

PERCEIVED RISK AND SOCIAL CONTROL: DO SANCTIONS REALLY DETER?

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Perceptual deterrence researchers have used simple cross-sectional correlations between prior behavior and current perceptions to study the effect of legal threats on social control. Such designs are inadequate because they: (1) confuse the causal ordering of perceptions and behavior, and (2) fail to take into account other inhibitory factors in an explicit causal model. In an analysis of panel data, the methodological simplicity of earlier studies is shown to have led researchers to reach erroneous conclusions. Our data suggest that past studies report an experiential effect, not a deterrent effect, and that the effect of perceived sanctions on criminal involvement is minimal once social definitional factors (moral commitment, informal sanctions) are controlled.

The deterrence doctrine is basically a perceptual theory (Waldo and Chiricos, 1972). As a perceptual theory, the major deterrence proposition is that the *perception* of certain, swift, and severe sanctions will keep people from committing sanctionable behavior. Gibbs (1975: 208) notes an obvious implication: "If individuals commit crimes because they have not been deterred and if individuals refrain from crimes because they have been deterred, then those who commit crimes tend to perceive punishment as less certain and/or less severe than do those who conform to laws." Empirical tests of this proposition are now common, and the preliminary evidence suggests that the perceived risk of punishment has a deterrent effect, while the perceived severity of punishment does not.¹

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¹ Most of the research shows either weak negative correlations between perceptions of punishment severity and criminal involvement (Waldo and Chiricos, 1972; Teevan, 1976; Bailey and Lott, 1976) or positive correlations (Silberman, 1976; Meier and Johnson, 1977). In a recent article critical of the way perceived severity has been operationalized in the past and offering a new

In reaching this conclusion about the deterrent properties of perceived risk, many deterrence researchers have used cross-sectional designs, correlating *current* perceptions of punishment risk with self-reports of *past* behavior.² Negative correlations between current perceptions and prior behavior have been uniformly interpreted by deterrence researchers as a deterrent effect. However, as Greenberg (1981) has pointed out, low perceptions of punishment risk (or severity) may be a *consequence* rather than a *cause* of involvement in illegal behavior. With cross-sectional data there is, of course, no way of knowing the perceptions of law violators prior to their involvement in illegal behavior.

Negative correlations between current perceptions of punishment risk and prior behavior support the deterrence hypothesis only if perceptions among the subjects studied are relatively stable over the period of retrospective self-reporting. Stability is necessary because the research model assumes that the perceived punishment risk at the time of the study is a valid indicator of the perceived punishment risk just prior to the reported behavior. If, however, as Greenberg suggests, the perception of punishment risk changes as a result of involvement in illegal behavior, deterrence researchers have isolated not a deterrent effect (Perceptions → Behavior) but an “experiential” effect (Behavior → Perceptions).³ The observed negative correlations may simply reflect the fact that those who commit illegal acts discover that they can “get away with it” and so reduce their estimates of the risks involved. Thus, in cross-sectional studies both a deterrent *and* an experiential

definition, Grasmick and Bryjak (1980) found evidence of a deterrent effect. This finding suggests that the dismissal of severity from deterrence analysis may be premature.

² For the most part deterrence researchers have used a time interval of one year in their inquiries concerning past behavior. That is, the self-report questions are generally of the following form: “How many times in the past year have you ‘committed crime x’?” Since these researchers measure current perceptions of risk, the correlation used to test the deterrence hypothesis relates current perceptions to behavior which precedes those perceptions by as much as one year. Some deterrence researchers have attempted to deal with the problem of causal ordering by asking either retrospective perceptual questions (Teevan, 1976) or prospective behavioral questions (Tittle, 1977).

³ Although, as Greenberg (1981) noted, behavior may influence both perceived certainty and severity, we believe that the experiential effect is more salient for perceptions of punishment risk than severity. People who engage in illegal acts without getting caught may be expected to lower their estimates of the probability of getting caught because, by engaging in forbidden behavior without being sanctioned, they may empirically refute their earlier estimates of the risks involved. Getting away with a crime does not speak to the issue of severity, however, and one who commits several undetected crimes may expect to receive more severe punishment should these other criminal events come to light.

interpretation may be compatible with the data. If the only evidence for deterrence is an inverse correlation between perceptions at one time and criminal behavior at some earlier time, the causal order is inescapably ambiguous.

Preliminary analyses of panel data by two groups of researchers suggest that these caveats must be taken seriously. Saltzman and her colleagues (1982) and Minor and Harry (1982) have found that estimates of perceived risk are not stable, even over short intervals, and are strongly influenced by behavioral experiences. Also, both studies found that the deterrent effect, as measured by the relationship between current perceptions and subsequent behavior, was much smaller than that reported in the perceptual deterrence literature. Their data suggest that the perception of formal legal sanctions plays only a small role (if any) in the production of conformity. However, this conclusion must be regarded as tentative because both Saltzman *et al.* and Minor and Harry utilized very simple two-wave, two-variable (2W2V) panel designs. Although such designs may be helpful in ferreting out causal order between two variables, two-variable models are especially susceptible to specification biases. This is because they inevitably exclude non-orthogonal variables, meaning that the observed effect for the included variables will combine the influence of included and excluded variables, thus yielding biased parameters (Hanushek and Jackson, 1977: 80). Furthermore, only by including non-deterrence variables in empirical tests of the deterrence doctrine may one check for the possibility that perceptions of punishment risk *and* involvement in illegal behavior are themselves the consequence of other, extra-legal variables. Either or both may be influenced not only by fear of formal sanction but also by fear of informal sanction, respect for the law, and other inhibitory factors. Gibbs, who makes a case for perceptual approaches to deterrence, nicely summarizes the need for both longitudinal data collection designs and the analytic power of full causal models:

All things considered there is only one defensible strategy for assessing the [deterrence] relation. . . . Given data on the perception of the certainty-severity of punishment by each individual among a large number of individuals, the appropriate question becomes: What is the association between those perceptions and the *subsequent* criminal or delinquent acts (official and self-reported) by those individuals? Even that research design would not be entirely satisfactory without controls for extralegal

conditions. . . . The general point is that individuals who appear to subscribe the most to the social condemnation of crime are the ones who tend to view punishment as the most certain, and they may commit fewer criminal acts because of social condemnation rather than fear of punishment (1975: 209).

The analysis reported here is a step in the direction Gibbs advocates. It reanalyzes the panel study used by Saltzman *et al.* (1982) but this time with the aid of a multivariate model.

I. METHODOLOGY

Three hundred college students selected randomly from a list of freshmen enrolled at a major state university were interviewed by trained student interviewers between January and June of 1975 (Time 1) and again approximately one year later (Time 2). The sample was 90 percent white and 51 percent male. The demographic characteristics of the sample closely approximate those of the larger student body from which the sample was drawn. (Details about the sampling procedures may be found elsewhere: Saltzman *et al.*, 1982; Paternoster *et al.*, 1982).

Measurement of Variables

Our choice of independent variables to model the social control process was guided by deterrence, social bonding, and social learning theories.

Deterrence. Research in perceptual deterrence has found strong to moderate negative correlations between measures of perceived risk, whether self-referenced or other-referenced, and involvement in illegal acts.⁴ In cross-sectional research the choice between types of measures poses problems because while theory suggests that self-referenced perceptions of risk are more salient to the deterrence process, they are also more likely to be influenced by prior behavior than more general, other-referenced measures.⁵ However, since panel data allow

⁴ A self-referenced measure of risk seeks respondents' estimates of their *own* risk; for example, "how likely is it that *you* would be arrested?" An other-referenced measure seeks an evaluation of the degree to which some generalized other is at risk; for example, "people who commit crimes" (Waldo and Chiricos, 1972).

⁵ Teevan (1976: 156) has noted that the "contamination" of current perceptions by prior conduct may be greater for self-estimates of risk than for estimates of risk to an "anonymous other." In a recent study, Paternoster *et al.* (1982) find empirical support for Teevan's warning. The correlations between prior behavior and a self-estimate of arrest risk were about twice as large as those between prior behavior and an other-referenced measure. The greater

us to distinguish deterrence from experiential effects, the latter problem need not concern us, and we have chosen a self-referenced measure of perceived risk. Respondents were asked to estimate their own chances of getting arrested for each of five offenses with response options ranging on a five-point continuum from "very likely" to "very unlikely."

Social Bonding. One of the better validated theories of crime and delinquency is Hirschi's (1969) social bonding theory. Hirschi claims that those individuals with strong social ties (bonds) are less free to break rules than those whose ties are weak or become attenuated. The elements of the bond described by Hirschi are: commitment, attachment, involvement, and belief.

Commitments are the rational element of the social bond and refer to the system of "side bets" (Becker, 1960) which could be put in jeopardy by deviance. As Hirschi (1969: 21) noted in his original formulation, one may become committed to conformity because of a valued investment made in the past *or* because prospects for the future might be threatened should one's deviance come to light: "... one is committed to conformity not only by what one has but also by what one hopes to obtain. Thus 'ambitions' and/or 'aspirations' play an important role in producing conformity."⁶ Both a past and a future oriented dimension were measured. For college students, an established record of academic success appears to create an important "stake in conformity" which could serve to control deviance. Thus, we will treat the respondent's cumulative grade point average (Grades) in the university as an indicator of past investment. To measure future oriented commitment respondents were asked a series of questions about whether they thought their involvement in each of five illegal behaviors would reduce their chances of achieving: good

contamination of self-referenced estimates may account for the fact that higher correlations are found for self-referenced measures in the literature.

⁶ Treating commitment as in part future oriented is, we believe, particularly appropriate for a young student population. Freshmen in college have not yet established many of the material commitments (job position, home, bank accounts) that could be put in jeopardy by criminal deviance. But freshmen have come to college in large measure to prepare to achieve such stakes. What they stand to lose by deviance is the chance to achieve things not yet gathered but firmly within reach. The future dimension of a side bet is also consistent with Becker's early discussion of commitment. One of the elements of commitment for Becker (1960: 35-36) is the fact that "the individual is in a position in which his decision with regard to some particular line of action has consequences for other interests and activities not necessarily related to it." He gives the example of middle-class girls who become committed to sexual abstinence because being chaste will make them better marriage prospects in the future.

grades, a college degree, a high paying job, a secure job, a position of leadership in school, a good marriage partner, material well-being, or peer acceptance.⁷ Answers to these questions are combined in an index we call "Stakes."

Attachment is the affective element of the social bond. Hirschi suggested that attachments to others and their good opinions of us act as a barrier to deviance. Research on this element of the bond has shown that while strong attachments between adolescents and parents may indeed serve to control misbehavior, attachment with peers may facilitate deviance (Hindelang, 1973; Krohn and Massey, 1980). The role of peers in promoting deviant conduct may be particularly great for social forms of deviance such as vandalism and drug use. In recognition of this, two measures of attachments were constructed. One measured parental attachments, the second measured attachment to peers (best friend and boy/girlfriend). The questions comprising these two measures were identical. Respondents were asked to indicate how important it was that their mother, father, best friend, boy/girlfriend approve of the things they do, how much influence the disapproval of these others would have on their behavior, and whether they would like to be the same kind of person that these others are.

Involvement refers to the time and energy spent in conventional activities. Hirschi claimed that deep involvement in conventional activity leaves little time or energy for deviant activity. Involvement in conventional activities was measured by summing the number of hours per week that the respondents told us they spent studying, attending classes, or participating in athletics, church affairs, fraternity or sorority matters, and similar conventional activities.

Belief is the moral element of the bond. Weak beliefs in the moral validity of rules make conformity less likely. This dimension of the bond was measured by asking respondents to indicate if they thought it was always wrong to commit each of five deviant acts. Response options for the five belief items

⁷ The future oriented dimension used here reflects the possible non-legal costs of deviant actions. The questions took the form: "How much would your chances of [obtaining a college degree] be reduced if you were arrested for [using marijuana]?" By asking respondents directly if they think their involvement in deviance would have any non-legal penalties (costs), we are estimating their assessment of the threat such behavior poses for other lines of activity. In other words, we are learning what our respondents think is at stake. Becker (1960: 36) emphasized the importance of this perceptual dimension: "the committed person must be aware that he has made the side bet and must recognize that his decision in this case [to be or not to be deviant] will have ramifications beyond it."

ranged on a five-point scale from “strongly agree” to “strongly disagree.”

Social Learning. Differential association and social learning theory claim that deviant acts become unlikely when there is little social reinforcement or approval for such behaviors (Sutherland and Cressey, 1978; Akers, 1977). Indeed, informal social sanctions have been shown to be a more important source of conformity than formal ones (Anderson *et al.*, 1977; Tittle, 1977). We measured the degree to which the respondents risked informal sanctions for five illegal behaviors by asking them to indicate the reactions that their mother, father, best friend, boy/girlfriend would have if the respondent were to commit each of them. Response options ranged from “highly disapprove” to “highly approve,” with a high score indicating disapproval should the respondent commit the deviant act.

Scale Construction. Instead of using offense-specific items in our data analysis, we constructed general composite scales for each of the independent variables discussed above. These scales aggregate responses across the five illegal acts referred to in the questions. Here we are influenced by Silberman’s (1976: 456) suggestion that moral commitment is “organized around a *set* of societal regulations rather than as a response to a single regulation” and his finding that stronger relationships were revealed when indices rather than offense-specific dependent variables were employed.⁸

⁸ Our use of composite scales to test the causal importance of perceived risk and to assess our more general model was based on our theory of the social control process. Following Silberman (1976), we presume an underlying commonality of those causal mechanisms that relate to criminal involvement. Hence, we presume that a general model of social control may best account for different types of criminal involvement. This will be the case if personal codes of conduct are based on general beliefs about the threat of punishment, the seriousness or immorality of offenses, the informal consequences of rule breaking, and the likely response of others to one’s misdeeds. Silberman (1976) has shown that to the extent that social control is organized around a *set of regulations*, rather than as a response to a single regulation, it will be easier to account for general patterns of deviance than for specific acts.

To test some of these theoretical assumptions we performed identical offense-specific analyses of our data. Zero-order correlations were first calculated between the offense-specific measure of the independent variables and the corresponding offense-specific dependent variable. In addition, separate simultaneous equation models were calculated for the five specific offenses and path coefficients estimated. The correlation analyses showed: (1) the relationships between offense-specific measures of social control variables and specific offenses were weaker than those for the general indices, and (2) the sign and relative strength of the zero-order relationships between independent and dependent variables for the offense-specific analyses were congruent with the observed relationships when indices were employed. The analyses of the simultaneous equations showed: (1) a smaller percent of the

For each of the independent variables discussed above, a composite scale was constructed by summing and averaging the raw scores of all the items contained in the measure. We examined the validity of this procedure by subjecting each set of items to a principal-component factor analysis without iteration (Nie *et al.*, 1975). The results showed that one-factor models fit the data in each set quite well.⁹ Each of the summated scales was then subjected to a reliability analysis, with Cronbach's alpha computed as a measure of each scale's reliability. All scales showed high reliability with alpha values ranging from .70 to .96. Table 1 reports descriptive information for each of the scales used to measure the independent variables.

Table 1. Basic Characteristics of the Composite Scales

Scale Name	Number of Items Comprising Scale	Range of Possible Scale Scores	Mean	Standard Deviation
Perceived Risk	5	1 - 5	2.81	.764
Beliefs	5	1 - 5	4.17	.600
Informal Sanctions	20	1 - 5	4.40	.336
Involvement	1	0 - 168	42.91	14.673
Stakes	40	1 - 5	3.18	.734
Grade Point Average	1	0 - 4.0	2.81	.618
Attachment to Parents	6	1 - 4.67	3.38	.631
Attachment to Peers	6	1 - 4.67	3.04	.579
Criminal Involvement (T1)	5	0 - 5	.91	1.008
Criminal Involvement (T2)	5	0 - 5	1.08	.994

Dependent Variable. Respondents were asked at both Time 1 and Time 2 to report their involvement in five specific offenses at any time in the past and within the past year. These five behaviors, which are the referent behaviors for the independent variable items, include theft under \$10, theft from \$10-\$100, property damage, writing a check with insufficient funds, and marijuana use.¹⁰ Respondents received a score of 1

variance in dependent variables was explained when offense-specific variables were used, and the strength of the individual path coefficients was weaker; and (2) the ordering of the predictor variables in the offense-specific equations were generally congruent with those from the equations employing global indices.

⁹ A graph of the eigenvalues showed an almost horizontal line after the first component, suggesting that no more than one factor should be extracted (Kim and Mueller, 1978). In addition, an examination of the factor loadings on the principal component for each item within each set showed all factor loadings higher than .30 with most of the loadings .50 or higher.

¹⁰ The specific wording of the self-report questions was: "How many times in the past year have you . . . 'stolen or shoplifted something worth less than \$10.', 'stolen or shoplifted something worth between \$10. and \$100.', 'deliberately marked, broken, or otherwise damaged someone else's property', 'written a check with insufficient funds', 'used marijuana or hashish'?"

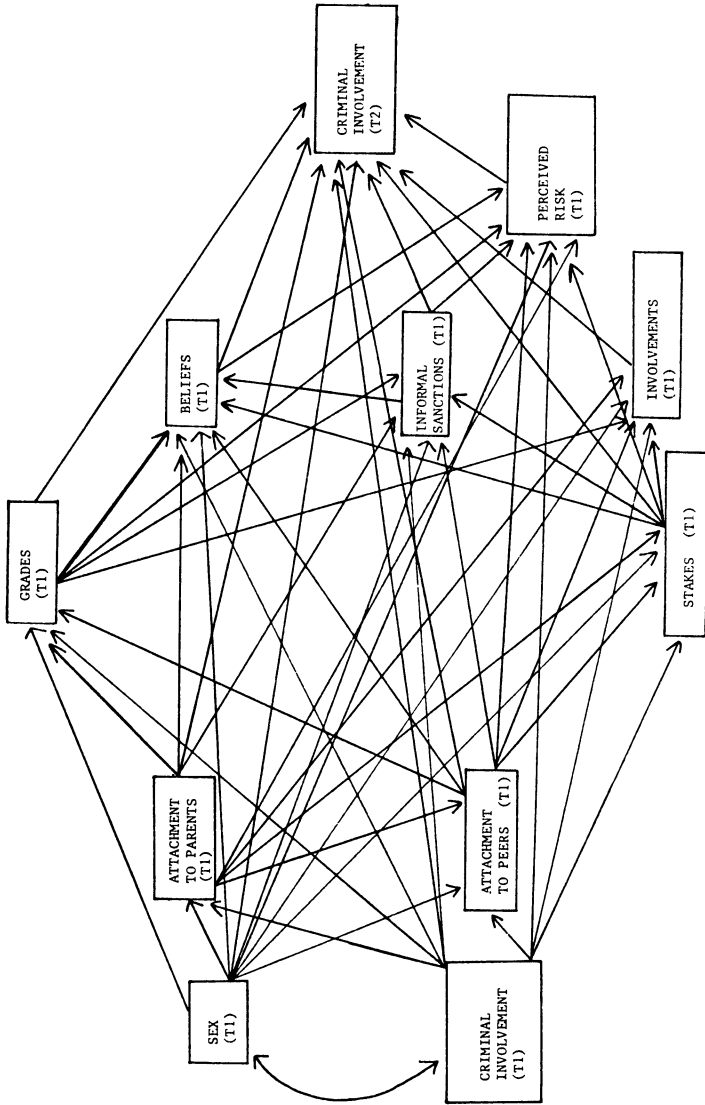
if they reported committing the act in the past year and a score of 0 if they did not report committing the act. A criminal involvement index was constructed by summing the number of offenses each respondent reported committing. Descriptive information about the index can be found in Table 1.¹¹

Specification of a Causal Model

The data from this research will be analyzed within an explicit model of the social control process (Figure 1). The model specifies the following influences on reported Time 2 criminal involvement: reported Time 1 criminal involvement, respondent's sex, attachment to parents, attachment to peers, grades, stakes, informal sanctions, beliefs, involvement, and perceived risk. Each of the factors is presumed to have an independent, direct, and additive effect on Time 2 criminal involvement. Our model, first of all, specifies a direct path from Time 1 to Time 2 criminal involvement. We hypothesize here the occurrence of a significant learning effect, a plausible assumption given the inclusion of an offense like marijuana use in the composite crime index (Becker, 1963). The respondent's sex is also hypothesized to have a direct effect on Time 2 criminal involvement. One of the most consistent findings in the criminological literature is the overrepresentation of both adult (Hindelang, 1981) and adolescent (Hindelang, 1971; Hindelang *et al.*, 1981) males in estimates of criminal involvement, official and self-reported. Harris (1977) offers a theoretical rationale for such a consistent finding, suggesting that such a differential may reflect the "type-scripts" of women in a male dominated society. Social control theory leads us to specify direct effects for stakes, grades, involvement, belief, attachment to parents, and attachment to peers on Time 2 criminal involvement (Hirschi, 1969). Prior research has shown that these elements of the social bond are predictive of criminal involvement (Hirschi, 1969; Hindelang, 1973; Krohn and Massey, 1980; Wiatrowski *et al.*, 1981). Finally, the model specifies direct effects among perceived risk, informal sanctions, and Time 2 criminal involvement. Deterrence theory leads us to hypothesize a negative effect for perceived risk on crime (Gibbs, 1975), while social learning theory would predict a negative relationship between informal (social) sanctions and deviance (Akers, 1977).

¹¹ The five behavior items were subjected to a principal-component factor analysis. A graph of the eigenvalues indicated that a one-factor model fit the model well and found factor loadings on the first component to be .30 or higher.

Figure 1. Preliminary Causal Model of Social Control Process



The model presented in Figure 1 also specifies relationships among the independent variables. One of the important considerations is the effect of prior behavior on our independent variables. The model hypothesizes a direct effect of Time 1 criminal involvement on each social control variable. We have elsewhere referred to the effect of prior behavior on perceived risk as an experiential effect (Saltzman *et al.*, 1982) and found that effect to be significant and negative. We suggest a similar effect with respect to the other variables in the model.¹² Although Hirschi (1969) leaves undetermined the factors which may weaken the social bond, it seems plausible to expect that one of these may be criminal involvement. Whatever the reasons for an initial involvement in criminal activity, it seems likely that such activity can subsequently weaken one's attachment to conventional others, belief in the legitimacy of social norms, commitment to conventional goals, and involvement in conventional activities. Indeed, this is the position of labeling theorists who argue that the experience of primary deviance and public labeling initiates exclusionary processes which limit one's access to conventional roles and opportunities, pushes one toward more deviant associates, and transforms one's identity and beliefs into deviant ones (Becker, 1963; Schur, 1971; Kitsuse, 1962). A plausible effect of criminal involvement may be to weaken both ties to conventional others

¹² The specification of an experiential effect between Time 1 crime and the social control variables is made on theoretical grounds. Since the model does not incorporate Time 2 measures of the social control variables, the data do not allow us to draw unambiguous conclusions about the causal influence of Time 1 crime. (We are indebted to Richard Lempert for making this point clear.) For example, we may find that the direct path from Time 1 crime to informal sanctions is negative. Our theoretical model would suggest that the experience of crime diminishes subjects' tendencies to perceive others as disapproving of deviance, i.e., they see others as more supportive of their deviance. However, the data may actually be reflecting quite a different pattern. For example, consider a group of respondents who perceive strong informal disapproval (no social support) for deviance at Time T-1 and do not commit deviant acts at that time. They continue to perceive high disapproval at Time 1 and so have committed no crimes by Time 2. Now consider a second group who at Time T-1 expect that relevant others will approve of their deviance and so commit deviant acts at Time 1. When they find that their involvement in crime does not meet with the expected approval, they adjust their perceptions, now perceiving only moderate support. Yet the fact that they perceive some social support means that this group is still more likely to commit crime than the first group, and some will have done so by Time 2. The data would show a positive association between criminal involvement and perceived social support for crime when, in fact, criminal experience reduced the perception of support from a high to a moderate level. Without incorporating additional measurement points, it is difficult to untangle the causal order, and it is only our strong theoretical assumptions which enable us to interpret the data as an experiential effect between Time 1 crime and the social control variables. It should be noted, however, that strong theoretical considerations do justify an experiential effect for perceived risk and the beliefs variable (where beliefs change to become more compatible with criminal involvement) as well as commitments and attachments.

(social bond) and estimates of the risk of apprehension. We also posit a direct negative effect of prior criminal involvement on informal sanctions, meaning that we expect that those who have committed deviant acts in the past perceive less social disapproval of those acts than those who have not committed them. This may be because those who commit deviant acts become better acquainted with supportive deviant others along the lines suggested by differential association theory (Sutherland and Cressey, 1978) or because they adjust their perception of others' evaluation of their behavior so as to be more consonant with their behavior (Festinger, 1957).

The respondent's sex is also hypothesized to have a direct effect on each social control factor. Specifically, we hypothesize that females will be more strongly bonded than males. We believe this to be the case for two reasons. First of all, the data to date show that young males are more likely than young females to (1) commit criminal acts, and (2) know of close others who have committed criminal acts. Given our supposition of the experiential process, it is likely that males, because of their higher rate of criminal involvement and their close association with like-minded deviant others, would be more likely than females to have weak social bonds and would be more likely to perceive of others as approving deviant conduct. Secondly, females may show a stronger bond to conventional life than males because of their different socialization experiences. We may expect stronger parental attachments for females because research has shown that parents are more responsive to female children (Lewis, 1972) and parents are less likely to use physical punishment techniques on female children (Duncan and Duncan, 1978). This may lead females to show a greater commitment to school success and a stronger belief in conventional rules and to perceive a greater likelihood of both formal and informal sanctions.

The specification of the remainder of the model is along the lines suggested by Hirschi (1969: 27-30) in his original formulation of social control theory and Akers *et al.*'s (1979: 636-40) description of a general social learning theory model.¹³

¹³ As the specification of our causal model was based on a strong set of *a priori* theoretical assumptions, we did not attempt an inductive search for a best-fitting model.

II. RESULTS AND DISCUSSION

Table 2 reports the bivariate correlation coefficients among all variables used in the causal model. An examination of these zero-order correlations indicates that our preliminary hypotheses about the social control process are generally well supported. With the exception of conventional involvement, each of the inhibitory variables is significantly related to the criminal involvement index at Time 2. Consistent with the deterrence doctrine, the zero-order correlation shows a weak but significant effect for perceived risk on subsequent criminal involvement ($r = -.18$, $p < .001$). The strongest relationships with Time 2 criminal involvement, however, are found for beliefs, informal sanctions, and Time 1 criminal involvement ($r = -.37$, $-.40$, and $.52$, $p < .001$). The other elements of the social bond also had a significant and negative effect on Time 2 criminal involvement with stakes ($r = -.23$) having a stronger effect than grades ($r = -.17$), peer attachments ($r = -.16$), or parental attachments ($r = -.10$). In addition, our assumptions about how the explanatory variables are causally related to each other is consistent with the data. There is a significant zero-order relationship between Time 1 criminal involvement and each endogenous variable except grades. There is also a significant zero-order relationship between sex and each social control variable with the exception of involvement. Attachment to parents is significantly related to each of its endogenous variables. The sign of the correlation is in the expected direction in each case except for grades, where the data show that those respondents with high attachment to their parents have lower grade point averages than those with weaker parental attachments. The same pattern prevails for attachment to peers, which shows a significant zero-order relationship with its endogenous variables, again with the exception of grades. In general, with few exceptions the magnitude and sign of the zero-order correlations are consistent with our causal model depicted in Figure 1. The major exception is our measure of conventional involvements, which showed a statistically insignificant correlation with Time 2 behavior and weak correlations with other variables in the

Table 2. Zero-Order Correlation Matrix for Variables Specified in Model 1 (N=300)

	X ₁	X ₂	X ₃	X ₄	X ₅	X ₆	X ₇	X ₈	X ₉	X ₁₀	X ₁₁
X ₁	—										
X ₂	-.23 ^c	—									
X ₃	-.20 ^c	.33 ^c	—								
X ₄	.26 ^c	-.39 ^c	-.60 ^c	—							
X ₅	.09	.08	.19 ^c	.13 ^b	—						
X ₆	-.26 ^c	.47 ^c	.42 ^c	.43 ^c	.11 ^a	—					
X ₇	-.06	-.09 ^a	-.02	-.05	.13 ^b	-.13 ^b	—				
X ₈	-.17 ^b	.26 ^c	.33 ^c	.32 ^c	.02	.35 ^c	-.11 ^a	—			
X ₉	-.31 ^c	.17 ^c	.25 ^c	.26 ^c	-.10 ^a	.27 ^c	.02	.39 ^c	—		
X ₁₀	.31 ^c	-.33 ^c	-.46 ^c	-.49 ^c	-.13 ^b	-.30 ^c	-.09	-.18 ^c	-.29 ^c	—	
X ₁₁	.25 ^c	-.18 ^c	-.37 ^c	-.40 ^c	-.06	-.23 ^c	-.17 ^c	-.10 ^a	-.16 ^b	.52 ^c	—
X ₁ = Sex*				X ₄ = Informal Sanctions		X ₇ = Grade Point Average				X ₁₀ = Criminal Involvement (T1)	
X ₂ = Perceived Risk				X ₅ = Involvement		X ₈ = Attachment to Parents				X ₁₁ = Criminal Involvement (T2)	
X ₃ = Beliefs				X ₆ = Stakes		X ₉ = Attachment to Peers					

a p < .05 b p < .01 c p < .001

* Sex was dummy coded where 0 = female, 1 = male.

model.¹⁴ In view of this the variable was dropped from the subsequent analysis.¹⁵

It is interesting to note at this point that the effect of prior behavior on current perceptions of the certainty of arrest, the experiential effect, is stronger than the effect of perceptions of certainty on subsequent behavior, the deterrent effect ($r = -.33, -.18$, respectively). Had we simply used a cross-sectional data collection design, as other perceptual deterrence researchers have done, we would have reported a moderate "deterrent" effect ($r = -.33$), rather than the true effect. Similar experiential vs. control effects can be observed for the other inhibitory variables. Beliefs, stakes, attachments, and informal sanctions are all more strongly related to the Time 1 measure of criminal involvement than to the Time 2 measure. Thus, it appears that criminal activity is both instrumental in weakening the social bond and a consequence of such attenuation.¹⁶

¹⁴ Theoretically, involvement is the weakest link in Hirschi's model of social control. His original claim was that since time and energy are zero-sum resources, the more one is involved in conventional activities, the less time and energy one may spend in being deviant. Though in accordance with folklore, "idle hands are the devil's workshop," this supposition does not accord with the available data. Although social control theory has had better luck in fitting the facts than most theories of delinquency (Empey, 1982; Kornhauser, 1978), most studies have found virtually no substantial effect for conventional involvements (Hirschi, 1969; Wiatrowski *et al.*, 1981). This may be because even those heavily involved in conventional activities have substantial blocks of time that could be made available for deviance.

¹⁵ As mentioned in note 8, we also performed an offense-specific analysis of our data, using, when appropriate, offense-specific measures of the independent variables. The results are generally congruent, with the index analysis reported in Table 2. In the offense-specific analysis, as in the general index analysis, the variables which had the greatest effect on Time 2 criminal involvement were Time 1 behavior, informal sanctions, beliefs, and stakes. For the most part the sign and strength of the correlations are consistent across offenses although they are nearly always weaker than the corresponding effects in the index analysis. In addition, the correlations among the independent variables in the specific-offense models were congruent with those reported in Table 2 for the general indices. Nor were there significant discrepancies between these offense-specific models and the index models with respect to the zero-order correlations for the hypothesized causal connections. As with the general index model, the variable measuring conventional involvements was not related to either the Time 2 crime measures or other variables in the model and was similarly dropped from further analyses. For those interested, the data are available from the first author.

¹⁶ The finding of a stronger experiential than deterrent effect was also apparent in the offense-specific analysis. The correlation between perceived risk and Time 1 behavior was larger than the correlation between perceived risk and Time 2 behavior for petty theft ($r = -.16$ vs. $-.04$), marijuana use ($r = -.16$ vs. $-.11$), bad checks ($r = -.15$ vs. $-.08$), and vandalism ($r = -.12$ vs. $-.11$); for theft the two correlations were identical ($r = -.07$). We also found stronger experiential than control effects for the other social control variables, although this finding is subject to the caution concerning causal order described in note 12. For those interested, the data are available from the first author.

Figure 2 and Table 3 report the results from the structural equation analysis. Table 3 shows the standardized and unstandardized regression coefficients from the structural model, and Figure 2 presents the causal linkages with standardized coefficients. There are several important points revealed by this analysis. First of all, the overall model does a fair job of explaining the variance in the dependent variable. The full model with Time 2 criminal involvement as the dependent variable explains 34 percent of the variance, a proportion consistent with other studies of social control (Minor, 1977; Krohn and Massey, 1980; Wiatrowski *et al.*, 1981). In addition, with the exception of grades and attachments to parents, the other endogenous variables are well explained within the model. Secondly, it should be observed that the best predictors of Time 2 criminal involvement are, in order of importance, Time 1 criminal involvement ($\beta = .381$), informal sanctions ($\beta = -.167$), grades ($\beta = -.140$), beliefs ($\beta = -.111$), and sex ($\beta = .078$). In each case the sign of the path coefficient is in the expected direction. The finding that informal sanctions, grades, and beliefs are good predictors of criminal involvement is consistent with other studies which have found these social control variables most strongly related to deviance (Anderson *et al.*, 1977; Silberman, 1976; Tittle, 1977; Krohn and Massey, 1980; Wiatrowski *et al.*, 1981). It would appear, then, that informal social influences are the most important factors in explaining conformity.¹⁷

The most theoretically interesting result is the absence of any direct deterrent effect for perceived certainty. While the zero-order relationship between perceived risk and Time 2 criminal involvement was both negative and significant ($r = -.18$, $p < .001$), the direct causal effect was weak but positive ($\beta = .058$). Once other inhibitory variables are controlled, the

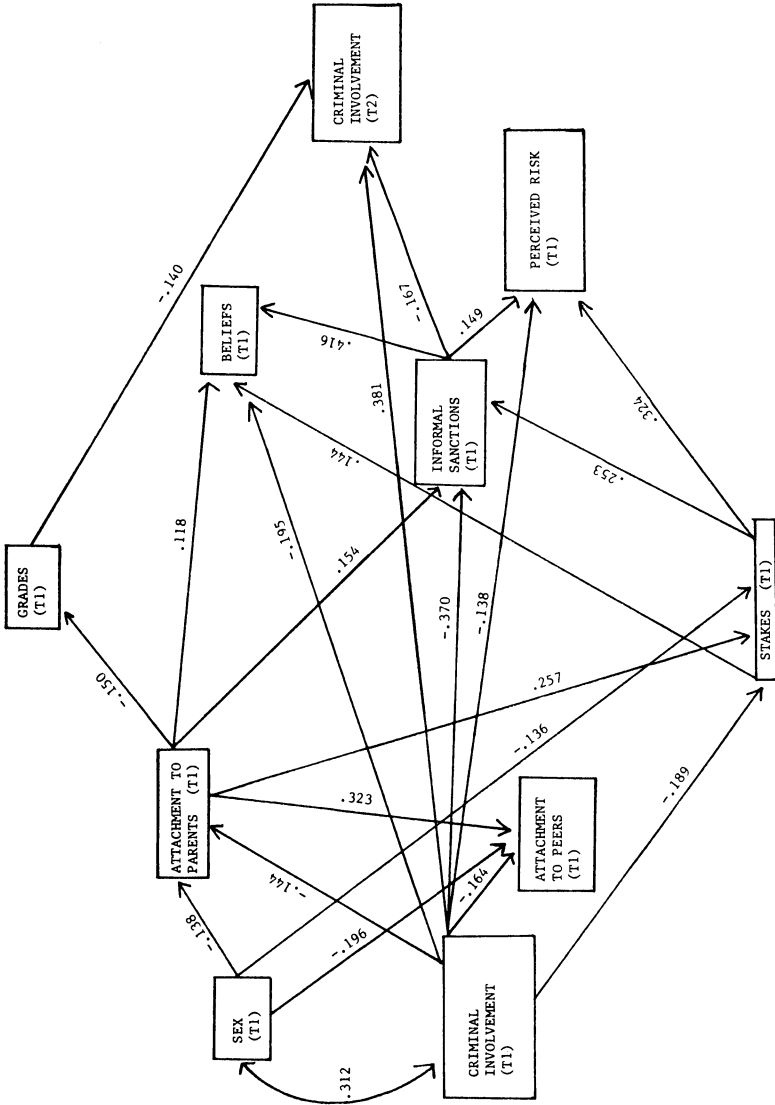
¹⁷ These results, with few exceptions, were replicated in our offense-specific analysis. The major difference between the offense-specific structural equations and those using general indices was that the magnitude of the R^2 s and direct effects was weaker when using the specific-offense measures. In fact, once prior involvement in the act was controlled, few other effects were statistically significant. Other than magnitude of effects, however, the five offense-specific models of the social control process were similar to Figure 2. The best predictor of the specific-offense measure of Time 2 criminal involvement was the Time 1 measure. This was true for all measures except vandalism, where the direct effect between Time 1 and Time 2 involvement in vandalism was positive but small ($\beta = .014$). Next in importance, after the lagged dependent variable, came informal sanctions, beliefs, grades, and sex (for petty theft and marijuana use). There was one small incongruity in the data. For petty theft attachment to peers had a controlling effect on crime ($\beta = -.051$) while for marijuana use it had a facilitating effect ($\beta = .053$). This should not be too surprising given the social nature of most marijuana use.

Table 3. Standardized and Unstandardized Regression Coefficients for Social Control Causal Model

Independent Variables	Criminal Involvement (T2)		Perceived Risk		Beliefs		Informal Sanctions	
	Beta	(b)	Beta	(b)	Beta	(b)	Beta	(b)
Perceived Risk	.058	(.075)	.016	(.020)	.416	(.743) ^c	.253	(.116) ^c
Beliefs	-.111	(-.183)	.149	(.339) ^a	.144	(.118) ^b		
Informal Sanctions	-.167	(-.495) ^a	.324	(.337) ^c	.013	(.013)	-.038	(-.021)
Stakes	-.041	(-.055)	-.050	(-.062)	.017	(.017)	.009	(.005)
Grades	-.140	(-.225) ^b	-.040	(-.052)	.118	(.112) ^a	.154	(.082) ^b
Attachment to Peers	.028	(.049)	.064	(.078)	.036	(.043)	-.046	(-.031)
Attachment to Parents	.057	(.089)	-.064	(-.097)	-.195	(-.116) ^c	-.370	(-.123) ^c
Sex	.078	(.154)						
Criminal Involvement (T1)	.381	(.376) ^c	-.138	(-.104) ^a				
R ²				.29		.44		.36
Independent Variables	Stakes		Grades		Attachment To Peers		Attachment To Parents	
	Beta	(b)	Beta	(b)	Beta	(b)	Beta	(b)
Perceived Risk								
Beliefs								
Informal Sanctions								
Stakes	.078	(.099)	.044	(.048)	.323	(.296) ^c	-.138	(-.174) ^a
Grades	.257	(.299) ^c	-.150	(-.146) ^a	-.196	(-.227) ^c	-.144	(-.090) ^a
Attachment to Peers	-.136	(-.199) ^a	-.041	(-.051)	-.164	(-.094) ^b		
Attachment to Parents	-.189	(-.138) ^c	-.089	(-.055)				
Sex								
Criminal Involvement (T1)								
R ²		.20		.03		.23		.05

^a p < .05
^b p < .01
^c p < .001

Figure 2. Path Analysis of Social Control Process (Coefficients are Standardized Regression Coefficients)



deterrent effect for the certainty of formal legal sanctions vanishes. This finding lends support to the warning given by Gibbs (1975: 209) that: "Individuals who appear to subscribe the most to the social condemnation of crime are the ones who tend to view punishment as the most certain, and they may commit fewer criminal acts because of social condemnation rather than fear of punishment."

The absence of a deterrent effect for perceived certainty is surprising. Most of the research in the perceptual deterrence literature has found strong to moderate deterrent effects for similar measures of risk and similar measures of association (Kraut, 1976; Silberman, 1976). Some of this research has controlled for other inhibitory factors (Silberman, 1976; Akers *et al.*, 1979; Jensen *et al.*, 1978). The key to this anomaly, we believe, lies in the temporal ordering of perceptions and behavior in prior research. It must be remembered that for the most part prior researchers have employed cross-sectional designs and have taken a negative correlation between prior behavior and current estimates of risks as evidence of a deterrent effect. Without considerable perceptual stability, this will not be the case, and the observed correlation is more appropriately interpreted as an experiential effect. Our panel design allowed us to calculate the experiential effect for criminal involvement on perceived risk. The observed relationship between prior behavior and perceptions of risk is negative and similar in magnitude to that reported in the literature as evidence of a deterrent effect ($r = -.33$, $\beta = -.138$). This should be compared with the observed deterrent effect ($r = -.18$, $\beta = .058$). These data, then, call into question most of the findings from prior perceptual deterrence research. Once the correct specification and causal ordering of variables are made, an experiential effect for behavior on perceptions of risk emerges, and a deterrent effect of perceived risk on criminal involvement vanishes.

An examination of Figure 2 and Table 3 also shows that conventional attachments and perceived stakes in conformity are not related to subsequent criminal involvement. While our measure of stakes shows a weak but negative effect on subsequent criminal involvement ($\beta = -.041$), both attachment to peers ($\beta = .028$) and attachment to parents ($\beta = .057$) show negligible but positive effects. Our finding of a positive (though weak) effect for peer attachments on criminal involvement is consistent with other studies (Hindelang, 1973; Akers *et al.*, 1979; Anderson *et al.*, 1977). Other research has, however,

found consistent evidence that stakes (commitment) and attachment to parents are effective constraints (Hirschi, 1969; Hindelang, 1973; Krohn and Massey, 1980; Wiatrowski *et al.*, 1981). Grades, however, which tap another dimension of commitment, are related to Time 2 involvement as expected ($\beta = -.140$).

As was the case for perceived risk, the inconsistency between our results and those of others may reflect the improper temporal ordering of variables in prior research. Because of the cross-sectional nature of the data, it is not at all clear from previous research whether weak bonds are a cause or a *consequence* of criminal involvement. Our data reveal that, whereas the respondents' prior involvement in criminal behavior is significantly associated with attachment to parents ($\beta = -.144$, $p < .05$), attachment to peers ($\beta = -.164$, $p < .01$), and stakes ($\beta = -.189$, $p < .001$), these elements of the bond are only weakly associated with subsequent behavior. Similar associations that are plausibly attributed to experiential effects can be observed for beliefs ($\beta = -.195$, $p < .001$) and informal sanctions ($\beta = -.370$, $p < .001$), although for these two inhibitory variables there remains an association with crime at Time 2 (β s = $-.111$; $-.167$, respectively).¹⁸

III. SUMMARY AND CONCLUSIONS

For the most part, deterrence researchers have failed to give careful consideration to the theoretical implications of their methodological strategies. They have often not incorporated important causal variables in their studies and have uncritically utilized one-wave data collection designs. The findings from this panel study suggest that data from such research have led to erroneous conclusions concerning the role of perceived risk in social control. In examining the true deterrent effect (current perceptions \rightarrow subsequent behavior), we found a significant zero-order negative correlation. However, when other preventive factors were included in an explicit model of social control, the deterrent effect disappeared. This finding was surprising given that previous research, including studies that control for a range of non-deterrence variables and use similar measures of perceived

¹⁸ Again there is a general congruence between these findings using general indices and our offense-specific analysis. As was true in other analyses using offense-specific measures, all effects are diminished in magnitude when compared with the effects in the general index analysis. The data do, however, consistently show stronger experiential than deterrent-controlling effects in each of the five offense-specific structural equation models.

risk, typically has found deterrent effects. In reconciling our findings with these other studies, we suggested that they were in fact not reporting deterrent effects (Perceptions → Behavior) but experiential effects (Behavior → Perceptions). Our panel data allowed us to place the perceptions and behavior variables ($B_{-1} \rightarrow P_1 \rightarrow B_2$) in their correct temporal order, thus permitting us to calculate independent deterrent and experiential effects. The relationship that can be characterized as an experiential effect has zero-order correlations and partial regression coefficients that are both significant and negative. This can explain the relationship between perceptions and self-reported past crime that researchers using cross-sectional designs have taken as evidence supporting the deterrence hypothesis.

Future research should concentrate on replicating these findings on more representative samples involving different criminal acts. The present study is limited in what it tells us about the general social control process because it uses a rather select sample of respondents—college students—and because the crime index is based on relatively minor offenses. It is also critical that future research designs utilize more than two data collection points. With several measurement points it will be easier to disentangle the causal ordering of perceptual and behavioral variables.¹⁹ The findings of this research, though limited, do, however, have important implications for

¹⁹ It would be interesting, for example, to investigate the way in which actual involvement in the criminal justice system affects perceptions. We did not have a sufficient number of respondents whose crime was discovered to justify any conclusions, but the patterns we observed may be of interest. The correlation between prior criminal involvement and current perceptions of arrest risk for those respondents who admitted committing an offense during the year before Time 1 but were not formally discovered ($n = 121$) was $r = -.11$ ($p = .12$). For those respondents reporting an offense during that time period and who were either stopped/questioned by the police or taken to the police station *without* being arrested ($n = 40$), the experiential effect was considerably larger, $r = -.24$ ($p = .07$). For those who reported an offense in the year before Time 1 and also reported being arrested during that year ($n = 8$), the experiential effect was *highest*, $r = -.35$ ($p = .20$). The same pattern prevails for the three groups for the Time 1 – Time 2 period. The experiential effect for the no discovery-no arrest group ($n = 151$) was $r = -.16$ ($p = .03$), for the discovered-no arrest group ($n = 39$) $r = -.34$ ($p = .02$), and for the discovered-arrested group ($n = 10$) $r = -.56$ ($p = .05$). The finding of a more substantial experiential effect for the discovered but not arrested group when compared with the not discovered-not arrested group is what we expected. Being discovered without being arrested appears to heighten the salience of the behavioral experience. Our finding of an even more substantial experiential effect for the discovered and arrested group is, however, not in accordance with our expectations concerning the experiential process. We expected the fact of arrest to make the risk of arrest a more credible threat, leading to an increased estimate of arrest risk. It is not clear what significance should be attached to these findings since so few people were discovered or discovered and arrested.

the deterrence doctrine. They argue that the inhibition of, or a propensity toward, criminal involvement may best be explained by extra-legal influences: moral beliefs, informal social sanctions, and some kinds of conventional commitments. Our data suggest that for a sample of college students perceived risk plays virtually no role in inhibiting minor criminal behavior. These findings suggest the need for a careful reconsideration of the role of the threat of formal legal sanctions in theories of social control and indicate that the debate on the deterrence doctrine has not yet been conclusively resolved.

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