond to the problem of overlapping concepts. Performing this task provided an important advance for self-control theory.

Overall, the findings are encouraging for Gottfredson and Hirschi's theory. However, to advance self-control theory and to contribute to the literature, we tested the role of opportunity in Gottfredson and Hirschi's theory using path analysis. This test represented the first time in the criminological literature that all the measures are present in a test of the theory's causal model. That is, the expectation was that opportunity would mediate the link between low self-control and deviance. Unfortunately, the findings were not able to support this assumption. However, it could be that opportunity moderates or conditions the link between low self-control and deviance, which is a more direct interpretation from Gottfredson and Hirschi's theory. On the other hand, the findings from this study were only able to provide partial support. That is, opportunity only conditions the link between low self-control and one dependent measure (i.e., intent to

commit academic dishonesty). This finding is consistent with Pratt and Cullen's (2000) view that opportunity in self-control theory behaves inconsistently with theoretical expectations. On the other hand, it is possible that the scenario method successfully held opportunity constant for all of the respondents (Bichler-Robertson et al. 2003) and thereby neutralized the effect of our opportunity measure.

This study makes its chief contribution by examining the role of negative motivation (i.e., freedom) in Gottfredson and Hirschi's theory. The findings show that freedom measures mediate the link between low self-control and both dependent measures at levels that are larger than self-control's direct link to the deviance measures. These findings support Agnew's (1995) position that freedom serves as a negative motivation for individuals with low self-control. Although these findings are similar to Piquero and Tibbetts (1996), the current study advances our understanding, because it defined the measures as negative motivation (i.e., freedom). That is, from these findings, criminologists are able to understand how an individual who has low self-control considers the costs of the behavior—before they become likely to perform the behavior. Thus, these findings suggest that criminologists need to respond to the overlap problem using freedom as a mediating measure when examining self-control theory.

Table 7. *Drunk Driving: Opportunity by Freedom Subsamples*

Variable	Low Freedom/ Low Opportunity			Low Opportunity/ High Freedom			High Opportunity/ Low Freedom			High Freedom/ High Opportunity		
	b	β	SE	b	β	SE	b	β	SE	b	β	SE
Parental Management	-.03	-.26	.02	-.01	-.08	.01	.04	.19	.03	-.03	-.39	.02
Self Control	.01	.08	.03	.01	.08	.02	.06	.03	.36	-.01	-.09	.02
R <sup>2</sup>	.09			.01			.09			.12		
N	42			34			44			32		

\* p < .05

However, it is also important to understand the potential moderating or conditioning effects of freedom to the link between low self-control and deviant behavior. The findings for this study were inconsistent. That is, the findings suggest that freedom is important as a moderator for the link between self-control and deviance for one behavior (i.e., intent to commit academic dishonesty). Overall, the findings on the role of freedom suggest that it is more consistent and therefore suitable as a mediating measure in self-control theory. Thus, using freedom in this way reveals results that are unique to self-control theory. This is an advance over interaction studies that combine self-control theory with other theories that reveal results that are not unique to self-control theory.

The additional subsample analysis shows inconsistent findings for the combination of conditioning effects of freedom and opportunity. These inconsistencies may be endemic of the problems that arise from the neutralization of opportunity. That is, the scenarios possibly holding opportunity constant brings about problems with the conditioning of the link between low self-control and deviance.

The findings from the current study have both theoretical and policy implications. Theoretically, the findings suggest the causal model from Gottfredson and Hirschi's theory may wrongly assume that individuals feel they are free to commit crime. We believe, as do others (i.e., Sheley 1980, 1983; Gibbs et al. 1998; Gibbs et al. 2002; Higgins 2002), that tests of control theories, specifically self-control theory, cannot assume freedom. That is, when criminologists test self-control theory, they need to use negative motivation (i.e., freedom) as a mediating measure in their studies. We understand that this will create a more complex model. However, we believe tests like these provide valuable insights into how individuals with low self-control view their potential costs. In other words, we feel this test will provide information about what an individual with low self-control is thinking when he or she decides to commit crime or deviance. In addition, this test provides distinct findings from other theories that relieve the problem of overlapping concepts (see Agnew 1995).

The findings from the current study have policy relevance as well. Because an individual's self-control level is stable after he or she reaches eight years old (see Turner and Piquero 2002), it is important to find out how individuals feel about the costs of behaviors. Criminologists can use this information to develop policies to slow crime or deviance. That is, by understanding the role that freedom plays in the decision to commit crime, criminologists can assist in developing policies that emphasizes the costs of criminal behavior. This is important to mobilize a

criminal justice system response to exert its force in preventing and reducing criminal behavior (Blumstein, Cohen and Nagin 1978; Nagin 1998). For instance, television advertisements may be aired that target this particular age group about the ills of academic dishonesty and drunk driving. Within these ads, the focus would be on the gravity of what they can lose (i.e., disapproval from significant others and feelings of guilt, shame, and regret). However, before criminal justice can set up this view, future research should consider addressing the limits from this study.

First, future research should consider samples from the community and adolescents to adequately assess the generalizability of the results. Although research on self-control theory routinely uses college student samples (see Pratt and Cullen 2000), criminologists need to check the generalizability of using freedom in the theory with other populations. Second, as a corollary, future research should consider expanding the measures of the dependent variable. Although research shows favorable findings with the deviance measures in the current study (Tibbetts and Myers 1999; Piquero and Tibbetts 1996; Bichler-Robertson et al. 2003), it is important to find out if freedom is an important mediator between low self-control and other measures of deviance. Third, future research should consider empirically comparing Gottfredson and Hirschi's theory with other crime theories (e.g., strain, learning, and developmental theories). With the advance of self-control theory made in this article, criminologists can safely compare the theory to other theories and distinguish between the findings. Finally, future research needs to address the previous limits, using a multiple method approach that will provide a substantial advance to self-control theory.

## **CONCLUSION**

In conclusion, the findings from the current study suggest that when testing self-control theory an important strategy to respond to the problem of overlapping concepts is to include a measure of negative motivation—freedom—as a mediating measure. It will provide valuable insights into the thought processes of individuals who have low self-control when they decide to commit crime or deviance. In addition, including freedom in self-control theory provides criminologists with a measure that distinguishes self-control from other theories. Therefore, in accordance with other criminologists (Agnew 1995; Gibbs et al. 1998; Gibbs et al. 2002; Higgins 2002; Grasmick et al. 1993), we agree that including motivation (i.e., negative motivation as freedom) is an important advance for self-control theory.

## NOTES

<sup>1</sup> The 10-centimeter lines were used to capture the data for the measures in this study for several reasons. First, the lines offered a chance to capture ratio level data. Data at the interval level is important for using LISREL to develop path analysis. Second, several criminologists successfully used the technique in studies of self-control theory (Gibbs and Giever 1995; Gibbs et al. 1998; Gibbs et al. 2002; Higgins 2002). In interpreting the lines for all of the scales, a one (1) shows less of the concept understudy. Further, as the lines progress, a three (3) or a ten (10) represents more of the concept than a 1 or a zero. However, the coding of the freedom items in the interpretation is backwards, but the interpretation is similar to the other measures.

<sup>2</sup>The factor analysis results for all of the measures are available from the George E. Higgins upon request.

<sup>3</sup>The scenario method we used as the dependent measure provides an artificial frame that may prime the respondent, thus influencing the respondents' decision-making (Bouffard 2002). However, our choice to use scenarios provided respondents with a specific crime or deviant act with which to estimate their intention, because the scenario method is a valid and reliable indicator of intention (Klepper and Nagin 1989). In addition, it is consistent with several studies that also used the method (Tibbetts and Myers 1999; Piquero and Tibbetts 1996; Nagin and Paternoster 1993; Tibbetts 1997a, 1997b). Although this justifies the use of the scenario, another possible limit is with the freedom measures. According to Bouffard (2002), if the students (i.e., respondents) do not create the cost measures, then criminologists are potentially priming their responses. Bouffard (2002) recommended that criminologists allow the respondents to generate the costs of their behavior.

We found this technique problematic for several reasons. First, developing a coding schema for the items may not yield the most reliable and valid indicators of costs. Second, the focus of this study is on advancing self-control theory, and, in this theory, those respondents with low self-control will lack the task persistence to present the extensive lists of valid and reliable costs that Bouffard (2002) suggests. On the other hand, several researchers noted that those with low self-control, especially college students, do have enough task persistence to complete surveys (see Gibbs and Giever 1995; Gibbs et al. 1998; Gibbs et al. 2002; Higgins 2002) developed by the researcher. Therefore, we felt it was suitable to use researcher-derived costs in this study in order to provide a first step in understanding the role of freedom in self-control theory.

<sup>4</sup>The qualitative judgments about the internal

consistency coincide with typical standards used to interpret internal consistency (see DeVellis 1991; Nunnally 1978).

<sup>5</sup>As pointed out by one of the reviewers, hierarchical linear regression may not be the correct analysis for this study. After further investigation of the method, we agreed with the reviewer. Thus, to provide a clearer analysis for this study we decided to follow a method similar to several others in the literature (Tibbetts and Whittimore 2002; Bichler-Robertson et al. 2003; Curry and Piquero 2003; Piquero and Hickman 1999).

<sup>6</sup> The numbers on the paths between the variables are the standardized regression coefficients. Those numbers with an \* are statistically significant at the .05 level. The numbers on the arrows pointing directly to the individual variables are the error variance for that variable.

<sup>7</sup> The numbers on the paths between the variables are the standardized regression coefficients. Those numbers with an \* are statistically significant at the .05 level. The numbers on the arrows pointing directly to the individual variables are the error variance for that variable.

## REFERENCES

- Agnew, Robert. 1985. "A Revised Strain Theory of Delinquency." *Social Forces* 64:151-167.
- Agnew, Robert. 1992. "Foundation for a General Strain Theory of Crime and Delinquency." *Criminology* 30:47-87.
- Agnew, Robert. 1995. "Testing the Leading Crime Theories: An Alternative Strategy Focusing on Motivational Processes." *Journal of Research in Crime and Delinquency* 32:363-398.
- Agnew, Robert. 2001. "Building on the Foundation of General Strain Theory: Specifying the Types of Strain most likely to Lead to Crime and Delinquency." *Journal of Research in Crime and Delinquency* 38:319-361.
- Akers, Ronald. 1985. *Deviant Behavior: A Social Learning Approach*. Belmont, CA: Wadsworth.
- Akers, Ronald. 1991. "Self-Control as a General Theory of Crime." *Journal of Quantitative Criminology* 7:201-11.
- Akers, Ronald. 1998. *Social Learning and Social Structure: A General Theory of Crime and Deviance*.

Boston, MA: Northeastern University Press.

Arneklev, Bruce J., Harold G. Grasmick and Robert J. Bursik. 1999. "Evaluating the Dimensionality and Invariance of 'Low Self-Control.'" *Journal of Quantitative Criminology* 15: 307-331.

Arneklev, Bruce J., Harold G. Grasmick, Charles R. Tittle and Robert J. Bursik. 1993. "Low Self-Control and Imprudent Behavior." *Journal of Quantitative Criminology* 9:225-247.

Bachman, Ronet, Raymond Paternoster, and Sally Ward. 1992. "The Rationality of Sexual Offending: Testing a Deterrence/Rational Choice Conception of Sexual Assault." *Law and Society Review* 26:343-372.

Benson, Michael L. and Elizabeth Moore. 1992. "Are White-Collar and Common Offenders the Same? An Empirical and Theoretical Critique of a Recently Proposed General Theory of Crime." *Journal of Research in Crime and Delinquency* 29:251-272.

Bichler-Robertson, Gisela, Marissa C. Potchak and Stephen Tibbetts. 2003. "Low Self-Control, Opportunity, and Strain in Students' Reported Cheating Behavior." *Journal of Crime and Justice* 26:23-53.

Birkbeck, Christopher and Gary LaFree. 1993. "The Situational Analysis of Crime and Deviance." *American Review of Sociology* 19:113-137.

Blumstein, Alford, Jacqueline Cohen, and Daniel S. Nagin. 1978. *Deterrence and Incapacitation: Estimating the Effects of Criminal Sanctions on Crime Rates*. Washington: National Academy of Sciences.

Bouffard, Jeffrey A. 2002. "Methodological and Theoretical Implications of Using Subject Generated Consequences in Tests of Rational Choice Theory." *Justice Quarterly* 19:747-772.

Brezina, Timothy. 1998. "Adolescent Maltreatment and Delinquency: The Question of Intervening Processes." *Journal of Research in Crime and Delinquency* 35:71-99.

Broidy, Lisa. 2001. "A Test of General Strain Theory." *Criminology* 39:9-35.

Burton, Velmer S., T. David Evans, Francis T. Cullen, Kathleen M. Olivares and R. Gregory Dunaway. 1999. "Age, Self-Control, and Adults' Offending Behaviors: A Research Note Assessing a General Theory of Crime." *Journal of Criminal Justice* 27: 45-54.

Burton, Velmer S., Francis T. Cullen, David T. Evans, Leanne F. Alarid and R. Gregory Dunaway. 1998. "Gender, Self-Control, and Crime." *Journal of Research in Crime and Delinquency* 35:123-147.

Burton, Velmer S., Francis T. Cullen, David T. Evans and R. Gregory Dunaway. 1994. "Reconsidering Strain Theory: Operationalization, Rival Theories, and Adult Criminality." *Journal of Quantitative Criminology* 10:213-239.

Cochran, John K., Peter B. Wood, Christine S. Sellers, Wendy Wilkerson and Mitchell B. Chamlin. 1998. "Academic Dishonesty and Low Self-Control: An Empirical Test of a General Theory of Crime." *Deviant Behavior* 19:227-255.

Conger, Rand. 1980. "Juvenile Delinquency: Behavior Restraint or Behavior Facilitation." Pp. 131-142 in *Understanding Crime: Current Theory and Research*, edited by T. Hirschi and M. Gottfredson. Beverly Hills, CA: Sage Publications.

Conger, Rand. 1976. "Social Control and Social Learning Models of Delinquent Behavior: A Synthesis." *Criminology* 14:17-40.

Curry, Theodore R. and Alex R. Piquero. 2003. "Control Ratios and Defiant Acts of Deviance: Assessing Additive and Conditional Effects with Constraints and Impulsivity." *Sociological Perspectives* 46:397-415.

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.

DeVellis, Robert. 1991. *Scale Development: Theory and Applications*. Newbury Park, CA: Sage Publications.

Emde, Robert N. and David Oppenheim. 1995. "Shame, Guilt, and the Oedipal Drama: Development Considerations Concerning Morality and Referencing of Critical Others." Pp. 413-436 in *Self-Conscious Emotions: The Psychology of Shame, Guilt, Embarrassment, and Pride*, edited by J. P. Tangney and K.W. Fischer. New York: Guilford Press.

Evans, David T., Francis T. Cullen, Velmer S. Burton, R. Gregory Dunaway and Michael Benson. 1997. "The Social Consequences of Self-Control: Testing the General Theory of Crime." *Criminology* 35:475-501.

- Forde, David R. and Leslie W. Kennedy. 1997. "Risky Lifestyles, Routine Activities, and the General Theory of Crime." *Justice Quarterly* 14:265-294.
- Fishbein, Martin and Izek Ajzen. 1975. *Belief, Attitude, Intention, and Behavior*. New York: Wiley.
- Gibbs, John J. and Dennis Giever. 1995. "Self-Control and Its Manifestations Among University Students: An Empirical Test of Gottfredson and Hirschi's General Theory." *Justice Quarterly* 12:231-255.
- Gibbs, John J., Dennis M. Giever and George E. Higgins. 2002. "A Test of Gottfredson and Hirschi's General Theory of Crime using Structural Equation Modeling." *Criminal Justice and Behavior* 30:441-458.
- Gibbs, John J., Dennis M. Giever and Jamie Martin. 1998. "Parental-Management and Self-Control: An Empirical Test of Gottfredson and Hirschi's General Theory." *Journal of Research in Crime and Delinquency* 35:42-72.
- Gibson, Christopher and John Wright. 2001. "Low Self-Control and Coworker Delinquency: A Research Note." *Journal of Criminal Justice* 29:483-492.
- Giever, Dennis. M. 1995. An Empirical Assessment of the Core Elements of Gottfredson and Hirschi's General Theory of Crime. *Unpublished Doctoral Dissertation*. Indiana University of Pennsylvania.
- Godin, Gaston and Gerjo Kok. 1996. "The Theory of Planned Behavior: A Review of its Applications to Health-Related Behaviors." *American Journal of Health Promotion* 11:87-98.
- Gottfredson, Michael and Travis Hirschi. 1990. *General Theory of Crime*. Stanford, CA: Stanford University Press.
- Grasmick, Harold, Charles Tittle, Robert Bursik and Bruce 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.
- Green, Donald. 1989. "Measures of Illegal Behavior in Individual-Level Deterrence Research." *Journal of Research in Crime and Delinquency* 26:253-275.
- Hay, Carter. 2001. "Parenting, Self-Control, and Delinquency: A Test of Self-Control Theory." *Criminology* 39:707-736.
- Higgins, George E. 2002. "General Theory of Crime and Deviance: A Structural Equation Modeling Approach." *Journal of Crime and Justice* 25:71-95.
- Janis, Irving L. and Leon Mann. 1977. *Decision Making: A Psychological Analysis of Conflict, Choice, and Commitment*. New York: Free Press.
- Klepper, S. and Daniel Nagin. 1989. "Certainty and Severity of Punishment Revisited." *Criminology* 27:721-746.
- 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 General Theory of Crime." *Social Problems* 45: 102-114.
- Longshore, Douglas, Judith A. Stein and Susan Turner. 1996. "Self-Control in a Criminal Sample: An Examination of Construct Validity." *Criminology* 34:209-228.
- Longshore, Douglas and Susan Turner. 1998. "Self-Control and Criminal Opportunity: Cross-Sectional Test of the General Theory of Crime." *Criminal Justice and Behavior* 25:81-98.
- Mazerolle, Paul and J. Maahs. 2000. "General Strain and Delinquency: An Alternative Examination of Conditioning Influences." *Justice Quarterly* 17:753-778.
- Mazerolle, Paul and Alex Piquero. 1998. "Linking Exposure to Strain with Anger: An Investigation of Deviant Adaptations." *Journal of Criminal Justice* 26:195-211.
- McCrae, Robert R. and Paul T. Costa. 1988. "Do Parental Influences Matter? A Reply to Halverson." *Journal of Personality* 56:445-449.
- Mustaine, Elizabeth Ehrhardt and Richard Tewksbury. 2002. "Workplace Theft: An Analysis of Student-Employee Offenders and Job Attributes." *American Journal of Criminal Justice* 27:111-127.
- Nagin, Daniel. 1998. "Criminal Deterrence Research at the Outset of the Twenty-First Century." Pp. 51-92 in *Crime and Justice: A Review of Research*, edited by M. Tonry. Chicago:University of Chicago Press.

- Nagin, Daniel and Raymond Paternoster. 1993. "Enduring Individual Differences and Rational Choice Theories of Crime." *Law and Society Review* 27:467-496.
- Nunnally, Jum. C. 1978. *Psychometric Theory* (2nd ed.). New York, NY: McGraw-Hill.
- Paternoster, Raymond, Robert Brame, Paul Mazerolle and Alex Piquero. 1998. "Using the Correct Statistical Test for the Equality of Regression Coefficient." *Criminology* 36:859-866.
- Paternoster, Raymond and Paul Mazerolle. 1994. "General Strain Theory and Delinquency: A Replication and Extension." *Journal of Research in Crime and Delinquency* 31:235-263.
- Piquero, Alex, Randall MacIntosh and Matthew Hickman. 2000. "Does Self-Control Affect Survey Response? Applying Exploratory, Confirmatory, and Item Response Theory Analysis to Grasmick et al.'s Self-Control Scale." *Criminology* 38:897-930.
- Piquero, Alex R. and Matthew Hickman. 1999. "An Empirical Test of Tittle's Control Balance Theory." *Criminology* 37:319-342.
- Piquero, Alex R. and Matthew Hickman. 2002. "The Rational Choice Implications of Control Balance Theory" Pp. 85-108 in *Rational Choice and Criminal Behavior: Recent Research and Future Challenges*, edited by A. R. Piquero and S. G. Tibbetts. New York: Routledge
- Piquero, Alex R. and Stephen Tibbetts. 1996. "Specifying the Direct and Indirect Effects of Low Self-Control and Situational Factors in Offenders' Decision-Making: Toward a More Complete Model of Rational Offending." *Justice Quarterly* 13:481-510.
- Polakowski, Michael. 1994. "Linking Self- and Social Control with Deviance: Illuminating the Structure Underlying a General Theory of Crime and its Relation to Deviant Activity." *Journal of Quantitative Criminology* 10:41-78.
- Pratt, Travis C. and Francis Cullen. 2000. "The Empirical Status of Gottfredson and Hirschi's General Theory of Crime: A Meta-Analysis." *Criminology* 38:931-964.
- Rohner, Ronald P. 1975. *They Love Me, They Love Me Not: A Worldwide Study of the Effects of Parental Acceptance and Rejection*. New Haven, CT: HRAF Press.
- Rohner, Ronald P. 1986. *The Warmth Dimension: Foundations of Parental Acceptance Rejection Theory*. Newbury Park, CA: Sage Publications.
- Rohner, Ronald P. 1999. *Handbook for the study of parental acceptance and rejection*. Storrs, CT: Center for the Study of Parental Acceptance and Rejection.
- Sellers, Christine. 1999. "Self-Control and Intimate Violence: An Examination of the Scope and Specification of the General Theory of Crime." *Criminology* 37:375-404.
- Sheley, Joseph F. 1980. "Is Neutralization Necessary for Criminal Behavior?" *Deviant Behavior* 2:49-72.
- Sheley, Joseph F. 1983. "Critical Elements of Criminal Behavior Explanation." *Sociological Quarterly* 24:509-525.
- Simpson, Sally and Nicole Leeper Piquero. 2002. "Low Self-Control, Organizational Theory, and Corporate Crime." *Law and Society Review* 36:509-539.
- Sorenson, Ann Marie and David Brownfield. 1995. "Adolescent Drug Use and a General Theory of Crime: An Analysis of a Theoretical Integration." *Canadian Journal of Criminology* 37:19-37.
- Sutton, Stephen. 1998. "Predicting and Explaining Intentions and Behavior: How Well are We Doing?" *Journal of Applied Social Psychology* 28:1317-1338.
- Tangney, June Price and Ronda L. Dearing. 2002. *Shame and Guilt*. New York: Guilford Press.
- Tangney, June. 1995. "Shame and Guilt in Interpersonal Relationships." Pp. 114-142 in *Self-Conscious Emotions: The Psychology of Shame, Guilt, Embarrassment and Pride*, edited by J. P. Tangney and K.W. Fischer. New York: Guilford Press.
- Tibbetts, Stephen G. 1997a. "Gender Differences in Students' Rational Decisions to Cheat." *Deviant Behavior: An Interdisciplinary Journal* 18:393-414.
- Tibbetts, Stephen G. 1997b. "Shame and Rational Choice in Offending Decisions." *Criminal Justice and Behavior* 24:234-255.
- Tibbetts, Stephen G. and David L. Myers. 1999. "Low Self-Control, Rational Choice, and Student Cheating." *American Journal of Criminal Justice* 23:179-200.



- Tibbetts, Stephen G. and Chris L. Gibson. 2002. "Individual Propensities and Rational Decision-Making: Recent Findings and Promising Approaches." Pp. 3-24 in *Rational Choice and Criminal Behavior: Recent Research and Future Challenges*, edited by A. R. Piquero and S. G. Tibbetts. New York: Routledge.
- Tibbetts, Stephen G. and Joshua N. Whittimore. 2002. "The Interactive Effects of Low Self-Control and Commitment to School on Substance Abuse Among College Students." *Psychological Reports* 90:327-337.
- Tittle, Charles, David A. Ward and Harold G. Grasmick. 2003. "Gender, Age, and Crime/Deviance: A Challenge to Self-Control Theory." *Journal of Research in Crime and Delinquency* 40:426-453.
- Turner, Michael G. and Alex R. Piquero. 2002. "The Stability of Self-Control." *Journal of Criminal Justice* 30:457-471.
- Unnever, James D., Francis T. Cullen and Travis C. Pratt. 2003. "Parental Management, ADHD, and Delinquent Involvement: Reassessing Gottfredson and Hirschi's General Theory." *Justice Quarterly* 20:471-500.
- Weibe, Richard P. 2003. "Reconciling Psychopathy and Low Self-Control." *Justice Quarterly* 20:297-336.
- Winfree, L. Thomas and Frances P. Bernat. 1998. "Social Learning, Self-Control, and Substance Abuse by Eighth Grade Students: A Tale of Two Cities." *Journal of Drug Issues* 28:539-558.
- Wright, Bradley. R., Terrie E. Moffitt and Avshalom Caspi. 1998. "Predispositions, Social Environments, and Crime: A Model of Varying Effects." Paper presented at the annual meeting of the American Society of Criminology in Washington, D.C.
- Wood, Peter B., Betty Pfefferbaum and Bruce J. Arneklev. 1993. "Risk-Taking and Self-Control: Social Psychological Correlates of Delinquency." *Journal of Crime and Justice* 16:111-130.
- Zahn-Waxler, Carolyn and JoAnn Robinson. 1995. "Empathy and Guilt: Early Origins of Feelings of Responsibility." Pp. 174-197 in *Self-Conscious Emotions: The Psychology of Shame, Guilt, Embarrassment and Pride*, edited by J. P. Tangney and K.W. Fischer. New York: Guilford Press.

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#### APPENDIX A

Scenarios for Academic Dishonesty (see Tibbetts 1997b)

It is 8:45 a.m. and (Kim/John), a college student, is running late for a final exam in a Math class that begins at 9:00 a.m. Kim/John had studied for the first two exams and earned C's on these exams. However, Kim/John did not study for the final exam, which is worth 40% of the final grade. Kim/John arrives at the classroom as the exams are being handed out and she/he takes a seat in the back of the room. Jerry, who is sitting nearby, receives the same form of the exam as Kim/John. Kim/John decides to copy answers off Jerry's answer sheet.

Scenario for Drunk Driving (see Piquero and Tibbetts 1996)

It is about 2:00 in the morning, and Judy/Joe has spent most of Thursday night drinking with her/his friends at the Club. She/he decides to leave the Club and go home to her/his off-campus apartment, which is about 10 miles away. Judy/Joe has had a great deal to drink. She/he feels drunk and wonders whether she may be over the legal limit and perhaps should not drive herself/himself home. She/he knows people who have driven home drunk before, and none of them have ever gotten caught. In addition, Judy/Joe realizes that if she/he gets a ride home, then she/he will have to take a bus back to the Club in the morning to pick up her/his car. Judy/Joe decides to drive herself/himself home.

## **APPENDIX B**

### **Self-Control Items**

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

## **APPENDIX C**

### **Parental Management Items**

1. When I was in 9<sup>th</sup> grade, an adult in my house knew where I was when school was out.
2. It was important in my house that I completed my homework each day.
3. When I was in 9<sup>th</sup> grade, no one really cared what type of programs I watched on TV.
4. When I was in 9<sup>th</sup> grade, my parents knew my close friends.
5. In my house, if you were told that you would get punished for doing certain things, and you got caught doing one, you definitely got punished.
6. I had to tell an adult in my house where I was going when I went out.
7. If I wanted to, I would have been allowed to stay home from school when I really wasn't sick.
8. When I was in the 9<sup>th</sup> grade, I would talk about what I did each day with an adult in my house.
9. In my house, whether or not I got punished for something usually depended on the mood of my parent(s).
10. If I had a problem when I was in 9<sup>th</sup> grade, I felt I could talk it over with a parent or adult in my house if I wanted to.
11. An adult in my house was aware of who I was out with.
12. When I was in 9<sup>th</sup> grade, an adult in my house knew what time I got home on weekend nights.
13. If I got caught doing something wrong, I might get yelled at, lectured, or threatened with punishment, but not actually punished by loss of privileges or grounding, for example.
14. At least one adult in my house would talk with me about things that were important to me when I was in 9<sup>th</sup> grade.
15. No one in my house was really concerned about what time I got home on weekend nights.
16. When I was in 9<sup>th</sup> grade, it seemed like at least one of the adults in the house was always on my case about something.
17. When I was in 9<sup>th</sup> grade, at least one of the adults in the house was pretty informed about what was happening in my life.
18. You really had to get one of the adults in my house mad before they would bother punishing you.
19. All of the adults in my house thought what was going on in their lives was more important than what was going on in mine when I was in 9<sup>th</sup> grade.
20. In my house, if you complained, carried on, or pitched a fit long enough, you got to do what you wanted to do.
21. When I was in 9<sup>th</sup> grade, at least one of the adults in my house was more concerned about my welfare than their own.
22. The punishment in my house was fairly consistent and depended largely on how serious a rule I had broken.
23. At least one of my parents paid pretty close attention to what I was doing and who I was doing it with.
24. If you broke one of the rules and got caught, you got punished in my house.
25. When I was in 9<sup>th</sup> grade, at least one adult in my house was pretty well informed about what I was doing in school, for example, what subjects I was taking, who my teachers were, and the clubs and activities in which I was involved.
26. The rule about what would get you into trouble were clear and applied consistently in my house.
27. When I was in 9<sup>th</sup> grade, if my parents had been notified that I was treating my teachers with disrespect, I would have been in serious trouble.
28. In my house, you never knew when one of the adults might just have enough and start hitting you.
29. When I was in 9<sup>th</sup> grade, if my parents received a report that I had been shoplifting, gum, candy, and other mall items, I would have been in serious trouble.
30. If I was feeling down or depressed, one of the adults in my house would notice it.
31. When you were punished in my house, there was good reason for it.
32. When I was in 9<sup>th</sup> grade, if I skipped school and my parents found out, I would have been in serious trouble.
33. When I was punished, one of the adults in my house would talk to me about why I was being punished so I fully understood.
34. In my house, the level of punishment was appropriate for the seriousness of the misbehavior.

*SCT Opportunity and Motivation*

35. In my house, you were more likely to lose privileges or get grounded as a punishment than to get hit.
36. When I was in 9<sup>th</sup> grade, if I got caught smoking cigarettes, I would have been in serious trouble.
37. At least one of the adults in my house was likely to be in a bad mood.
38. When I was in 9<sup>th</sup> grade, if I came home drunk, I would have been in serious trouble.
39. When I was in 9<sup>th</sup> grade, if I was going to sleep over at a friend's house, one of my parents would check on the plan with my friend's parents.
40. I was allowed to spend any amount of time I wanted watching TV.