

## Self-Control and Insurance Fraud

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### Abstract

This paper reports the results from a survey that investigated the effectiveness of measures of criminal versatility and self-control in explaining a type of economic crime, insurance fraud, committed by exaggerating a legitimate claim. The study tests the robustness of Gottfredson and Hirschi's (1990) self-control theory, developed largely from studies of juvenile delinquency, by examining its efficacy in explaining insurance fraud, a nonviolent offense typically committed by adults. By comparing admitted insurance fraud offenders with non-offenders a variety of potential differences were examined. Our findings refute the perception that insurance fraud is a crime committed mostly by "ordinary" and presumably otherwise respectable citizens. Although the perpetrators of insurance fraud were indistinguishable from the remainder of the sample on a number of demographic and psychological dimensions such as marital status and interpersonal affect, they expressed relatively strong preferences for risky behaviors and were far more likely to have been involved in imprudent activities analogous to crime such as gambling, driver's license suspension, and tax evasion. Consistent with self-control theory, identifying persons with a history of reckless activities provides a means of separating many defrauders from their law-abiding peers.

### Introduction

This paper reports a study that investigated the effectiveness of measures of criminal versatility and self-control in explaining insurance fraud committed by exaggerating a legitimate claim. An Insurance Research Council study reported by Stewart (1997) found that some element of fraud was involved in 36% of auto injury claims, but only 3% of total claims and therefore, 8% of frauds involved fake accidents or planned schemes. The remaining 92% of defrauders did not set out to fake claims, but took advantage of opportunities for claim inflation as accidents occurred. Some degree of opportunity must have presented itself to many of the 64% whose claims were found to be legitimate. What is different about those who endeavor to defraud insurance companies? Do they otherwise conduct their affairs in a legitimate manner, or are they more likely to have been involved in other criminal or analogous activities?

One explanation, offered by Gottfredson and Hirschi (1990), emphasizes similarities between ostensibly different offenses and views crime as existing within a nexus of imprudent actions that are analogous to crime, such as drunkenness or reckless driving. According to their versatility hypothesis, specific crimes have unique causes only to the extent that opportunities systematically differ across individuals. Arguing that crime is explained by differential self-control, they deny central roles to social structure or biology beyond that logically required by the nature of the act. Insurance claim falsification requires some ability to fabricate, in the same way that robbery demands a degree of mobility. They argue that the best predictors of any type of offense will be involvement in other offenses and that the existence of versatility demonstrates a common antecedent cause for crime.

Using data from a survey administered to evening students at a commuter college, variables were classified as measuring demographic characteristics, self-control or versatility. By comparing admitted insurance fraud offenders with non-offenders we were able to examine a variety of potential differences. We found that perpetrators of insurance fraud were demographically indistinguishable from the remainder of the sample on a number of broad dimensions such as age and marital status, but were far more likely to be involved in criminal or analogous acts.

### **White Collar Criminals**

Detailed studies of the characteristics of insurance fraud offenders are limited and we therefore discuss the attributes of white-collar criminals. Weisburd et al. (1991) is the result of a comprehensive study intended to describe and classify white-collar criminals and crime based on pre-sentence investigation reports of convicted federal offenders. Eight offense categories were reviewed including filing false claims, tax and antitrust violations, securities, mail, lending and credit institution fraud, bribery, and bank embezzlement. Convicted offenders typically possessed troubled pasts, were more likely than members of the general public to have prior criminal records and were often charged with related criminal activity. If not concurrently committing other offenses, white-collar criminals were still likely to possess a prior arrest record, with 43% having earlier convictions. The prior offenses were typically of a financial nature, but included wife beating, drunk and disorderly conduct, and performing illegal abortions. Weisburd et al. (1991:66) report that:

For the most part, white-collar offenders are much less likely to have either long or serious criminal records. But we should stress here that these white-collar criminals evidence prior criminality to a much greater extent than most practitioners and scholars would have expected.

Similarly, Benson and Moore (1992) found that 39% of white-collar offenders had prior arrests, of which 85% were for nonwhite-collar offenses. This supports our reading of the versatility hypothesis which we interpret as a simple denial that specialization is an important attribute of offenders.

Some differences were reported by Weisburd et al (1991) between the white collar criminals and common criminals: They were often college educated (25% versus 3%), have steady employment (55% versus 11%) and own homes (45% versus 7%). They were also more likely to possess significant financial resources than other criminals. The high status antitrust violators had median net worth of \$160,000, whereas the median low status mail fraud offender was bankrupt.

The Coalition Against Insurance Fraud (1997) published a monograph reporting results from focus group research and a national telephone survey. They report that the major explanations offered for committing insurance fraud are saving money, getting work performed that would otherwise be unaffordable and retaliation against insurance companies. Tennyson (1997) analyzed the data from this survey. Her research focused on consumer attitudes, not fraudulent actions. She found support for the hypothesis that attitudes toward dishonesty in other settings are related to attitudes toward filing false insurance claims. A probit regression showed that approval of insurance fraud increased by 20% to 25% for respondents who found tax evasion acceptable.

## **A General Theory of Crime**

Gottfredson and Hirschi's (1990) general theory of crime builds on the relationship between social-control and criminal behavior. They posit that an individual acquires self-control through the successful exertion of social-control during childhood. Self-control is the extent to which individuals, "are [not] vulnerable to the temptations of the moment" (p.87), and once acquired creates an enduring preference for acceptable social behavior. Those who fail to develop self-control are more likely to commit delinquent acts as youths and to engage in crime as adults. Gottfredson and Hirschi consider self-control as antecedent to any other factor affecting crime, and believe it to be the best predictor of deviance or conformity over the life course. The essence of their theory is that crime is caused by a lack of control intersecting with opportunity for quick and easy gratification. Pratt and Cullen (2000) conducted a meta-analysis of 21 research studies intended to assess the empirical status of Gottfredson and Hirschi's theory at the end of its first decade. Although expressing strong reservations as to whether it deserved to be considered *the* general theory of crime, they report strong and consistent support for low self-control as a predictor of criminal and analogous behavior.

According to Gottfredson and Hirschi (1990), the benefit of most crime is obvious and generally desirable to all, but the cost calculus is different for those who are insensitive

to the suffering of victims and ignore or discount the risk of social, legal and natural sanctions. The absence of self-control is evidenced by several intertwined traits that are "factors affecting calculation of the consequences of one's acts (p. 95)." Low self-control results in strong preferences for activities that result in immediate gratification, are easy or simple to perform, and require little skill or planning. Consequently, such actions typically result in meager long-term benefits and few long-term commitments. Those who lack self-control are often thrilled by risk and lack empathy for the suffering and needs of others. Collectively these elements determine how vulnerable individuals are to the temptations and opportunities of the moment.

Because low self-control indicates an enduring predisposition towards impulsive and selfish actions, criminals will engage in a variety of these acts throughout their lifetime. Furthermore, because the appeal to the low-control individual depends on contextual features such as target accessibility and vulnerability, they are equally satisfied committing burglary, robbery, and shoplifting, depending on opportunity. If the criminal does obtain legitimate work his next victim could easily be his employer. Those with low self-control will seize an opportunity to defraud an insurance company after a burglary or accident, an act often requiring only that the offender lie about the value of stolen items, or exaggerate pain or physical disability.

Although Gottfredson and Hirschi believe that versatility is the norm, apparent specialization could occur because appealing opportunities may repeatedly present themselves. Criminals also avail themselves of opportunities to participate in diverse kinds of reckless or imprudent behaviors, such as speeding, binge drinking and excessive gambling.

### Research Questions

According to Gottfredson and Hirschi (1990), criminal versatility exists because those with low self-control have a propensity for committing circumstantially appealing crimes and imprudent acts. They believe that apparent specialization is due to recurrent opportunities that may be due to stable behavior patterns, such as being negligent in caring for one's property, but are not the product of careful purposeful action. Most insurance fraud is committed by those who have actually sustained a loss, and can file a false claim without entirely fabricating their account. Only a small percentage is perpetrated by repeat offenders who file completely fictitious claims. The insurance industry data, discussed in the introduction, suggests that only 8% of auto insurance fraud is planned, setting a maximum rate on the percentage of offenses committed by specialists. Since most insurance fraud offenders are opportunists, the issue arises as to whether they are normally law-abiding citizens who have been tempted by a unique opportunity for quick and easy gratification, requiring little skill or planning, or are they likely to have a history of criminal or otherwise imprudent behavior?

*RQ1: Are those who exaggerate insurance claims more likely to have committed other criminal and imprudent acts?*

As Gottfredson and Hirschi are attempting to explain crime, they naturally focus on identifying the traits of those with low self-control. It should also be possible to identify those least likely to offend through the measurement of behaviors that logically entail the exercise of self-control. Those with high self-control should have achievements that signify their willingness to attempt difficult tasks, carefully plan activities and defer gratification.

*RQ2: Are those who have committed insurance fraud less likely to have engaged in activities requiring high self-control?*

Gottfredson and Hirschi analyzed a variety of personality traits that are correlated with criminal activities and which they believe to be by-products of low self-control. The attitudinal scales included in the present study were intended to measure subjects' desire for: (1) immediate gratification, (2) easy or simple tasks, (3) tasks requiring little skill or planning, and (4) their consequent lack of long-term commitments, (5) willingness to engage in risky activities, and (6) lack of sensitivity and concern for others.

*RQ3: Do those who commit insurance fraud possess attitudes indicative of low self-control?*

Hirschi and Gottfredson (1993), view demographic variables as proxies for the direct measurement of attitudes and behaviors. Attributes such as sex or age may be correlates of crime, but are not causes. Measures of age, sex, race, health, and whether respondents were married, or had children were included in the study.

*RQ4: Can those who commit insurance fraud be identified using demographic measures?*

Hirschi and Gottfredson (1990: 49) state that, "the best indicators of self-control are the acts we use self-control to explain: criminal, delinquent, and reckless acts." Because Gottfredson and Hirschi believe that criminal versatility is the norm, they argue that the best predictor of involvement in a particular crime is a history of committing other criminal or imprudent acts. Accordingly, the final research question is:

*RQ5: Are criminal and imprudent acts the best indicators of a propensity to commit insurance fraud?*

Research Question 1 and Research Question 5 differ in that the former simply posits that committers of insurance fraud will display the characteristic of versatility. The latter

posits that involvement in other illegitimate or reckless activities will better identify defrauders than demographic or attitudinal measures.

## METHOD

The sample was recruited from undergraduate and graduate evening business classes at a small northeastern university that mainly attracts local students. These students primarily come from working-class backgrounds and are the first in their families to attend college. Because evening students generally attend part-time, while working full-time, they were expected to rate high on most control dimensions. Three hundred and thirty-two subjects returned usable questionnaires. For each analysis we included all subjects who had answered the relevant questions. The pair-wise correlations reported in Table 3 are based on between 330 and 332 subjects, although missing responses for some items reduced the number available for the logistic regressions to as low as 298. Forty-seven percent of the subjects were female, 88% were white, 39% were married, 25% had children, 38% owned their own homes, 97% reported themselves to be in good health, and 40% attended church at least monthly. Forty-five percent were 25 years old or younger and 15% were 40 or over. Forty-one percent had already earned baccalaureate degrees, reflecting both the graduate component of the sample and undergraduates returning for second-degrees.

The survey questions (Table 1) consist of the dependent variable, and measures of demographic attributes, opportunity, behaviors, and attitudes. Since the goal of the present research is to explain insurance fraud, measures of imprudent or criminal behaviors are used as independent variables including; drinking, gambling, smoking, accidental pregnancies, drunk driving, vandalism and lying on a job application or resume. Where appropriate the extent of involvement is measured so that occasional indulgence could be differentiated from habitual use. All questions were written by the authors except three scales that were obtained from the Jackson Personality Inventory (JPI) (Jackson 1984) and used with permission. A pilot test was administered to 41 evening undergraduate students. Items were modified based on subject comments and statistical analysis. The actual survey (Appendix) was administered in class to subjects by their regular instructors.

Table 1. Factual Questions and Attitudinal Scales

<u>Variables</u>	<u>Survey Question</u>
<b>Dependent Variable:</b>	
Insurance fraud	
<b>Demographic:</b>	
Gender	35
Age	1
Marital status, children	2
Health	3,4
Race	5
<b>Opportunity:</b>	
Hospitalization	12
<b>Behavioral measures of self-control:</b>	
Exercise	6
Church attendance	11
Education	13
Professional license	14,15
Owner or partner	16
Full/part-time employment	17
Second-job	18
Spending habits	19
Home Ownership	20
Late mortgage/credit payments	21
<b>Criminal and analogous acts:</b>	
Accidental pregnancy	22
Smoking	7
Drinking	8
Gambling	9,10
Moving violation	24,25
Suspended license	26
Childhood theft	27
Theft in last year	28
Lie on resume	29
Tax evasion	30
Vandalism	31-34
<b>Attitudinal Scales:</b>	
Immediacy of gratification	36
Ease of commission	
Long-term goals	
Skill and planning	
Risk attitude-JPI	
Responsibility-JPI	
Interpersonal affect-JPI	

The researcher-constructed attitudinal scales were designed to measure subject preferences for behaviors that are: (1) easy to perform, (2) require little skill or planning, (3) provide immediate gratification of desires; and that (4) seldom lead to long-term involvements or commitments. Several questions in each scale paraphrased Gottfredson and Hirschi's descriptions of people with high or low self-control; others attempted to measure traits more obliquely. The JPI scales are designed for use in non-psychiatric, non-clinical populations of average or above average intelligence and education and are appropriate for the subjects surveyed. The JPI risk scale matches well with Gottfredson and Hirschi's notion that low self-control individuals are undeterred by risk and may experience risky situations as thrilling. The responsibility and interpersonal affect scales capture the dimension of the low self-control individual that Gottfredson and Hirschi (p.89) describe as, "self-centered, indifferent, or insensitive to the suffering and needs of others." Cronbach's  $\alpha$  was calculated to measure intra-scale reliability. Statistics between .50 and .70 were obtained for the various scales. While the JPI was superior overall, the  $\alpha$ 's for the researcher-constructed scales were adequate for further analysis. The principal components method with varimax rotation was used to examine factor structure. The researcher-constructed scales appear structurally similar to those obtained from the JPI.

## Results

### *Preliminary Analysis*

As preliminary analysis, we report significant Spearman correlations between individual questions and the dependent measure, supplemented by cross tabulations for variables of particular interest. According to Gibbons (1976:296), the Spearman coefficient of rank correlation is an appropriate measure of association for data that is at least ordinally ranked and for dichotomous measures. All variables, except race, were at least ordinally measured, and were coded throughout the analysis, so that positive signs indicate results consistent with the criminal versatility hypothesis and self-control theory. Race, as the sole categorical variable, was analyzed using a  $\chi^2$  test, but was not significant.

Fifteen percent of the 332 subjects responded affirmatively to the question, "Have you ever exaggerated an insurance claim?" As the question elicits neither the timing of the criminal event, nor its magnitude, it measures both minor and significant offenses over the life course. The wording was intended to encourage frankness in respondents, who might have been reluctant to acknowledge filing a fraudulent claim. The magnitude of the offense was not obtained because of possible bias due to lack of frankness and increased error due to faulty recall.

Table 2 (below) summarizes the significant correlations obtained between the independent variables and the dependent measure. Significant correlations were obtained for 19 of the 41 individual questions and scales, of which 18 had the expected sign. Of the six demographic items contained in the survey, only gender was significantly correlated with the dependent variable. Similarly weak results were achieved for the eleven behavioral measures of self-control; only debt delinquency and working a second-job were significant and the latter had the wrong sign. Better results were obtained from the seven attitudinal scales; subjects who preferred immediate gratification, easy tasks, risky behavior, and avoided responsibility were more likely to have engaged in insurance fraud. Measures of criminal and imprudent behaviors showed the highest correlations, with 11 of 16 measures being significantly associated with the dependent variable. Because of redundancy in the questions, only ten classes of behaviors were measured, of which five were significant; (1) heavy drinking, (2) unsafe driving, (3) gambling, (4) lying on a job application or resume, and (5) tax evasion. The first two are typically the result of surrendering to the impulses of the moment, whereas the last two provide monetary rewards without hard work. Gambling may be either entertainment or undertaken for gain, but the compulsion associated with extreme forms place it with heavy drinking and unsafe driving.

*Table 2. Summary of Significant Correlations*

<u>Variable</u>	<u>Spear-R</u>	<u>p</u>
Gender (Q1)	.13	.01
Hospitalization (Q6)	.13	.01
Second-Job (Q19)	-.11	.02
Late Payments (Q22)	.10	.03
Drinking Frequency (Q9)	.15	.004
Drinking Amount (Q10)	.20	.001
Gambling Frequency (Q24)	.16	.002
Maximum Amount Bet (Q25)	.18	.001
Moving Violations (Q26)	.21	.001
Suspended license (Q27)	.16	.002
Lie on resume (Q30)	.23	.001
Understating Income (Q31)	.21	.001
Overstating Deductions (Q32)	.19	.001
Off-the-Books Income (Q33)	.16	.002
Unreported Bartering (Q34)	.25	.001
Immediacy of Gratification (Scale)	.17	.001
Ease of Commission (Scale)	.16	.002
Risk (Scale)	.20	.001
Responsibility (Scale)	.11	.03

Criminal and imprudent acts are also categorized according to the means, motive and opportunity associated with their commission. Those who engage in specific types of criminal activity have been found to be involved in imprudent acts or actions analogous to crime. However, opportunity and personal attributes make some types of crime more likely than others. We report cross tabulations for two activities that are structurally dissimilar from insurance fraud, alcohol consumption and unsafe driving, and two similar behaviors, lying on a resume and failing to report bartered income (Table 3).

*Table 3. Criminal and Analogous Acts***Panel A Consumed Ten or More Drinks of Alcohol Weekly (Q10)**

Spearman-R=.20 p < .01	Yes	No
Fraud	30.2	11.5
~Fraud	69.8	88.5
Totals	100%	100%
(n)	(53)	(279)

**Panel B Cited for Moving-Violations in Prior Year (Q26)**

Spearman-R=.21, p < .01	Yes	No
Fraud	27.7	10.9
~Fraud	72.3	89.1
Totals	100%	100%
(n)	(65)	(266)

**Panel C Lied on a Resume (Q30)**

Spearman-R=.23, p < .01	Yes	No
Fraud	30.4	10.3
~Fraud	69.6	89.7
Totals	100%	100%
(n)	(69)	(263)

**Panel D Failed to Report Barter Income (Q34)**

Spearman-R=.25, p < .01	Yes	No
Fraud	28.3	8.8
~Fraud	71.7	91.2
Totals	100%	100%
(n)	(92)	(238)

Moderate drinking is condoned by society and need not indicate low self-control. But alcohol consumption is implicated in a wide variety of crimes and imprudent acts and heavy drinking is considered analogous to crime. We expected an association between drinking and insurance fraud even though the two activities are physically quite dissimilar in nature (Panel A). Subjects who consumed ten or more drinks per week were 2.63 times as likely to engage in insurance fraud as those who did not.

Unsafe driving is an imprudent activity that can lead to reckless endangerment of others and shows little regard for self-preservation. Police intervention is a likely outcome and may entail expensive fines and increased insurance costs. As a consistent pattern of behavior, it can lead to frequent accidents and recurring opportunities for insurance fraud. The data does not permit discrimination between these competing explanations.

Subjects who received moving-violations within the prior year (Panel B) were 2.54 times more likely to be involved in insurance fraud.

Lying on a resume (Panel C) is structurally similar to filing a false insurance claim, as both are types of deceitful behaviors requiring literacy. Lying on a resume is a simple activity that requires no special skills, just an active imagination. The applicant has obvious means, motives and opportunities and relies largely on the prospective employer's carelessness. Of the 21% of subjects who admitted to lying on a resume to obtain employment, 30% had committed insurance fraud. Subjects who had lied on a resume were 2.95 times more likely to be involved in insurance fraud.

Failing to report barter income, unlike lying on a resume is a crime of omission. As with insurance fraud, it is likely to result in criminal penalties if detected. Contractors and other self-employed individuals may possess opportunities to trade goods or services on a non-cash basis. The retail value of the exchange is legally income and is required to be reported on the tax return. When perpetrated on a moderate scale, this is a crime that is unlikely to be detected. Subjects who failed to report bartered income (Panel D) were 3.22 times more likely to be involved in insurance fraud.

### *Logistic Regression Analysis*

The large number of independent variables (41) and relatively small sample size (n varied between 298 and 332 depending on the variables analyzed) precluded the use of a single model to test the research questions. Each question was explored separately by fitting models that included only those variables relevant to each of the first four questions. As a means of assessing the validity of the final research question, a forward-stepwise model was fitted from the full variable pool.

For the separate examination of research questions 1-4, logistic regression and discriminant analysis were used to examine the relationship between the independent variables and insurance fraud. The results for the discriminant analysis were similar to the logistic regressions and only the latter are reported. The analysis is based on the presentation in DeMaris (1992). Tests of significance reported are based on Wald statistics. As two of the four models were not statistically significant they are not presented separately. Summary data for all four models is presented in Table 4.

*Table 4. Summary of Logistic Regressions by Class of Variable*

<u>Model</u>	$\chi^2$	<u>df</u>	<u>p value</u>	<u>Significant Variables</u>
RQ1: Crimes and Imprudent Behaviors	58.94	16	.0001	Q26*, Q31*, Q32*
RQ2: Behavioral Measures of Control	13.90	11	.24	Q19*
RQ3: Attitudinal Measures of Control	24.02	7	.002	Risk**
RQ4: Demographic Variables	13.47	9	.15	Q1**

Q1: gender, Q19: Second Job, Q26: Moving Violations, Q31, Understating Income, Q32: Overstating income

\* Significant at  $p < .05$  \*\*Significant at  $p < .01$

The logit coefficients ( $\beta$ ) show the effects of the independent variables on the log odds of committing insurance fraud and the antilogs ( $e^\beta$ ) indicate the estimated change in the odds, controlling for all other variables in the equation. For example, as reported in Table 5, answering yes to Q7 increases the predicted odds of committing insurance fraud by 1.152 times or an increase of 15.2%. For responses measured ordinally,  $e^\beta$  is interpreted as the increase in odds resulting from a unit increase in the response. The beta of 1.523 for Q24 indicates a 52.3% increase in the odds of defrauding for each unit increase in a subject's frequency of gambling. Changes in odds can be converted into conditional probabilities only by specifying the values of the other independent variables in the model.

*Table 5. Binary Logistic Regression for Criminal and Analogous Acts-RQ1*

Coefficients	b	S.E.	e <sup>b</sup>
Constant	-7.091	2.263	
Accidental Pregnancy (Q7)	.141	.458	1.152
Smoking (Q8)	.099	.507	1.104
Drinking Frequency(Q9)	.172	.212	1.188
Drinking Amount (Q10)	.031	.295	1.032
Gambling Frequency (Q24)	.420	.235	1.523
Gambling Amount (Q25)	.078	.241	1.081
Moving Violations (Q26)	.713	.338	2.039*
Suspended License (Q27)	.713	.568	2.040
Childhood Theft (Q28)	-.058	.692	.944
Theft in Last Year (Q29)	-.400	.459	.671
Lie on Resume (Q30)	.729	.430	2.073
Under-reported Income (Q31)	.506	.257	1.659*
Overstated Deductions (Q32)	.492	.215	1.636*
Paid Off-the-Books (Q33)	.093	.543	1.097
Bartering (Q34)	.488	.465	1.629
Vandalism (Q36)	-.150	.260	.861

$\chi^2/df = 58.988/16$  ( $p < .0001$ ) \* Significant at  $p < .05$  [Insert Table 5]

Research Question 1 addressed the versatility of subjects who committed insurance fraud, by asking whether they were more likely than the remainder of the sample to engage in other criminal or imprudent activities. The fitted model, which included 16 measures bridging 10 categories of criminal and imprudent behaviors, was significant at the .0001 level. In contrast with the 11 significant pair-wise correlations obtained, only three variables, moving violations, income understatement, and deduction overstatement, were significant. As noted above, unsafe driving is considered a

reckless behavior analogous to crime. Tax evasion is a certain method of obtaining, at least in the short run, monetary gain without hard work. Among the easiest crimes to commit are neglecting to report secondary sources of income or exaggerating deductions.

With Research Question 2 we attempted to extend Gottfredson and Hirschi's work by examining whether behavioral measures of *high* self-control would be useful in differentiating between those who had, or had not, committed insurance fraud. The model, which is not presented, was not statistically significant and the only significant variable, working a second-job, had the wrong sign.

Attitude towards risk has been the strongest and most robust personality trait used to explain criminality since economic analysis was introduced to the discipline by Becker (1968). Gottfredson and Hirschi argue that other individual personality traits besides risk will explain crime when the inter-relationship between trait, opportunity, and offense are considered. Research Question 3 asked if attitudes indicative of low self-control would explain insurance fraud. As reported in Table 6, the overall model was significant at  $p < .002$ , but only the risk scale was individually significant ( $p < .006$ ). Thus, we are unable to add support to this aspect of Gottfredson and Hirschi's theory.

*Table 6. Binary Logistic Regression for Attitudinal Scales*

<u>Coefficients</u>	<u>b</u>	<u>S.E.</u>	<u>e<sup>b</sup></u>
Constant	.342	1.088	
Immediacy of Gratification	.125	.098	1.133
Ease of Commission	.157	.128	1.170
Long-Term Goals	.027	.105	1.027
Skill and Planning	-.029	.104	.972
Risk Attitude	.197	.072	1.218**
Responsibility	.038	.092	1.038
Interpersonal Affect	.026	.077	1.026

$\chi^2/df = 23.174/7$  ( $p < .002$ ) \*\* Significant at  $p < .01$

Of the demographic variables that were the focus of Research Question 4, only being male indicated a propensity to commit insurance fraud. Gottfredson and Hirschi view demographic factors as correlates rather than causes of crime. That young males are more likely to commit violent crimes and that males are more likely to participate in criminal and imprudent behaviors is one of the few undisputed facts in the criminology literature. Finding that men are more likely to commit insurance fraud is unsurprising, the lack of significance for other demographic variables emphasizes the ubiquity of insurance fraud as a phenomenon that cuts across age, race, and marital status.

Research Question 5 is based on Gottfredson and Hirschi's core argument that low-self control leads to opportunistic participation in criminal and imprudent activities. While attitudinal or demographic measures may identify low-self control, actual involvement in other crimes or similar activities should be superior to the other classes of variables examined in the study. We used a forward stepwise procedure (Table 7), since the total number of independent variables (41) was large relative to the number of subjects (298). An additional variable, Q6-hospitalization for reasons other than childbirth, was included in the step-wise selection pool as a possible measure of opportunity.

*Table 7. Stepwise Binary Logistic Regression for Full Set of Variables*

<u>Coefficients</u>	<u>b</u>	<u>S.E.</u>	<u>P value</u>	<u>e<sup>b</sup></u>
Constant	-4.265	1.076	.0001	
Hospitalization (Q6)	.781	.397	.05	2.183
Frequency of Gambling (Q24)	.655	.205	.002	1.926
Suspension of License (Q27)	1.034	.495	.04	2.813
Understating Income (Q32)	.569	.195	.004	1.766
Unreported Barter Income (Q34)	1.331	.373	.0004	3.786

$$\chi^2/df = 52.568/5 \text{ (p. .0001)}$$

The results from the stepwise model strongly support the conclusion that criminal and imprudent acts are the best indicators of a propensity to commit insurance fraud. The defrauders are more likely to gamble frequently (Q24), have had their driver's license suspended (Q27), evade taxes (Q32, Q34), and have been hospitalized (Q6). Four of the five entering variables represent criminal and imprudent activities, while the fifth measures opportunity. In conjunction they span the most important traits of the low self-control individual. Gambling provides immediate and thrilling gratification with the possibility of monetary reward. License suspension is usually the result of either numerous moving violations or driving while intoxicated. Tax evasion is a certain

method of obtaining, at least in the short-run, monetary gain without hard work. The attitudinal variables, which had yielded a significant model when analyzed separately (Table 6), were apparently swamped by the versatility measures. The behavioral and demographic classes of measures, which did not result in significant separate models, fared no better in the stepwise analysis.

The classification accuracy of the model (Table 8) is substantial given the low percentage of offenders in the study. Although the model identified only 30% of total offenders (13 of 43), 72% of predicted offenders (13 of 18) had defrauded and the false positive rate was only 2%.

*Table 8. Classification Table for Stepwise Binary Logistic Regression*

Reported	Predicted	
	Fraud	~Fraud
Fraud	13	30
~Fraud	<u>5</u>	<u>250</u>
Totals	18	280

30% of those who committed insurance fraud were correctly classified as were 98% of those who did not

In comparing Table 8 with Table 3, it is apparent that the individual measures identify a larger proportion of offenders than did the forward stepwise model. Correct classifications of offenders range from a low of 33% for alcohol consumption to a high of 55% for unreported bartered income. The 2% rate of false positives for the regression model, as compared with the pairwise correlations (13% - 23%), demonstrates the superiority of the logistic regression model. However, the ability of single measures of criminal and imprudent behavior to identify a substantial proportion of perpetrators is additional evidence supporting the versatility hypothesis.

## Conclusion

The Committee Against Insurance Fraud has reported that false auto injury claims are largely crimes of opportunity committed by those who have suffered an accident and either faked or exaggerated an injury. Only eight percent of fraudulent claims were considered to have been committed by habitual criminals. The remaining ninety-two percent were supposedly "ordinary" policyholders who were similar on a range of demographic characteristics to those whose claims were genuine. Although we are aware of no prior research concerning the characteristics of those who committed other types of insurance fraud, we have little reason to doubt that the findings can be generalized. After all, those in a position to file false homeowners or business claims are even more likely to be middle-class than those owning automobiles

This study's participants also appear to qualify as members of the "ordinary" middle: 88% were white, 39% were married, all were attending college, 38% owned their own homes, 40% attended church at least monthly and 85% had not filed false insurance claims. The 15% who did admit to exaggerating a claim differed by no more than 5% from their peers on any of these dimensions and demographics beyond gender were of no value in identifying them. But, they were distinguishable by their high level of participation in criminal and other imprudent behavior

The main goal of the present study was to break the perception that insurance fraud is a crime committed mostly by the "ordinary" and thereby presumably hitherto respectable citizen. This characterization neither provides insight into the causes of fraud, beyond opportunity, nor does it suggest a remedy. Following Gottfredson and Hirschi, we suggested that those who had committed insurance fraud were more likely to be involved in imprudent activities analogous to crime. Our findings support this conjecture with excessive gambling, license suspension, and tax evasion appearing in the step-wise logistic regression model and several other risky behaviors such as excessive drinking and lying on a resume being pair-wise correlated with false insurance claims. Identifying persons with a history of reckless activities provides a means of separating many non-career defrauders from their demographic peers.

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**APPENDIX A**

The survey questions used to obtain the data reported in this study are presented below. Instructions have been omitted, the attitudinal questions have been unscrambled and explanatory headings added.

1. Sex    A. Male    B. Female
2. When were you born?  
A. before 1955    B. 1955-1959    C. 1960-1964  
D. 1965-1969    E. 1970 or after
3. Current marital status:  
A. Single    B. Married/Cohabiting  
C. Divorced    D. Separated    E. Widowed
4. Do you have any children?    A. Yes    B. No
5. How has your general health been since age 18?    A. excellent    B. good    C. fair    D. poor
6. Have you ever been hospitalized? (except for childbirth)    A. Yes    B. No
7. Women: Have you ever had an accidental pregnancy?    A. Yes    B. No  
Men: Have you been responsible for an accidental pregnancy?    A. Yes    B. No
8. Do you smoke cigarettes?    A. Yes    B. No
9. How often do you have a drink (beer, wine, wine-coolers, hard liquor)?  
A. Almost every day    B. Several times a week  
C. Several times a month    D. Several times a year  
E. Never
10. How many drinks do you consume during a week?  
A. 0-9    B. 10-19    C. 20-29    D. 30-39    E. 39+
11. How often do you exercise during a typical week?    A. 0    B. 1-2    C. 3-4    D. 5-6    E. 7
12. Which group do you identify with?  
A. Black    B. White    C. Asian    D. Hispanic  
E. Other
13. How often do you go to church, synagogue, mosque or other place of religion?  
A. yearly    B. monthly    C. weekly    D. daily  
E. Never
14. Which one phrase best completes the sentence below? Picked elective courses in high school or college because they were:  
A. easy    B. Interesting  
C. useful for my intended career    D. other
15. Which was the last level of education that you completed?  
A. Less than a bachelors degree  
B. Bachelors degree  
C. Masters degree  
D. D.D.S., Ed.D, J.D.,M.D.,O.D., Ph.D.,etc
16. Are you licensed to practice a trade or profession? (law, medicine, movie projection, plumbing, public accounting.)    A. Yes    B. No
17. Are you an owner or partner in a business or professional practice?  
A. Yes    B. No
18. What is your current employment status?  
A. full-time (including homemaker)    B. part-time  
C. student    D. unemployed    E. retired
19. Have you had a second job at any time during the last 3 years?    A. Yes    B. No
20. Which statement best describes your current financial situation?  
A. I spend **less** than I make.  
B. I spend as much as I make.  
C. I spend **more** than I make.
21. Do you own your own home?    A. Yes    B. No

22. Have you ever been more than 2 months late on a car, mortgage or credit card payment?  
A. Yes B. No

23. How often do you buy lottery tickets?  
About once a:  
A. year B. month C. week D. day E. never

24. How often do you gamble (other than the lottery)? About once a:  
A. year B. month C. week D. day E. never

25. What is the most that you have ever placed on a single bet?  
A.\$0-249 B.\$250-499 C.\$500-\$749  
D.\$750-\$999 E. over \$1000

26. How many times have you received a moving violation in the last year?  
A.0 B.1-2 C. 3-4 D. 5-6 E. 7 or more

27. Has your driver's license ever been suspended? A. Yes B. No

28. I took something that wasn't mine at least once when I was a child. A. Yes B. No

29. In the last year I have taken something that wasn't mine at least once. A. Yes B. No

30. Have you ever included something that wasn't true on a job application or resume?  
A. Yes B. No

31. Have you ever had income that didn't get reported on your tax return, even by a small amount?  
A. Yes B. No.

32. Have you ever overstated your deductions on your tax return, even by a small amount?  
A. Yes B. No.

33. Have you ever been paid off the books?  
A. Yes B. No

34. I have traded goods or services and not reported it on my tax form. A. Yes B. No

35. Have you ever exaggerated an insurance claim? A. Yes B. No

36. How many times have you defaced or vandalized someone else's property?  
A.0 B. 1-5 C. 6-10 D. 11-15 E.16+

#### Immediacy of Gratification

"Criminal acts provide immediate gratification of desires."

True

1. I would prefer to wait to open my birthday presents on my birthday, even if I accidentally found out where they were hidden.

2. Many people expect results too fast from their diets; I would rather be on a nutritious diet and lose weigh slowly and sensibly.

3. I like to save the best for last.

4. I obey stop signs even when there are no other cars in sight.

5. I would wait a year for a boyfriend or girlfriend away at school or in the army.

False

1. I like to get quick results when I'm investing my time and money.

2. I am often impatient when I am forced to wait.

3. When I want to buy something I use my credit card even if I know I will have trouble making the payments.

4. I see nothing wrong with demanding instant gratification of my desires.

5. If I don't see immediate results from an exercise program, I can't stick to it.

#### Ease of Commission

"Criminal acts provide easy or simple gratification of desires."

A. True

1. I don't mind working hard for my money.

2. I agree with the old saying that you have to work for things that are worthwhile.

3. A little extra effort always makes the reward that much better.

4. I like to earn people's respect by being careful and diligent.

False

1. I like to look for the easy simple way out.
2. I often just look busy at work even when there are tasks I should be doing.
3. I often can't seem to follow up on things.
4. People who work hard to get what they want are just fooling themselves.
5. Easy come, easy go is my philosophy.

**Long-term Commitments**

"Crimes provide few or meager long-term benefits."

True

1. I keep in touch with my old friends.
2. I have long-term goals.
3. People should plan for the future.
4. The benefits of striving for the long-run are obvious.
5. I am committed to working for my future and my family's future.

False

1. I have little interest in career advancement.
2. I have difficulty making long-term commitments.
3. I prefer to concentrate on the short-term.
4. The short-run is what is important to me.
5. Here today, gone tomorrow, so why worry about the future.
6. If I want something I'm willing to keep working for it even when it's tough going.

**Skill and Planning**

"Crimes require little skill or planning."

True

1. I value education for its own sake, whether or not it is practical.
2. Before I travel I make a written list of what I need to take.
3. I usually make a list before I go to the supermarket.
4. I shop once a week for almost everything that I need.
5. When I have a lot of things to do I make a schedule so that nothing gets forgotten.

False

1. A person needs only "street smarts" to get ahead not academic training.
2. People spend too much time on their education.
3. Even when I have learned a new skill or trade I have never gotten ahead.
4. I enjoy tasks which require little skill or planning.
5. When playing board games or gambling, I prefer games that are mostly luck.

