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# SELF-CONTROL IN GLOBAL PERSPECTIVE: AN EMPIRICAL ASSESSMENT OF GOTTFREDSON AND HIRSCHI'S GENERAL THEORY WITHIN AND ACROSS 32 NATIONAL SETTINGS*

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## ABSTRACT

Research concerning Gottfredson and Hirschi's (1990) general theory of crime has paid inadequate attention to the reliability and validity of self-control measures in non-Western settings, to the relationship between parenting and self-control in non-Western settings, and to Gottfredson and Hirschi's assertion that macro-level cultural forces have little or no influence on criminal behaviour. The present study addresses each of these issues using a six-item self-control scale and two separate crime measures among young-adult respondents from 32 Western and non-Western settings on all six humanly-habitable continents. Across Western and non-Western settings, results suggest that (1) the six-item self-control scale is reliable; (2) the scale is associated with violence and property crime; and (3) an eight-item parental neglect scale is associated with self-control in both Western and non-Western settings . At the same time, HLM analysis suggests that there exists a macro-level contextual effect, unanticipated by Gottfredson and Hirschi, of aggregate parental neglect on individual-level self-control.

## SELF-CONTROL IN GLOBAL PERSPECTIVE: AN EMPIRICAL ASSESSMENT OF GOTTFREDSON AND HIRSCHI'S GENERAL THEORY WITHIN AND ACROSS 32 NATIONAL SETTINGS

Gottfredson and Hirschi's (1990) General Theory of Crime has generated a great deal of theoretical and empirical attention over the course of the past fifteen years. However, although numerous studies provide support for many of the theory's primary assertions, such studies tend to employ data that come primarily from the United States. Among those studies that have tested the theory outside of the United States, most have been conducted in Western cultures and none has yet to provide a systematic comparison of the theory's applicability to crime in all six humanly-habitable continents. Such research is needed for two related reasons. First, Gottfredson and Hirschi argue unequivocally that the same underlying processes serve to control crime equally across all cultures. Second, they make this claim despite clear and important differences between Western and non-Western cultures. The present paper therefore (1) examines the reliability and validity of a six-item self-control measure in 32 national settings from all six humanly-habitable continents; (2) examines the relationship between parental neglect and self-control in the same 32 settings; and (3) uses multi-level modeling to provide a preliminary examination of the degree to which macro-level, cultural forces influence criminal behaviour and self-control.

### THE PREDICTIONS OF THE GENERAL THEORY

Gottfredson and Hirschi's (1990) influential theory of crime begins with the fundamental premise that crime reflects the natural tendency of individuals to pursue immediate gratification (see also Hirschi, 1969). According to this perspective, acts of force and fraud are often the most expedient means by which to achieve immediate material gratification while "analogous" behaviours, like promiscuous sex and the use of chemical substances, are often the most

expedient means by which to achieve immediate visceral gratification. Given their belief that crime reflects the natural pursuit of self-interest, Gottfredson and Hirschi argue that crime requires no special explanation and that the major task of criminologists should be seeking the causes of conformity to laws and norms that limit the immediate pursuit of gratification.

According to Gottfredson and Hirschi, the major source of conformity is an individual trait that they call "self-control." According to these theorists, those with low self-control tend to possess a number of relatively stable constitutional characteristics that prevent them from forgoing the pleasure of the immediate moment in the interest of long-term benefit. Such individuals, for example, lack “persistence in the course of action” such that they avoid difficult tasks, are drawn to risky or exciting behaviour, and prefer physical tasks that put them at risk for injury over mental tasks that involve cognitive concentration (Gottfredson and Hirschi, 1990:89). Likewise, such individuals tend to have a bad temper and to be “insensitive to the suffering” that others experience (Gottfredson and Hirschi, 1990:89-90; see also Grasmick et al., 1993).

Given their adamant criticism of research suggesting meaningful genetic differences in the predisposition for self-control (e.g., Mednick et al., 1984), Gottfredson and Hirschi situate the origin of self-control in early childhood socialization. In particular, they suggest that children develop self-control to the degree that their parents set clear rules, monitor their children’s behaviour, recognize rule-violations, and sanction such violations consistently within the first decade of their child’s life (see also Larzelere and Patterson 1990; Patterson and Dishion 1985). Following the first decade of life, Gottrfreson and Hirschi contend that interpersonal differences in self-control remain relatively stable even as a given individual’s criminal behaviour increases in the teenage years and declines thereafter.

While Gottfredson and Hirschi acknowledge cross-cultural variation in crime rates, they dispute the notion that such variation reflects differences in culturally-defined conceptions of law, differences in the fundamental processes that produce crime, or differences in structural variables like poverty (e.g., Neapolitan, 1999). Rather, they argue that early parental socialization promotes or prevents the development of self-control equally across cultural context and they state explicitly that “cultural variability is *not* important in the causation of crime” (1990:174-175, italics in original).

**THE APPLICABILITY OF THE THEORY TO NON-WESTERN CULTURES**

Although Samuel P. Huntington's (1996) influential work concerning the "clash of civilizations" does not address self-control theory directly, it provides a useful framework from which to question whether Gottfredson and Hirschi are correct in their adamant assertion that their theory of crime applies equally across all human cultures. Huntington defines a "civilization" as a "cultural entity" that transcends geography even as it may subsume particular nation-states (see also Durkheim and Maus, 1971). Quoting Bozeman (1975:1), he argues that a civilization is characterized by "values, norms, institutions, and modes of thinking to which successive generations in a given society have attached primary importance." Drawing on existing scholarship, he then delineates the eight civilizations that he believes exist in the modern world: Sinic (Chinese), Japanese, Hindu, Islamic, Orthodox, Western, Latin American, and African.

While Huntington acknowledges that Western civilization shares certain of its characteristics with other civilizations, he contends that a particular *combination* of characteristics distinguishes the West, including the United States and Western Europe, from the his other seven civilizations. Among these characteristics are the West's Greek, Roman, and

Christian legacies, its relative separation of religion and politics, and its relative tendency toward representative politics. Perhaps most important for the present purpose, however, Huntington (1996:72) suggests that "Again and again, both Westerners and non-Westerners point to individualism as the central distinguishing mark of the West." In light of the central role that individualism may play in Western society, one can reasonably question whether a general theory of crime that is built around the quintessentially individualist concept of self-control can serve to explain meaningful variance in crime outside Western society, let alone serve to explain *all* meaningful variance, as Gottfredson and Hirschi seem to predict. As yet, we know of only one study (Vazsonyi et al., 2004) that has explicitly tested Gottfredson and Hirschi's theory outside of the U.S. and Europe and even this study's results could plausibly be argued to reflect the West's cultural influence on Japan in the post-World War II era. Thus, the present study employs data from 32 nations across all six humanly-habitable continents to examine the fundamental predictions of Gottfredson and Hirschi's General Theory of Crime.

## EMPIRICAL ASSESSMENTS OF THE GENERAL THEORY

### *The Reliability of Self-control Measures*

One of the most researched facets of Gottfredson and Hirschi's theory involves the degree to which measures derived from the theory are reliably correlated with one another. Grasmick et al. (1993) provide seminal research in this area using a community sample of 395 adults from Oklahoma City to probe six different dimensions of self-control derived from Gottfredson and Hirschi's theory: (1) impulsivity; (2) a preference for simple tasks; (3) risk-seeking; (4) physicality; (5) self-centeredness; and (6) a bad temper. Of 24 items that they proposed to reflect the self-control concept, principle components analysis suggested that 23 of these items formed a reliable and unidimensional self-control scale ($\alpha$=.81). Further research

employed modified versions of the same scale and replicated this finding with other U.S. samples of adults (e.g., Arneklev et al., 1993), college students (e.g., Arneklev et al., 1999), and incarcerated offenders (e.g., Longshore, 1998; Longshore and Turner, 1998; Longshore et al., 1996; Piquero and Rosay, 1998). Although the Grasmick et al. (1993) self-control scale is perhaps the most commonly used, other measures of self-control have also been devised and a number of studies bear on their reliability among U.S. samples. Burton et al. (1999), for example, employed a 12-item scale gauging the impulsivity, temper, physicality, and risk-seeking components of the self-control concept and found an $\alpha$-coefficient of .64 (see also, Burton et al., 1998). Similarly, Evans et al., (1997) employed an 11-item scale tapping all but the simple task component of self-control and found an $\alpha$ of .61.

A limited research literature has attempted to assess the reliability of self-control measures outside the U.S. Paternoster and Brame (1998), for example, found that five dichotomous items gauging whether a given respondent was daring, lazy, lacking in concentration, prone to act out, and difficult to discipline produced an $\alpha$-coefficient of .69 in a sample of working-class British youths (see also Polakowski, 1994). Lagrange and Silverman (1997) used 26 items to produce reliable measures of impulsivity, risk-taking, carelessness, a bad temper, and a present-orientation among a sample of secondary school students in Edmonton, Canada. Although they did not explicitly invoke Gottredson and Hirschi's theory, Caspi et al. (1994) found an $\alpha$-coefficient of .79 among measures of the degree to which children were careful, thoughtful, rational, and aversive to impulsivity in a New Zealand birth cohort. In the most extensive cross-cultural study of Gottfredson and Hirschi's theory to date, Vazsonyi et al. (2001) found that a variation on the Grasmick et al. (1993) scale produced a highly reliable measure of self-control in Hungary, the Netherlands, Switzerland, and the United States. Finally,

in perhaps the only study to specifically test Gottfredson and Hirschi's theory in Asia, Vazsonyi et al. (2004) find that a revised version of the Grasmick et al. (1993) scale provided a reliably, multi-dimensional measure of self-control among a sample of college students in Japan.

***Self-control and Crime***

Beyond providing a seminal test of the degree to which the dimensions of self-control cluster together empirically, Grasmick et al. (1993) found that their self-control measure was correlated with both force and fraud. Further research has replicated their findings among U.S. samples of adults (e.g., Evans et al. 1997), young adults (Gibbs et al., 1998), adolescents (e.g., Cochran et al., 1994), and incarcerated offenders (e.g., Longshore, 1998; Longshore et al., 1996; Piquero and Rosay, 1998). Burton et al. (1999) found that, following Gottfredson and Hirschi's predictions, their measure of self-control was also correlated with analogous behaviours like problems in the workplace and substance use (see also Winfree and Bernat, 1998). Finally, a number of studies have found that the relationship between self-control and crime holds net of controls for such variables as age, sex, income, criminal values, and peer association (e.g., Evans et al., 1997; Winfree and Bernat, 1998).

A limited cross-cultural research literature finds evidence that self-control measures are correlated with crime outside the U.S. Lagrange and Silverman (1997), for example, found that measures of self-control were related to both force and fraud among adolescents in Canada (see also, Sorenson and Brownfield, 1995). Other researchers have found similar results among adolescents in New Zealand (Caspi et al., 1994) and England (Paternoster and Brame, 1998; Polakowski, 1994). Finally, Vazsonyi et al. (2001; 2004) found that measures of self-control were related to a range of deviant behaviours in Hungary, the Netherlands, Switzerland, the United States, and Japan. While it would therefore appear that self-control is a valid predictor of

criminal and analogous behaviours within Western society and perhaps within non-Western settings that have been strongly influenced by the West, research has yet to provide an adequate assessment of the degree to which self-control and crime are related in non-Western settings.

***Parenting and Self-control***

An established research literature suggests that parenting is at least moderately associated with delinquency (e.g., Glueck and Glueck, 1950; McCord, 1979, 1991; Cernkovich and Giordano 1987; Larzelere and Patterson 1990; Patterson and Dishion 1985; Van Voorhis et al. 1988; Wells and Rankin 1988). Although less research has tested the degree to which self-control mediates this relationship, two studies suggest that it might. Employing a sample of 289 college students, Gibbs et al. (1998) found that retrospective accounts of parental monitoring and discipline were correlated with a 40-item self-control scale, that this scale was correlated with self-reported delinquency, and that a significant relationship between parenting and delinquency was fully mediated by self-control. Using a community sample of adolescents, Hay (2001) found that parental monitoring and discipline were associated with a modified version of the Grasmick et al. (1993) self-control scale, that this scale was associated with self-reported delinquency, and that self-control mediated a portion of the relationship between parenting and delinquency. As yet, the relationship between parenting and self-control has yet to be evaluated outside Western settings.

## METHODS

### DATA

The present data come from university students in 32 different national settings (see Tables 2-5) who participated in the International Dating Violence Study (IDVS) (Straus and Members of the International Dating Violence Research Consortium, 2004). The IDVS is being conducted by members of a research consortium located at universities in all major world regions, representing all six humanly-habitable continents, thus allowing for a preliminary investigation of the validity of Gottfredson and Hirschi's (1990) general theory in both Western and non-Western settings. A detailed description of the study, including the questionnaire and all other key documents, is available via the world wide web at: http://pubpages.unh.edu/~mas2. In all sites, appropriate authorities reviewed all procedures used to protect the rights and safety of the participants, including explaining the purpose of the study, explaining the potentially sensitive nature of questions concerning sexual relationships, and explaining the voluntary nature of participation.

The members of the International Dating Violence Research Consortium administered the dating violence questionnaire to students at their respective universities. There is a core questionnaire that each member of the Consortium translated and then back-translated to maintain "conceptual equivalence" (Straus, 1969) across the sites. In addition, the questionnaire has space for members to add questions to measure variables that are uniquely important for their site or to measure constructs to test a theory of particular interest. The questionnaires were usually administered in classes taught by members of the Consortium and in other classes for which they could make arrangements. Almost all were Criminology, Psychology, and Sociology undergraduate courses. Thus, the present data come from a convenience sample. The results

describe what was found for students in those classes and cannot be taken as representative of each nation's overall population or of all students at each university. As in other surveys, not every student answered every question. To respect the privacy and the voluntary nature of participation, the instructions emphasized that respondents were not required to participate and could simply turn in a blank questionnaire if they desired. The mean response rate across sites was 81.8%.

## MEASURES

### *Self-control*

The IDVS contains six items that correspond roughly to each of the six dimensions of self-control (see Grasmick et al., 1993). Each ranges from 1 (strongly disagree) to 4 (strongly agree). The first item is a measure of self-centeredness that asks respondents how much they agree with the statement: "I don't think about how what I do will affect other people." The second is a measure of risk-taking based on whether respondents agree with the statement: "I often do things that other people think are dangerous." The third is a measure of temper that asks respondents whether they agree with the statement: "There is nothing I can do to control my feelings when my partner hassles me." The fourth is a rough measure of physicality drawing on Gottfredson and Hirshci's (1990) assertion that those with low self-control are likely to suffer disproportionately from accidents. Specifically, it probes whether respondents agree with the statement: "I often get hurt by things that I do." The fifth is a rough indicator of impulsivity probing whether respondents agree with the statement: "I have trouble following the rules at work or in school." The sixth builds on Gottfredson and Hirschi's assertion that those with self-control take into account the long-term consequences of their acts. Specifically, it is based on an item gauging whether respondents agree with the statement: "I have goals in life that I try to

reach." Descriptive statistics for each item, for the self-control scale, and for all other variables are presented in Table 1.

(Table 1 about here)

***Criminal History***

The IDVS contains eight items gauging self-reported criminal history. The response categories for each item range from 1 (strongly disagree) to 4 (strongly agree). There are two items for property crime (engaged in theft of things worth more than $50 and theft of money) and two for violent crime (hit or threatened to hit someone and attacked someone to hurt them). Each is asked for two separate periods in a respondent's life-course (prior to age 15 and following age 15), making a total of eight items. A property crime sub-scale is comprised of four items reflecting the above two property crime items measured for two separate periods in the life-course. A total violent crime sub-scale is comprised of four items reflecting the above two violent crime items measured for two separate periods in the life-course.

***Parental Neglect***

The IDVS data do not provide extensive measures of the degree to which parents set clear rules, monitor their children, recognize rule violations, and sanction their children consistently for such violations. Nonetheless, "Gottfredson and Hirschi (1990) assume these conditions will not develop unless parents are emotionally or in other ways invested in the child" (Gibbs et al., 1998:49; see also Snyder and Patterson, 1987). As such, we use the IDVS's eight-item parental neglect scale as a proxy for good parenting. Certain of these items (e.g., parents made sure I went to school) gauge elements of direct control that have been used in the existing delinquency research (e.g., Gibbs et al., 1998; Hay, 2001; McCord, 1979, 1991; Rankin and Kern, 1994; Sorenson and Brownfield, 1995). Others (e.g., parents provided comfort) gauge

elements of parental support that have been found to load on one latent factor with measures of parental monitoring and sanctioning (see Wright and Cullen, 2001).

***Statistical Control Variables***

Given the possibility of cultural variance in willingness to self-disclose socially undesirable behaviour, as well as recent research suggesting that self-control may influence response accuracy (Piquero et al., 2000) the Social Desirability scale of the Personal and Relationships Profile (Straus and Mouradian, 1999) was used as a control. This is a 13-item scale adapted from Reynolds short form of the widely used Crowe Marlowe social desirability scale (Reynolds, 1982). The scale items are behaviours and emotions that are slightly undesirable but true of almost everyone, such as "I sometimes try to get even rather than forgive and forget" and "There have been occasions when I took advantage of someone." The more of these items the respondent denies, the more likely a respondent is to avoid admitting the undesirable criminal behaviours which are the focus of this study.

Given that age and sex are reliably and substantially related to criminal behaviour across culture (e.g., Gottfredson and Hirschi, 1990; Moffitt et al., 2001), we control for each in the analyses that follow. We code age in years and we code sex as "1" for males and "0" for females. Given that differential association is also among the most reliable correlates of criminal behaviour (see Akers, 1998), we control for a two-item measure of criminal peers. Each item ranges from 1 (strongly disagree) to 4 (strongly agree). The first probes whether respondents "have *friends* who commit criminal acts" and the second probes whether respondents "spend time with criminal *friends*."

Finally, we control for socioeconomic status using a scale that combines father's education, mother's education, and family income. Given that income has such different values

in different nations and that years of education may have different meanings in different nations, it was not appropriate to use raw scores for these variables. Instead, we created a variable that measured the SES of each student relative to others at the student's university. This was done by first transforming the three SES variables into z-scores for the site, summing the three of them, and then calculating the z-score of that sum. The result is a scale measuring SES as the number of standard deviations each student was above or below the mean of his or her respective site.

**ANALYTIC STRATEGY**

The analyses that follow are divided into three sets. The first set assesses the reliability of the six-item IDVS self-control scale within each of the 32 national settings. It employs confirmatory factor analysis using a weighted-least-squares algorithm designed for ordinal measures to estimate each item's independent factor loading on the overall self-control scale. Following Browne (1984), it bases these estimates on the polychoric correlation matrix of observed item values among the respondents within a given culture. In addition, it provides overall fit statistics for the six-item model of self-control in each of the 32 national settings. These include the $\chi^2$-statistic, the root-mean-square-error-of-approximation (RMSEA), and the traditional $\alpha$-coefficient.

The second set of analyses assesses the degree to which the self-control scale is associated with two crime-types within each of the 32 national settings. Assuming that our self-control scale is reliable across settings, Gottfredson and Hirschi's theory asserts that the scale should be associated with multiple forms of crime net of statistical controls for such variables as age, sex, and criminal peers. In addition, the second set of analyses examines the degree to which parental neglect predicts self-control within each of the same settings, again net of adjustments for our control variables.

The third set of analyses uses the HLM statistical package (Raudenbush et al., 2000) to assess whether Gottfredson and Hirschi's theory is correct in asserting that cultural variability plays no role in promoting criminal behaviour once individual-level variables have been controlled. In particular, we examine the degree to which sites with higher *average* levels of criminal peer association have higher average levels of crime after controlling for individual-level variables. If Gottfredson and Hirschi are correct, a respondent's crime should be affected neither by the level of crime among his or her own friends *nor* by the overall criminal culture at a given university. While we use an individual-level measure of criminal peer association to reflect crime among a respondent's own friends (level-one criminal peers), we use the average level of criminal peer association (level-two criminal peers) at a given university to reflect that national setting's overall criminal culture. In addition, although Gottfredson and Hirschi predict that self-control is determined exclusively by the parenting to which a child is subjected by his or her own parents, recent research (e.g., Pratt et al. 2004) suggests that the greater social context may impinge upon self-control net of the parenting to which an individual is subjected in his or her own household. We therefore examine the degree to which sites with higher *average* levels of parental neglect (level-two neglect) have lower average levels of self-control after adjusting statistically for individual-level parenting (level-one neglect).

## RESULTS

### *The Six-item Self-control Scale*

Table 2 presents the results of 32 confirmatory factor analyses assessing the reliability of our six-item self-control scale within each national setting. Specific national settings are listed vertically at the left of the table, along with the number of respondents who provided data for all six items in each setting. Sample sizes range from a low of 135 respondents in Malta to a high of

4706 in the U.S. Factor loadings for particular items within each setting are listed horizontally with each row's loadings corresponding to one of the 32 national settings.

(Table 2 about here)

Overall, results in Table 2 suggest that the IDVS self-control scale is reliable across setting. Of 192 factor loadings (six items by 32 settings), 187 are statistically significant. In 27 of the 32 national settings, all six self-control items load to a statistically significant degree. In the remaining five settings, five of six self-control items load to a statistically significant degree. Of the six items comprising the IDVS self-control scale, three load to a statistically significant degree in all 32 national settings, two (selfishness and temper) fail to load significantly in only one setting, and one (goals) fails to load significantly in three settings. Mean factor loadings range from a high of .67 (rules) to a low of .35 (goals).

Comparing the above results to those of studies using exclusively Western samples suggests that the IDVS items do an equal or better job of representing one underlying construct as do items from prior studies. Specifically, the average factor loading across all 192 cells presented in Table 2 is .50. This compares favorably with the results of prior research using more elaborate measures. Arneklev et al. (1999), for example, estimated a second-order factor model using items derived from the Grasmick et al. (1993) self-control scale and found second-order loadings that range from a high of .63 (impulsivity) to a low of .25 (physicality). Likewise, as compared to the present mean loading of .50, Arneklev et al. (1999) found an average second-order loading of .40 among adults and .42 among college students.

Turning to the overall fit of the six-item IDVS self-control scale, 11 of the 32 national settings yielded non-significant $\chi^2$ values. This suggests that the six-item model fits the data well in only about one-third of the national settings. At the same time, the $\chi^2$ statistic is sensitive

to sample size such that larger samples produce greater error regardless of a model's true fit to the data. For this reason, we supplemented the $\chi^2$ statistic with the RMSEA, for which lower values represent a better fit to the data. Of the 32 national settings included, 11 yielded RMSEA values under .05 and another 20 yielded RMSEA values between .05 and .10. Finally, to provide a more traditional measure of overall reliability, we supplemented the latter two statistics with α-coefficients. Across all 32 national settings, the average α-coefficient is .53, ranging from a high of .67 in Australia to a low of .39 in Korea.

Comparing the above results to those of studies using exclusively Western samples suggests that the present measure's reliability is again comparable to that of previously employed self-control measures. On one hand, because α is partly a function of the number of items in the scale, studies with a large number of items have higher α-coefficients. Grasmick et al. (1993), for example, achieved an α-coefficient of .81 with a variant of their original scale. On the other hand, studies using 11 or 12 item self-control scales have achieved reliabilities of .61 (Evans et al., 1997) and .64 (Burton et al., 1999; Burton et al., 1998). Moreover, some studies have found that scales of impulsivity and risk-taking with α-coefficients as low as .45 (Longshore et al., 1996; Piquero and Rosay, 1998) do as well or *better* at predicting criminal behaviour than more reliable scales that include all six self-control components. In sum, then, Table 2 suggests that self-control can be measured with at least moderate reliability in both Western and non-Western national settings using the IDVS self-control scale.

***Self-control and Crime***

Tables 3 and 4 examine the degree to which the IDVS self-control scale predicts criminal history within each of the 32 national settings. As is typical of self-reported crime measures, our criminal history measures are positively skewed. In particular, our violence measure is censored

such that between 18 and 65 percent of respondents in each setting reported no history of violence. Similarly, our property crime measure is censored such that between 28 and 75 percent of respondents in each setting reported no history of property crime. Given that these non-normal distributions violate a key assumption of OLS regression, OLS analyses presented in Tables 3 and 4 employ the natural log of each criminal history measure. Further, we supplement each OLS analysis with a Tobit regression analysis (see Long, 1997) that corrects for the censored nature of dependent variables, but whose coefficients must be weighted by the proportion of *uncensored* responses prior to interpretation.

(Table 3 about here)

Examining OLS results from Table 3, the IDVS self-control scale is associated with violence to a statistically significant degree in all 32 national settings. In particular, the absolute value of standardized coefficients linking self-control to violence in these 32 settings ranges from a low of .13 to a high of .40. For purposes of comparison, our criminal peers scale also bears a significant relation to violent crime all 32 settings with standardized coefficients ranging from a low of .09 to a high of .35. While the mean absolute value of the standardized OLS coefficient linking self-control and violence across all 32 settings is .28, the mean standardized OLS coefficient linking criminal peers and violence is .20. Moreover, the standardized self-control coefficient is of greater magnitude than the standardized criminal peers coefficient in 24 of the 32 settings. It therefore appears that self-control is somewhat more strongly related to violence in the present study than is an individual's association with criminal peers. While OLS results might be called into question given the non-normal nature of our violence measure, Tobit results for each national setting are substantively identical to those of OLS results, suggesting a

robust inverse relationship between the IDVS self-control scale and violence within each of the 32 national settings.

(Table 4 about here)

Table 4 repeats the analyses from Table 3 using property crime as a dependent variable in place of violence. Examining OLS results from Table 4, the IDVS self-control scale is associated with property crime to a statistically significant degree in 28 of 32 national settings. In particular, the absolute value of standardized coefficients linking self-control to property crime ranges from a non-significant low of .07 in Hungary to a significant high of .35 in Mexico. In comparison, our criminal peers scale also bears a significant relation to property crime in 28 of the 32 settings with standardized coefficients ranging from a non-significant low of .05 in Iran to a significant high of .37 in Malta. While the mean absolute value of the standardized OLS coefficient linking self-control and property crime across all 32 settings is .21, the mean standardized OLS coefficient linking criminal peers and property crime is .20. In contrast to results for violence, the standardized self-control coefficient is of greater magnitude than the standardized criminal peers coefficient in only 15 of the 32 settings. It therefore appears that self-control is only marginally more associated with property crime in the present study than is an individual's association with criminal peers. Tobit results for each national setting are substantively identical to those of OLS results in all 32 settings. Given controls for age and sex in all OLS and Tobit models from Tables 3 and 4, it would appear that self-control is substantially and significantly associated with crime in both Western and non-Western settings net of demographics. Given the control for social desirability, which was significantly and negatively related to crime in the vast majority of models from Tables 3 and 4, it would appear

that the relationship between self-control and crime is not merely an artifact reflecting some individuals' greater or lower willingness to self-disclose undesirable behaviour.

***Parenting and Self-control***

Table 5 explores the degree to which parental neglect within each national setting predicts self-control among a given setting's respondents. Given that the IDVS self-control scale is not censored, only OLS estimates are presented. Consistent with the general theory's prediction, parental neglect is significantly and inversely related to self-control among respondents in all 32 national settings. Moreover, the magnitude of the standardized OLS coefficient linking parenting and self-control is generally quite strong, averaging an absolute value of .27, higher than that linking self-control and property crime, and only slightly lower than that linking self-control and violence. Once again, these relationships obtain net of controls for age, sex, SES, and social desirability.

***Cultural Influences on Crime and Self-control***

Table 6 employs the HLM statistical package (Raudenbush et al., 2000) to estimate individual- and aggregate-level influences on crime and self-control. All independent variables have been grand-mean centered prior to analysis. Beginning with the first column of Table 6, results pooled across all 32 national settings suggest a strong relationship between self-control and violence at the individual level. Criminal peers bear an independent association with violence, though not a relationship as high in its magnitude as that linking violence with self-control. While these results largely mirror those of the disaggregated analyses presented in Table 3, the level-two results employ an aggregate measure of criminal peers as a means of gauging cultural influences on violence. Rebellon (2006), for example, has argued that studies of differential association theory have typically mismeasured the concept of differential association

by relying exclusively on items gauging crime among a respondent's *friends* rather than among the broader pool of their peers in general. According to this logic, even if a respondent does not associate with criminal friends him or herself, he or she may be embedded within a culture where high levels of crime are prevalent. We use a mean-aggregated measure of criminal peer association as a proxy measure reflecting greater or lesser criminal cultures. Results from the first column of Table 6, however, fail to reveal a significant association between mean-aggregated criminal peers and violence. Results from the second column of Table 6 are substantively similar to those from the first column. In particular, they suggest that property crime is significantly associated with self-control and criminal peers at the individual level, but not with a mean-aggregated measure of criminal peers.

The final column of Table 6 examines the degree to which parental neglect at the individual and aggregate levels is associated with self-control. In line with Gottfredson and Hirschi's predictions, as well as the results from Tables 3 and 4, column 3 suggests that higher levels of parental neglect are associated with lower levels of self-control. Level-2 results, however, suggest that an aggregate measure of parental neglect is significantly and strongly associated with an individual's self-control. In particular, net of the parental neglect to which a given individual was subjected him or herself during childhood, respondents tended to have lower levels of self-control when they came from a national setting with high average levels of parental neglect. While unanticipated by Gottfredson and Hirschi, this result suggests that informal social control at the hands of parents *other* than one's *own* may impinge upon the individual's self-control.

## DISCUSSION

Gottfredson and Hirschi's (1990) influential theory of crime has received great attention over the course of the past fifteen years. While research has consistently found at least partial-support for the theory, such research has been based almost exclusively on Western samples, most of which come from the U.S. Given the cultural differences that exist between Western and non-Western nations, existing research provides little insight concerning the applicability of Gottfredson and Hirschi's theory to non-Western cultures. Given the strong claims that Gottfredson and Hirschi make about the universal applicability of their theory, the present study provides the most extensive cross-national test of their theory to date. It begins by examining the degree to which the six-item IDVS self-control scale is reliable within 32 different Western and non-Western national settings. It then examines the degree to which the IDVS self-control scale predicts two forms of crime within each setting as well as the degree to which an 8-item parental neglect scale is associated with self-control in each setting. Finally, it provides a preliminary assessment of the degree to which Gottfredson and Hirschi's theory, previously tested only at the micro-level, makes accurate predictions at the macro-level.

Results at the micro-level provide impressive support for the generality of Gottfredson and Hirschi's theory within a rage of disparate Western and non-Western settings. Aside from yielding reliability estimates among U.S. respondents that are comparable to those found in prior studies employing a similar number of items, the scale appears generally reliable in a range of national settings both inside and outside the West. To be certain, reliability varied from setting to setting. Results clearly suggest, for example, a weaker reliability of the scale among Iranian respondents versus U.S. or Australian respondents. Nonetheless, despite variance in the degree to which the six IDVS self-control items clustered together in different settings, it remains the

case that at least five of the six items clustered together to a statistically significant degree in all 32 settings. As such, it would appear that the concept of self-control has substantive meaning not only in Western societies, but in societies whose cultures differ markedly from those of the West.

Beyond suggesting that the elements of self-control tend to cluster together in a range of disparate national settings, the present results provide impressive support for two further predictions of Gottfredson and Hirschi's theory. First, self-control is significantly associated with at least one form of crime in all 32 national settings and with multiple types in the vast majority. This finding emerged net of demographic controls and net of what was generally a significant independent influence of respondent willingness to self-disclose undesirable information. Second, an 8-item parental neglect scale was significantly associated with self-control in all 32 national settings, again net of statistical controls. Although explicit measures of parental monitoring and sanctioning are not available in the IDVS, Hirschi (1995) explicitly discusses the concept of parental neglect as one manifestation of poor parenting and prior research suggests items gauging neglect to load on one underlying factor with items gauging monitoring and sanctioning. Thus, despite measurement limitations, we are impressed with strength of the support for the general theory's micro-level predictions, and perhaps more impressed with the consistency of this support in such disparate national settings.

At the same time, despite impressive support for the general theory as an important explanation of individual-level variation in crime and self-control, our results yield two findings that run counter to Gottfredson and Hirschi's predictions. First, although our aggregate measure of peer association was unrelated to either violence or property crime in multi-level analyses, our results consistently support the notion that individuals who associate with criminal friends are

significantly more prone to both violence and property crime even after holding self-control constant. While Gottfredson and Hirschi would likely claim that this relationship reflects the influence of one's own criminal behaviour on one's choice of peer associates rather than the reverse relationship, it should be noted that they simultaneously condemn the type of longitudinal research that would be required to provide a critical test of this assertion. Second, our multi-level results suggest that an individual's self-control is strongly associated not only with the parental neglect that he or she experienced within his or her family, but even more strongly associated with the *average* level of parental neglect in his or her national setting. Our results therefore add to an emerging research literature (e.g., Pratt et al., 2004) suggesting that self-control may stem from more than the parenting within an individual's own family.

Notwithstanding the above results, the present study must clearly be interpreted in the context of the convenience samples that it employed. As mentioned above, the present respondents were not sampled at random from their respective universities, let alone their respective nations. Nonetheless, granting that the present respondents are likely linked culturally as members of the educated classes in their respective nations, respondents from different settings are, at a minimum, embedded within very different cultural contexts representing all eight of the major "civilizations" enumerated by Huntington (1996). Therefore, the present study provides important preliminary evidence that the self-control concept should not be viewed merely as an artifact of Western culture nor as a concept that can reasonably be excluded from cross-national criminological research.

In light of our findings, several avenues merit attention in future research. First, given the limited availability of cross-cultural data concerning the etiology of crime in general, and Gottfredson and Hirschi's theory in particular, future research might attempt to collect more

representative data from a range of Western and non-Western cultures. Second, such data might include more extensive measures of self-control, perhaps drawing from the Grasmick et al. (1993) self-control scale, with which to further test the reliability and validity of the self-control concept across culture. Third, despite Gottfredson and Hirschi's (1990) advocacy of cross-sectional data like those employed herein, further research might benefit from longitudinal data collection. Absent such data, and again despite Gottfredson and Hirschi's (1990) argument to the contrary, a correlation between parenting and self-control may plausibly be viewed as evidence that those with innate tendencies toward impulsivity tire their parents to the point of inconsistent parenting or neglect. Likewise, the reliable correlation that we find between crime and criminal peer association at the individual-level may plausibly be interpreted as support for the argument that crime is at least partly learned from those with whom one associates.

Pending such research, the present study provides a foundation from which future research can build concerning the cross-cultural validity of self-control theory. While our findings do not support all of Gottfredson and Hirschi's predictions, they support many, suggesting that their parsimonious account of crime may apply to both Western and non-Western cultures. We therefore encourage further cross-cultural researchers to incorporate the contributions of self-control theory, while simultaneously encouraging control theorists to remain open to the potential influence of culture as an aggregate phenomenon whose whole is greater than the sum of its individual parts.

## REFERENCES


Akers, Ronald L.
1998 Social Learning and Social Structure: A General Theory of Crime and Deviance. Northeastern University Press.

Arneklev, Bruce J., Harled G. Grasmick, and Robert J. Bursik, Jr.
1998 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, Jr.
1993 Low self-control and imprudent behaviour. Journal of Quantitative Criminology 9:225-247.

Baumrind, Diana
1991 The influence of parenting style on adolescent competence and substance use. Journal of Early Adolescence 11:56-95.

Bozeman, Adda D.
1975 Civilizations under stress. Virginia Quarterly Review 51:1-18.

Burton, Velmer S., Jr, Fancis T. Cullen, T. David Evans, Leanne Fiftal Alarid, and R. Gregory Dunaway
1998 Gender, self-control, and crime. Journal of Research in Crime and Delinquency 35:123-147.

Burton, Velmer S. Jr., T. David Evans, Francis T. Cullen, Kathleen M. Olivares, and R. Gregory Dunaway
1999 Age, self-control, and adults' offending behaviours: A research note assessing a general theory of crime. Journal of Criminal Justice 27:45-54.

Caspi, Avshalom, Terrie E. Moffitt, Phil A. Silva, Magda Stouthamer-Loeber, Robert F. Krueger, and Pamela S. Schmutte
1994 Are some people crime-prone? Replications of the personality-crime relationship across countries, genders, races, and methods. Criminology 32:163-195.

Cernkovich, S.A. and P.C. Giordano
1987 Family relationships and delinquency. Criminology 25:295-321.

Cochran, John K., Peter B. and Bruce J. Arneklev
1994 Is the religiosity-delinquency relationship spurious? A test of arousal and social control theories. Journal of Research in Crime and Delinquency 31:92-123.

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 35:475-504.

Durkheim, Emile and Marcel Mauss
1971 A not on the notion of civilization. Social Research 38:808-813.

Gibbs, John J., Dennis Giever, and Jamie S. Martin
1998 Parental management and self-control: Anempirical test of Gottfredson and Hirschi's general theory. Journal of Research in Crime and Delinquency 35:40-70.

Glueck, Sheldon and Eleanor Glueck
1950 Unraveling Juvenile Delinquency. Cambridge, MA:Harvard University Press.

Hamilton, Lawrence
2003 Statistics with Stata. Belmont, CA: Wadsworth.

Hay, Carter
2001 Parenting, self-control, and delinquency: A test of self-control theory. Criminology 39:707-736.

Hirschi, Travis
1995 The family. In Crime. James Q. Wilson and Joan Petersilia (Eds.). pp. 121-140. San Francisco, CA: ICS Press.

Huntington, Samuel P.
1996 The Clash of Civilizations and the Remaking of World Order. New York, NY: Simon and Schuster.

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.

Lazalere, R.E. and Gerald R. Patterson
1990 Parental management: Mediator of the effect of socioeconomic status on early delinquency. Criminology 28:301-324.

Long, J. Scott
1997 Regression Models for Categorical and Limited Dependent Variables. London, UK: Sage.

Longshore, Douglas
1998 Self-control and criminal opportunity: A prospective test of the general theory of crime. Social Problems 45:102-113.

Longshore, Douglas and Susan Turner

1998 Self-control and criminal opportunity: Cross-sectional test of the general theory of crime. Criminal Justice and Behaviour 25:81-98.

Longshore, Douglas, Susan Turner, and Judith A. Stein
1996 Self-control in a criminal sample: An examination of construct validity. Criminology 34:209-228.

McCord, Joan
1979 Some child-rearing antecedents of criminal behaviour in men. Journal of Personality and Social Psychology 37:1477-1487.
1991 The cycle of crime and socialization practice. Journal of Criminal Law and Criminology 82:211-228.

Mednick, Sarnoff A., W. H. Gabrielli, and B. Htchings
1984 Genetic influences in criminal convictions: Evidence from an adoption cohort. Science 224:891-894.

Moffitt, Terrie E., Avshalom Caspi, Michael Rutter, and Phil A. Silva
2001 Sex Differences in Antisocial Behaviour: Conduct Disorder, Delinquency, and Vioelence in the Dunedin Longitudinal Study. Cambridge, UK: Cambridge University Press.

Nagin, David S. and Raymond Paternoster
1993 Enduring individual differences and rational choice theories of crime. Law and Society Review 27:467-496.

Neapolitan, Jerome L.
1999 A comparative analysis of nations with low and high levels of violent crime. Journal of Criminal Justice 27:259-274.

Patterson, Gerald R. and T.J. Dishion
1985 Contributions of families and peers to delinquency. Criminology 23:63-79.

Paternoster, Raymond and Robert Brame
1998 The structural similarity of processes generating criminal and analogous behaviours. Criminology 36:633-669.

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.

Piquero, Alex R, R. MacIntosh, and M. 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. 38:897-929.

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.

Pulkkinnen, Lea
1982 Self-control and continuity from childhood to late adolescence. In Life-Span Development and Behaviour: Vol. 4. Paul B. Baltes and Orville F Brin, Jr. (Eds.). New York, NY: Academic Press.

Pratt, Travis C., Michael G. Turner, and Alex R. Piquero
2004 Parental socialization and community context: A longitudinal analysis of the structural sources of low self-control. Journal of Research in Crime and Delinquency 41:219-243.

Rankin, Joseph H. and Roger Kern
1994 Parental attachments and delinquency. Criminology 32:495-515.

Raudenbush, Stephen, Anthony Bryk, Yuk Fey Chang, and Richard Congdon
2000 HLM 5: Hierarchical Linear and Nonlinear Modeling. Lincolnwood, IL: Scientific Software International, Inc.

Rebellon, Cesar J.
2006 Do adolescents engage in delinquency to attract the social attention of peers? An extension and longitudinal test of the social reinforcement hypothesis. Journal of Research in Crime and Delinquency. 43:387-411.

Reynolds, W.M.
1982 Development of reliable and valid short forms of the Marloew-Crowe social desirability scale. Journal of Clinical Psychology. 38:119-125.

Rosembaum, J.L.
1989 Family dysfunction and female delinquency. Crime and Delinquency 35:31-44.

Sorenson, Anne 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.

Snyder, J. and Gerald R.Patterson
1987 Family interaction and delinquent behaviour. In Handbook of Juvenile Delinquency. H.C. Quay (Ed.). New York, NY: Wiley.

Straus, Murray A.
1969 Phenomenal identity and conceptual equivalence of measurement in cross-national comparative research. Journal of Marriage and the Family. 31:233-239.

Straus, Murray A., S. L. Hamby, et al.
1998 The personal and relationships profile (PRP). Durham, NH, University of New Hampshire, Family Research Laboratory. Available at: http://pubpages.unh.edu/~mas2/

Straus, Murray A. and Members of the International Dating Violence Research Consortium
2004 Prevalence of violence against dating partners by male and female university students worldwide. Violence against Women. 10:790-811.

Straus, Murray A. and V.E. Mouradian
1999 Preliminary psychometric data for the personal and relationships profile (PRP): A multi-scale tool for clinical screening and research on partner violence. American Society of Criminology, Toronto, Ontario.

Vazsonyi, A.T., L.E. Pickering, M. Junger, and D. 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

Vazsonyi, A.T., J.E.C. Wittekind, L.M. Belliston, and T.D. Van Loh
2003 Extending the general theory of crime to "the East": Low self-control in Japanese late adolescents. *Journal of Quantitative Criminology*. 20:189-216.

Van Voohis, P., Frank T. Cullen, R.A. Mathers, and C.G. Garner
1987 The impact of family structure and quality on delinquency: A comparative assessment of structural and functional factors. Criminology 26:235-261.

Wells, L.E. and Rankin, J.H.
1988 Direct parental control and delinquency. Criminology 26:263-285.

Winfree, L. Thomas and Frances P. Bernat
1999 Social learning, self-control, and substance abuse by eighth grade students: A tale of two cities. Journal of Drug Issues 28:539-558.

Wright, John Paul and Francis T. Cullen
2001 Parental efficacy and delinquent behaviour: Do control and support matter? Criminology 39:677-706.

## Table 1. Descriptive Statistics

| | *N* | *Min* | *Max* | *Mean* | *SD* |
|---|---|---|---|---|---|
| **Individual Level** | | | | | |
| Self-control[a] | 20913 | 1.0 | 4.0 | 3.2 | 0.4 |
| *Selfish*[b] | 21741 | 1.0 | 4.0 | 3.2 | 0.8 |
| *Trouble w/Rules*[b] | 21080 | 1.0 | 4.0 | 3.4 | 0.7 |
| *Life Goals* | 21662 | 1.0 | 4.0 | 3.5 | 0.7 |
| *Risk-taking*[b] | 21432 | 1.0 | 4.0 | 3.0 | 0.8 |
| *Often Hurt*[b] | 21216 | 1.0 | 4.0 | 3.1 | 0.8 |
| *Bad Temper*[b] | 17341 | 1.0 | 4.0 | 3.1 | 0.7 |
| Parental Neglect[a] | 21087 | 1.0 | 4.0 | 1.7 | 0.5 |
| Criminal History (Property)[a] | 21445 | 1.0 | 4.0 | 1.5 | 0.6 |
| Criminal History (Violent)[a] | 20770 | 1.0 | 4.0 | 1.5 | 0.6 |
| Criminal Peers[a] | 20930 | 1.0 | 4.0 | 2.0 | 0.8 |
| Social Desirability[a] | 21060 | 1.0 | 4.0 | 2.6 | 0.4 |
| Age | 21948 | 18.0 | 55.0 | 22.9 | 6.0 |
| Sex | 22186 | 0.0 | 1.0 | 0.3 | 0.5 |
| SES | 20551 | -4.0 | 3.0 | 0.0 | 1.0 |
| **National Level**[c] | | | | | |
| Criminal Peers | 32 | 1.4 | 2.4 | 2.0 | 0.3 |
| Parental Neglect | 32 | 1.4 | 2.1 | 1.7 | 0.2 |

[a]Scale reflects mean of constituent items for respondents providing data for at least 75% of those items
[b]Reverse-coded
[c]National Level variables reflect mean value of nation's respondents

## Table 2. Confirmatory Factor Analyses of PRP Self-Control Scale within Setting: WLS Estimates[a]

| | | WLS Factor Loadings | | | | | | Model Fit | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | *Selfish* | *Rules* | *Goals* | *Risk* | *Hurt* | *Temper* | $\chi^2$ | *p* | *RMSEA* | $\alpha$ |
| (1) | Australia (N=232) | .60 | .79 | .47 | .67 | .66 | .53 | 14.01 | .122 | .049 | .69 |
| (2) | Belgium (N=766) | .41 | .62 | .15 | .63 | .66 | .30 | 57.59 | .000 | .840 | .47 |
| (3) | Brazil (N=328) | .44 | .73 | .48 | .47 | .65 | .27 | 38.39 | .000 | .100 | .52 |
| (4) | Canada (N=1267) | .53 | .72 | .46 | .55 | .64 | .48 | 28.90 | .001 | .042 | .64 |
| (5) | China (N=1075) | .53 | .75 | .25 | .43 | .47 | .43 | 58.73 | .000 | .072 | .52 |
| (6) | Germany (N=539) | .40 | .65 | .47 | .48 | .53 | .55 | 25.87 | .002 | .059 | .55 |
| (7) | Great Britain (N=443) | .39 | .74 | .39 | .68 | .70 | .44 | 27.34 | .001 | .068 | .64 |
| (8) | Greece (N=273) | .45 | .88 | .37 | .54 | .25 | .56 | 11.72 | .230 | .033 | .59 |
| (9) | Guatemala (N=214) | .65 | .81 | .57 | .57 | .60 | .44 | 27.32 | .001 | .098 | .62 |
| (10) | Hong Kong (N=571) | .41 | .47 | .31 | .62 | .74 | .48 | 50.48 | .000 | .090 | .55 |
| (11) | Hungary (N=175) | .52 | .66 | .62 | .41 | .42 | .40 | 20.10 | .017 | .084 | .47 |
| (12) | India (N=144) | .54 | .36 | .25 | .41 | .58 | .48 | 21.61 | .010 | .099 | .43 |
| (13) | Iran (N=159) | ***.17*** | .40 | .30 | .45 | .73 | .48 | 11.57 | .239 | .043 | .42 |
| (14) | Israel (N=364) | .46 | .82 | .49 | .72 | .72 | .39 | 22.37 | .008 | .064 | .65 |
| (15) | Japan (N=186) | .35 | .51 | ***.22*** | .56 | .33 | .51 | 10.03 | .348 | .025 | .46 |
| (16) | Korea (N=250) | .48 | .74 | .18 | .27 | .35 | .37 | 13.08 | .130 | .046 | .39 |
| (17) | Lithuania (N=370) | .37 | .69 | .25 | .57 | .45 | .18 | 26.83 | .002 | .073 | .45 |
| (18) | Mexico (N=221) | .44 | .75 | .30 | .49 | .72 | .48 | 10.53 | .309 | .028 | .56 |
| (19) | Malta (N=135) | .60 | .84 | .44 | .51 | .67 | .46 | 8.48 | .487 | .000 | .65 |
| (20) | Netherlands (N=416) | .33 | .51 | ***.06*** | .81 | .79 | .46 | 18.75 | .027 | .051 | .44 |
| (21) | New Zealand (N=156) | .43 | .81 | ***.13*** | .62 | .52 | .46 | 15.13 | .087 | .066 | .53 |
| (22) | Portugal (N=418) | .57 | .54 | .47 | .49 | .33 | .27 | 23.03 | .006 | .061 | .48 |
| (23) | Romania (N=268) | .39 | .76 | .20 | .63 | .66 | ***.03*** | 24.03 | .004 | .080 | .46 |
| (24) | Russia (N=476) | .36 | .59 | .31 | .31 | .37 | .42 | 25.09 | .003 | .061 | .41 |
| (25) | Singapore (N=216) | .33 | .81 | .51 | .51 | .62 | .49 | 18.44 | .030 | .070 | .59 |
| (26) | Sweden (N=703) | .49 | .75 | .21 | .71 | .70 | .51 | 35.00 | .000 | .064 | .59 |
| (27) | Switzerland (N=393) | .39 | .73 | .49 | .49 | .57 | .53 | 32.47 | .000 | .082 | .57 |
| (28) | Taiwan (N=185) | .38 | .39 | .30 | .61 | .76 | .59 | 16.79 | .052 | .069 | .57 |
| (29) | Tanzania (N=362) | .42 | .53 | .23 | .49 | .32 | .43 | 9.90 | .359 | .017 | .45 |
| (30) | United States (N=4706) | .53 | .75 | .48 | .59 | .66 | .48 | 98.63 | .000 | .046 | .65 |
| (31) | Venezuela (N=395) | .34 | .71 | .37 | .66 | .61 | .53 | 7.70 | .565 | .000 | .54 |
| (32) | South Africa (N=285) | .52 | .60 | .62 | .47 | .31 | .29 | 23.91 | .004 | .076 | .50 |
| | *Mean* | *.44* | *.67* | *.35* | *.54* | *.57* | *.43* | | | | *.53* |

***Bold Italics***: Not signigicant at p<.05 (two-tailed)

[a]Sample sizes reflect only cases with complete data for all six items

## Table 3. Partial Association of Violence with Self-control by Setting[a]

| | N[b] | Proportion Censored | Self-control Coefficient | | | Criminal Peers Coefficient | OLS Adjusted $R^2$ |
|---|---|---|---|---|---|---|---|
| | | | Standardized OLS[c] | Unweighted Tobit | Weighted Tobit | Standardized OLS[c] | |
| (1) Australia | 220 | .43 | -.33 | -.75 | -.32 | .19 | .33 |
| (2) Belgium | 740 | .52 | -.23 | -.58 | -.30 | .09 | .30 |
| (3) Brazil | 384 | .35 | -.26 | -.54 | -.19 | .26 | .37 |
| (4) Canada | 1364 | .36 | -.32 | -.63 | -.23 | .25 | .35 |
| (5) China | 1581 | .35 | -.34 | -.68 | -.24 | .26 | .33 |
| (6) Germany | 538 | .27 | -.26 | -.48 | -.13 | .22 | .26 |
| (7) Great Britain | 466 | .34 | -.39 | -.76 | -.26 | .16 | .35 |
| (8) Greece | 338 | .37 | -.21 | -.45 | -.17 | .17 | .46 |
| (9) Guatemala | 276 | .43 | -.30 | -.62 | -.27 | .19 | .32 |
| (10) Hong Kong | 766 | .50 | -.29 | -.67 | -.33 | .28 | .29 |
| (11) Hungary | 179 | .52 | -.24 | -.64 | -.33 | .25 | .39 |
| (12) India | 202 | .29 | -.33 | -.64 | -.19 | .21 | .34 |
| (13) Iran | 188 | .43 | -.26 | -.67 | -.29 | .13 | .38 |
| (14) Israel | 364 | .52 | -.31 | -.60 | -.37 | .25 | .38 |
| (15) Japan | 168 | .62 | -.31 | -.77 | -.48 | .16 | .21 |
| (16) Korea | 324 | .36 | -.19 | -.44 | -.16 | .35 | .33 |
| (17) Lithuania | 453 | .26 | -.29 | -.54 | -.14 | .17 | .35 |
| (18) Mexico | 257 | .49 | -.40 | -.82 | -.41 | .14 | .37 |
| (19) Malta | 138 | .50 | -.31 | -.67 | -.34 | .22 | .23 |
| (20) Netherlands | 432 | .57 | -.27 | -.87 | -.50 | .15 | .27 |
| (21) New Zealand | 162 | .40 | -.27 | -.65 | -.26 | .12 | .30 |
| (22) Portugal | 447 | .41 | -.22 | -.49 | -.20 | .22 | .36 |
| (23) Romania | 321 | .54 | -.22 | -.54 | -.34 | .17 | .25 |
| (24) Russia | 543 | .18 | -.18 | -.37 | -.07 | .11 | .33 |
| (25) Singapore | 270 | .57 | -.31 | -.75 | -.43 | .19 | .18 |
| (26) Sweden | 671 | .55 | -.18 | -.66 | -.43 | .22 | .32 |
| (27) Switzerland | 388 | .43 | -.13 | -.32 | -.14 | .20 | .34 |
| (28) Taiwan | 276 | .26 | -.26 | -.52 | -.14 | .31 | .29 |
| (29) Tanzania | 315 | .18 | -.38 | -.63 | -.11 | .15 | .35 |
| (30) United State | 5099 | .36 | -.35 | -.72 | -.26 | .16 | .34 |
| (31) Venezuela | 307 | .54 | -.25 | -.49 | -.27 | .21 | .28 |
| (32) South Africa | 210 | .22 | -.22 | -.40 | -.09 | .32 | .30 |
| *Mean* | | | *-.28* | | | *.20* | *.32* |

[a]All coefficients significant at p<.05; statistical ontrols for age, sex, SES, and social desireability included in analyses but not shown

[b]Includes cases reporting at least 75% of items for any given scale

[c]Natural log of dependent variable used to minimize skew

***Bold Italics***: Not significant at p<.05 (two-tailed)

## Table 4. Partial Association of Property Crime with Self-control by Setting[a]

| | | N[b] | Proportion Censored | Self-control Coefficient | | | Criminal Peers Coefficient | OLS Adjusted $R^2$ |
|---|---|---|---|---|---|---|---|---|
| | | | | Standardized OLS[c] | Unweighted Tobit | Weighted Tobit | Standardized OLS[c] | |
| (1) | Australia | 220 | 46 | -.26 | -.67 | -.31 | .28 | .26 |
| (2) | Belgium | 743 | 62 | -.16 | -.46 | -.29 | .21 | .22 |
| (3) | Brazil | 394 | 69 | -.27 | -.77 | -.53 | .11 | .14 |
| (4) | Canada | 1367 | 39 | -.28 | -.63 | -.25 | .25 | .27 |
| (5) | China | 1590 | 37 | -.26 | -.61 | -.23 | .23 | .24 |
| (6) | Germany | 540 | 37 | -.12 | -.29 | -.11 | .21 | .15 |
| (7) | Great Britain | 466 | 50 | -.17 | -.36 | -.18 | .24 | .25 |
| (8) | Greece | 338 | 45 | -.18 | -.42 | -.19 | .22 | .32 |
| (9) | Guatemala | 279 | 40 | -.19 | -.42 | -.17 | .15 | .19 |
| (10) | Hong Kong | 760 | 46 | -.18 | -.42 | -.19 | .21 | .16 |
| (11) | Hungary | 179 | 66 | ***-.07*** | ***-.38*** | ***-.25*** | .22 | .14 |
| (12) | India | 207 | 49 | -.40 | -.99 | -.49 | ***.07*** | .24 |
| (13) | Iran | 187 | 70 | -.25 | -.68 | -.48 | ***.05*** | .15 |
| (14) | Israel | 368 | 67 | -.20 | -.47 | -.31 | .23 | .21 |
| (15) | Japan | 169 | 56 | -.35 | -1.03 | -.58 | .27 | .22 |
| (16) | Korea | 324 | 29 | -.17 | -.40 | -.12 | .27 | .16 |
| (17) | Lithuania | 452 | 43 | -.31 | -.77 | -.33 | .16 | .19 |
| (18) | Mexico | 258 | 49 | -.35 | -.91 | -.45 | .14 | .29 |
| (19) | Malta | 137 | 54 | ***-.08*** | ***-.28*** | ***-.15*** | .37 | .18 |
| (20) | Netherlands | 433 | 75 | -.15 | -.65 | -.49 | .13 | .11 |
| (21) | New Zealand | 163 | 35 | ***-.10*** | ***-.22*** | ***-.08*** | ***.13*** | .15 |
| (22) | Portugal | 449 | 66 | -.11 | -.31 | -.20 | .25 | .24 |
| (23) | Romania | 318 | 73 | ***-.10*** | ***-.29*** | ***-.21*** | .19 | .12 |
| (24) | Russia | 542 | 35 | -.21 | -.47 | -.16 | ***.08*** | .21 |
| (25) | Singapore | 271 | 51 | -.28 | -.79 | -.40 | .13 | .22 |
| (26) | Sweden | 673 | 61 | -.12 | -.43 | -.26 | .29 | .23 |
| (27) | Switzerland | 391 | 50 | -.18 | -.56 | -.28 | .25 | .26 |
| (28) | Taiwan | 277 | 28 | -.19 | -.41 | -.11 | .19 | .12 |
| (29) | Tanzania | 323 | 30 | -.24 | -.51 | -.15 | .17 | .20 |
| (30) | United States | 5124 | 45 | -.32 | -.75 | -.34 | .14 | .28 |
| (31) | Venezuela | 307 | 51 | -.29 | -.67 | -.34 | .19 | .22 |
| (32) | South Africa | 226 | 34 | -.21 | -.40 | -.14 | .25 | .21 |
| *Mean* | | | | *-.21* | | | *.20* | *.20* |

[a]Controls for age, sex, SES, and social desireability included in analyses but not shown

[b]Includes cases reporting at least 75% of items for any given scale

[c]Natural log of dependent variable used to minimize skew

***Bold Italics***: Not significant at p<.05 (two-tailed)

## Table 5. Partial Association of Self-Control with Parental Neglect by Setting[a]

| | | N[b] | Unstandardized OLS Coefficient | S.E. | Standardized OLS Coefficient | Adjusted $R^2$ |
|---|---|---|---|---|---|---|
| (1) | Australia | 224 | -.29 | .05 | -.31 | .39 |
| (2) | Belgium | 744 | -.22 | .03 | -.22 | .24 |
| (3) | Brazil | 386 | -.22 | .04 | -.26 | .33 |
| (4) | Canada | 1375 | -.25 | .02 | -.27 | .34 |
| (5) | China | 1817 | -.29 | .02 | -.29 | .27 |
| (6) | Germany | 543 | -.34 | .03 | -.34 | .28 |
| (7) | Great Britain | 469 | -.25 | .04 | -.25 | .37 |
| (8) | Greece | 343 | -.11 | .05 | -.11 | .31 |
| (9) | Guatemala | 285 | -.19 | .06 | -.18 | .23 |
| (10) | Hong Kong | 866 | -.22 | .02 | -.27 | .31 |
| (11) | Hungary | 189 | -.27 | .06 | -.32 | .22 |
| (12) | India | 223 | -.21 | .06 | -.21 | .22 |
| (13) | Iran | 189 | -.29 | .06 | -.34 | .26 |
| (14) | Israel | 370 | -.46 | .05 | -.42 | .31 |
| (15) | Japan | 169 | -.31 | .07 | -.29 | .33 |
| (16) | Korea | 324 | -.22 | .05 | -.22 | .22 |
| (17) | Lithuania | 458 | -.22 | .04 | -.22 | .22 |
| (18) | Mexico | 258 | -.17 | .06 | -.17 | .24 |
| (19) | Malta | 140 | -.30 | .08 | -.28 | .24 |
| (20) | Netherlands | 434 | -.17 | .04 | -.19 | .23 |
| (21) | New Zealand | 162 | -.27 | .06 | -.33 | .15 |
| (22) | Portugal | 451 | -.16 | .04 | -.19 | .27 |
| (23) | Romania | 324 | -.15 | .05 | -.15 | .24 |
| (24) | Russia | 543 | -.23 | .04 | -.24 | .20 |
| (25) | Singapore | 274 | -.39 | .05 | -.43 | .31 |
| (26) | Sweden | 678 | -.22 | .03 | -.29 | .30 |
| (27) | Switzerland | 396 | -.22 | .04 | -.24 | .33 |
| (28) | Taiwan | 292 | -.26 | .05 | -.32 | .22 |
| (29) | Tanzania | 343 | -.33 | .05 | -.30 | .27 |
| (30) | United States | 5132 | -.33 | .01 | -.34 | .39 |
| (31) | Venezuela | 310 | -.25 | .05 | -.27 | .38 |
| (32) | South Africa | 220 | -.29 | .06 | -.32 | .27 |
| *Mean* | | | *-.25* | | *-.27* | *.28* |

[a]All coefficients significant at p<.05; Statistical controls for age, sex, SES, and social desireability included in analyses but not shown
[b]Includes cases reporting at least 75% of items for any given scale
*Not significant at p<.05 (one-tailed)

## Table 6. Multi-level Models of Criminal History and Self-control

| | Violent Criminal History | Property Criminal History | Self-control |
|---|---|---|---|
| **Individual Level** | | | |
| Self-control | -.41 (.01) * | -.34 (.01) * | -- -- |
| Criminal Peers | .14 (.00) * | .14 (.01) * | -- -- |
| Age | .00 (.00) | .00 (.00) * | .00 (.00) * |
| Sex | .27 (.01) * | .17 (.01) * | -.10 (.03) * |
| SES | .01 (.00) | .01 (.00) | -.01 ,00 |
| Social Desirability | -.23 (.01) * | -.21 (.01) * | .47 (.01) * |
| Parental Neglect | -- -- | -- -- | -.27 (.02) * |
| **National Level** | | | |
| Mean Criminal Peers | .01 (.08) | .08 (.08) | -- -- |
| Mean Parental Neglect | -- -- | -- -- | -.41 (.13) * |
| Intercept | 1.49 (.02) * | 1.44 (.02) * | 3.19 (.02) * |

*p<.05 (one-tailed)