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Drug Use and Deterrence: A Test of Silberman's General Theory

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DRUG USE AND DETERRENCE

A TEST OF SILBERMAN'S GENERAL THEORY

A Thesis

Presented to

The Faculty of the Department of Sociology

The College of William and Mary in Virginia

In Partial Fulfillment

Of the Requirements for the Degree of

Master of Arts

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by

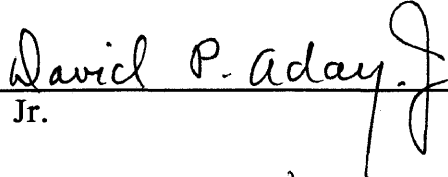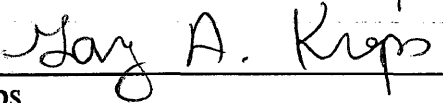Michael Owen Maume

April 1994

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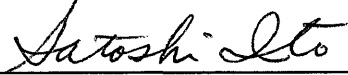
the requirements for the degree of

Master of Arts

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ABSTRACT

Almost two decades ago, Matthew Silberman (1976) proposed and tested a general theory of deterrence. Since that time, research has produced inconsistent findings about the principles and dynamics of deterrence. I draw from criticisms of Silberman's work and from refinements in theories of deviance and social control to further test Silberman's core ideas. The key independent variables include moral commitment to the norm, peer involvement, perceived certainty of punishment, and perceived severity of punishment. The current study examines self-report data describing definitions about and use of alcohol, marijuana, and cocaine. The sample consists of 729 undergraduates at a mid-Atlantic university. After replicating many of Silberman's analyses, the data reveal overall support for his general theory of deterrence.

DRUG USE AND DETERRENCE: A TEST OF

SILBERMAN'S GENERAL THEORY

INTRODUCTION

Theories of deterrence have been in existence nearly as long as the discipline of sociology itself. However, deterrence as a major explanatory paradigm for crime and deviance was not widely researched until the late 1960's (see Andenaes, 1966; Chambliss, 1966; Gibbs, 1968; Jensen, 1969; Tittle, 1969; Zimring and Hawkins, 1968). The concept of deterrence refers generally to the constraining effects of sanctions and of rules and laws that threaten sanctions. General deterrence refers to constraint that results from witnessing the punishment of others. Specific deterrence refers to the constraining effects of punishment on the subject under observation (Gibbs, 1975:34,38). Deterrence theories are based in utilitarian and exchange theories that depict individuals as rational beings who weigh the costs and benefits of their actions. Theorists "attempt to spell out those conditions under which the perceived risk of punishment (cost) counterbalances the estimated gains from an act sufficiently to prevent commission of that act" (Geerken and Gove, 1975:497).

This research focuses on drug use as it relates to the deterrence doctrine. There are several reasons for examining deviant drug use. First, drug use is widely regarded as a problem of epidemic proportions. Since the 1980's, the U.S. government has declared a "war on drugs" in a very literal sense, at times using

military force to sanction drug commerce. Aday (1990:231) predicts that not only will the acceptance of this strategy of social control continue to grow, but it will continue to "make drug trafficking the most lucrative industry in the history of modern nations." Drugs that have been prohibited or regulated include marijuana, cocaine, heroin, and various opium derivatives. Aday and Thomson (1992:420) note that although these drugs have been portrayed by the popular media as dangerous or even lethal, there is evidence that some are less dangerous or destructive than drugs that are not criminally prohibited. For example, tobacco and alcohol use are known to be dangerous to health and to contribute directly to loss of life and property destruction.

Second, there are strong conventional beliefs about deterring the possession, distribution, and use of illegal drugs. There are those who feel that drug users and dealers should receive severe prison sentences if arrested. There are others who have argued for decriminalization or deregulation of illegal drugs. Almost everyone would agree that murder or rape is wrong. On the other hand, there probably are widely discrepant attitudes about drugs and drug use.

Third, drug use is subject to both informal and formal social control. Aday and Anderson (1991:24) define social control as "the punishment of an individual or collective act that has been identified as a violation." Aday's (1990) model of social control identifies two major types of social control: 1) formal, which is derived from laws and specialized agencies; and 2) informal, which is derived from interpersonal relationships[1]. According to Aday, our society has changed from reliance on informal

social control to pervasive use of formal, coercive control. Paradoxically, Aday and Thomson (1992) suggest that informal methods of social control, such as advertising and education, rather than the current national drug policy encouraging formal means of social control, may be more effective for dealing with illegal drug use.

I. THEORETICAL ISSUES

Some of the first research done on deterrence by social scientists tested for a general deterrence effect (see Savitz, 1958; Schuessler, 1952). For example, Sellin (1967) examined states' use of the death penalty to test for a general deterrence effect on homicide rates and found no substantial evidence to support the deterrence hypothesis. However, later researchers looked at penalties other than death and many found support for their hypotheses (see, for example, Waldo and Chiricos, 1972; Erickson and Gibbs, 1977). The current study focuses only on specific deterrence.

Another theoretical issue concerns the conceptualization of the threat of punishment. The threat of punishment is a central variable in deterrence doctrine. It can be measured in a number of ways. Threat of punishment usually is conceptualized in three dimensions: certainty, severity, and celerity of punishment. Many researchers measure only certainty and severity of punishment. Erickson and Gibbs (1977:253) note that social scientists tend to be divided in their approaches: "studies have been limited either (1) to *objective properties* of punishment (for example, the ratio of prison admissions to offenses reported to the police) or (2) to perceptual properties (for example, the perceived risk of arrest)."

Waldo and Chiricos (1972) researched individual perceptions of the severity

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and certainty of punishment as they relate to self-reported rates of marijuana use and petty larceny. The authors employed an interview schedule with a sample of 321 university students. They found no relationship between self-reported criminality and the respondents' perception of the severity of punishment for those crimes. They report a significant relationship between certainty of punishment and crimes reported, but the degree of the relationship depended on the type of offense (Waldo and Chiricos, 1972:536). They conclude that results do not provide adequate support for the deterrence hypothesis.

Meier and Johnson (1977) found legal variables to be insufficient for explaining deterrent effects. Six hundred and thirty-two adults were asked to provide descriptions of the frequencies of their own use of marijuana. The authors found compelling evidence to support their hypothesis that social, extralegal factors played a more important role in deterring use. In fact, they found that the variables of "age, fear of physical consequences of [marijuana] use, and beliefs that marijuana use is immoral" had much greater effects on marijuana use than did traditional legal variables such as the perceived certainty and severity of punishment (Meier and Johnson 302).

II. CORE CONCEPTS

I use Silberman's (1976) concepts to examine the dynamics of deterrence. The first two core independent variables, perceived severity of punishment and perceived certainty of punishment, are derived from Silberman's conceptualization of perceived threat. The next two variables, moral commitment to the norm and peer involvement, are derived from Silberman's general theory of deterrence and other theories of deviance. Drug use, the dependent variable, will be described in the section on index construction.

Perceived certainty of punishment is measured as the degree to which individuals perceive the possibility of negative sanctioning, or punishment, for an act or acts. Although typically researchers have measured both certainty and severity of punishment, and at times have found an interaction effect between the two variables, certainty of punishment has been examined as a factor of deterrence independent of the severity of punishment. Silberman (1976:445) did not define the concept of threat of punishment as such. Instead, he measured perceived certainty of punishment as the respondents' perceptions of "how likely the police would be to catch 'someone like yourself' if you committed any of the offenses." The answer choices were as follows: very likely, likely, unlikely, or very unlikely. I use an index of certainty of

punishment that consists of Likert-scaled items that are similar to Silberman's (1976). They ask respondents to indicate the likelihood of their being arrested for drug-related crimes. The possible responses are as follows: no chance at all, a slight possibility, somewhat likely, and almost certain.

Perceived severity of punishment is measured as the degree to which individuals perceive that punishment will have a negative effect on their lives. Silberman (1976:445) measured perceived severity of punishment as the degree to which respondents thought "they would be very likely, likely, unlikely or very unlikely to get the maximum [state] penalty if they were convicted of committing each one of the offenses."

Grasmick and McLaughlin (1978) criticize this measure as ineffective for describing severity of punishment. They argue that this measure does not take into account the evidence of variation in people's perceptions of the maximum legal penalty vary. For example, although two people may perceive the maximum legal penalty for drinking in public to be a $100 fine, some may think this is a very severe penalty, while the others consider it to be a slap on the wrist.

I use an index of punishment severity that consists of Likert-scaled items asking respondents to indicate the degree to which they think their futures would be negatively affected if they were convicted for drug-related crimes[2].

Moral commitment to the norm is defined as internalized values that conform to some rule or law.[3] Silberman cites Mead's conception of moral commitment as societal norms that are "internalized to become self-regulatory mechanisms"

(1976:453). In contrast, Tittle (1977) attributes the concept to the structural-functional theory of Talcott Parsons and his followers. Silberman's (1976:445) questionnaire asked respondents "to rate each of the eleven offenses according to whether it was always wrong, usually wrong, sometimes wrong or not at all wrong." The sum of these responses comprised his morality index. I use a morality index that consists of a set of Likert-scaled items asking respondents about the wrongness of drug use. (See Appendix I.)

Peer involvement reflects the concept of differential association proposed by Edwin Sutherland. Most researchers have found that interaction with peers involved in deviant or criminal activities has a positive effect on criminal involvement in general, and a negative relationship with perception of the threat of punishment[4] (cf. Tittle and Rowe, 1974). Silberman (1976:445) constructed a peer involvement index that was a "summated scale based on the number of offenses for which the respondent had known at least one person who had been arrested." My peer involvement index consists of items that ask for the number of friends known by the respondent who had ever used drugs.

III. HYPOTHESES

Silberman's propositions are derived from three general explanatory theories of crime and deviance: deterrence, moral commitment, and differential association[5]. (1976:457-458) I propose hypotheses that capture Silberman's meanings; however, the language has been modified slightly to reflect the focus of the present work. The hypotheses, then, are as follows:

Hypothesis I: The higher the degree of moral support for the legal regulation of drug use, the lower the probability that individuals will use drugs (the moral commitment hypothesis).

Hypothesis II: The greater the perceived threat of punishment for drug use, the lower the probability that individuals will use drugs (the deterrence hypothesis).

(The next two hypotheses are components of the deterrence hypothesis.)

Hypothesis IIA: The greater the perceived certainty of punishment for drug use, the lower the probability that individuals will use drugs.

Hypothesis IIB: The greater the perceived severity of punishment for drug use, the lower the probability that individuals will use drugs.

Hypothesis III: The greater the degree of association with peers who have used drugs, the greater the probability that individuals will use drugs (the differential association hypothesis).

Hypothesis IV: The greater the perceived threat of punishment for drug use, the greater the degree of moral support for the legal regulation of drug use.

Hypothesis V: The greater the degree of moral support for the legal regulation of drug use, the smaller the degree of association with peers who have used drugs.

Hypothesis VI: The greater the degree of association with peers who have used drugs, the greater the degree of perceived threat of punishment.

Silberman tested his deterrence propositions on both the individual (N=174) and the offense (N=9) levels of analysis, resulting in two distinct causal models. The hypotheses stated above will be tested on the individual level only.

IV. RESEARCH DESIGN

The data for this study come from a campus survey conducted in the spring of
1990 at a small mid-Atlantic university. Seventeen hundred questionnaires were
mailed to a random sample of resident and non-resident undergraduate students of the
university. Seven hundred and twenty-nine students returned completed
questionnaires, yielding a response rate of 43 percent and comprising a 13.8 percent
sample of the entire undergraduate population.

The original analyses by Aday and Anderson (1991) were aimed at developing
an integrated theory of adolescent drug use using concepts derived from theories of
social control, differential association, and deterrence. Aday and Anderson report
weak relationships between measures of deterrence and drug violations. I believe that
this resulted from weaknesses in the measurement of the construct of deterrence.
Aday and Anderson include only a measure of perceptions of severity of punishment.
These researchers did not examine certainty of punishment as a part of the index of
deterrence.

Control Variables

A disadvantage of using a sample of college undergraduates is the lack of

variability in socio-demographic characteristics. Silberman faced the same

disadvantage with his sample. He (1976:446) states:

> There are several variables, extraneous to this study, that are generally
> expected to be associated with criminal behavior: age, ethnicity, urbanism,
> socioeconomic status and sex. The relatively high degree of homogeneity of
> the student population along the first four dimensions makes it superfluous to
> control these variables. The student body is predominantly composed of
> young (18-22 years of age), affluent, white residents of suburban communities
> surrounding several major metropolitan areas in the Eastern United
> States...The university is co-ed, however. Consequently, sex should be
> controlled for in order to see if males and females respond differently to the
> threat of punishment and other factors associated with criminal deterrence.

Items for age, urbanism, and gender are included in the 1990 campus survey.

References to ethnicity and socioeconomic status were not included in the survey.

Race was left out because of its presupposed homogeneity. Hence, student

respondents described by Silberman are not much different from those in the present

study.

The only significant difference appears to be in the measure of urbanism. The

present survey asks respondents to describe the area where they grew up. The

possible choices are rural (1), suburban (2), urban (3), and don't know/can't say (4).

Roughly three quarters (73.6%) of the sample identified their childhood environment

as suburban, 17 percent checked rural, seven percent indicated urban. Only three

percent claimed they didn't know or couldn't say. Because of its variability and

potential theoretical relevance, this item will be retained as a control variable.

Specifically, urbanism will be measured as a scale from low (rural/urban=1) to

medium (suburban/urban=2) to high (urban/urban=3), treating don't know/can't say

responses as missing cases.

Gender is coded as "1" for females, "2" for males. The sample is made up of 443 females and 285 males, resulting in a 61-39 split, a ratio that slightly overrepresents females in the sample (females comprise 53.4% of the undergraduate population). Gender appears to be a more significant (and more interesting) control variable than urbanism. Like most studies of crime and deviance, Silberman's (1976:447) study revealed that males were more likely than females to commit criminal offenses, and that males felt the deterrence effect more strongly than females. Aday and Anderson's (1991) results suggest that similar findings are likely in this study.

V. INDEX CONSTRUCTION AND BIVARIATE ANALYSES

The data were examined first through analyses of bivariate associations (using phi coefficients and Pearson's r). See Tables 2 and 3 for results. These analyses provide the basis for constructing index measures of the independent and dependent variables.

Following Silberman's (1976) procedures, the individual items representing the independent variables and the individual drug use measures were dichotomized in order to make comparisons of the bivariate relationships in 2x2 tables (see Table 1). For example, I examined the association between the indicator variable for moral commitment relative to alcohol use and the alcohol use variable.

Silberman (1976) used summed indexes to represent the key variables in his analysis of the deterrence effect on the individual level. Grasmick and Bryjak (1980:481) endorse this method of data reduction and cite two advantages. First, according to them, "a more precise presentation of results is possible" and, second, "the composite scales approximate an interval level of measurement and can be analyzed with familiar multiple regression techniques." Index reliability was considered through an examination of item to index correlations. Items were included only if those correlations were at least .50.

MORALITY is measured using three items, each of which asks respondents to agree or disagree with the following statement: "Regardless of how safe or dangerous (alcohol/marijuana/cocaine) might be, it is wrong to use if it is illegal to use." Response options comprise a Likert index ranging from 1 (strongly disagree) to 5 (strongly agree). The distribution of this index is presented in Appendix I. In later analyses, this and the other indexes are dichotomized using the index mean as the point of division. For example, those who scored from 3 to 9 on the morality index are categorized as low morality; those who scored from 10 to 15 are categorized as high morality. The resulting dichotomous variables are presented in Appendix I.

PEERS is composed of two items asking respondents, "Out of your five closest friends, estimate how many have ever used a drug (1. marijuana/2. cocaine)." The questionnaire contained no item for alcohol. However, if it had, there is a good probability it would have been unusable because of a lack of variance in the distribution (i.e. almost all would report having friends who used alcohol).

SEVERITY (perceived severity of threatened sanctions) is composed of three items asking respondents, "If you were arrested and convicted for 1) drinking in public, 2) possession of marijuana, or 3) selling a pound of cocaine, do you think your future would be affected negatively?" The possible responses were no (1), yes, a little (2), yes, somewhat (3), and yes, seriously (4).

CERTAINTY (perceived certainty of threatened sanctions) is measured using an item for alcohol that asks, "What do you think is the chance that you would be arrested if you were under 21 and drinking at a bar," and two items that ask, "If you

were selling 1) marijuana or 2) grams of cocaine from an apartment, what do you think would be the chance of getting arrested?" The possible responses were no chance at all (1), a slight possibility (2), somewhat likely (3), and almost certain(4).

DRUG USE is measured as self-reports of the use of alcohol, marijuana, and cocaine. The survey included items for each type of drug and asked for frequencies of use in the past week, past month, and past year. I dichotomized responses to "have used" and "have not used" for both marijuana and cocaine (cf. Gossweiler, 1992:18). Almost 95% of the respondents in this study report use of alcohol at some time in their lives. Therefore, a measure of alcohol use as "ever" or "never" used (similar to the items for marijuana and cocaine) would be meaningless because of the lack of variance. Accordingly, I used a single item from the questionnaire that asks respondents to report the number of days in the past month that they were intoxicated by alcohol. This measure was collapsed into two categories, "was not intoxicated" and "was intoxicated at least once." Sixty-one percent of respondents reported that they were intoxicated at least once in the past month. By contrast, only 11% reported having used marijuana in the past month, and four respondents (0.5%) reported having used cocaine in the past month.

These three measures of drug use were then summed to create a drug use index, which served as a measure of the dependent variable. The index ranges from 0 to 3 and has a mean of 1.1. Although they are not identical to those used by Silberman (1976), the indexes I have constructed for the core concepts of the theory are conceptually and empirically similar to those in Silberman's original research.

VI. ANALYSIS

Measuring association

Table 2 presents phi coefficients for associations between the dependent variables (drug use by type) and the independent variables that refer to those types. The indicator variables were dichotomized (as described in Table 1) in order to construct 2x2 tables.

Table 3 presents correlations between the index measures of the key independent variables, the drug use variables, and the drug use index. At first glance, it appears that the deterrent effect from all sources is strongest for marijuana, followed by alcohol, and then cocaine. Overall, the coefficients are weak to moderate for morality and peer involvement, and even weaker for the threat of punishment (certainty and severity). Note the stronger association between the drug use index and the index measures of the key independent variables. This finding is consonant with Silberman's (1976) observation that the deterrent effect is more apparent when non-specific indexes are correlated. The correlation between peer involvement and marijuana use is particularly striking. While the phi and Pearson coefficients are very similar for the other bivariate relationships, there is a marked increase from the phi coefficient for marijuana use and peer involvement in Table 2 ($\phi = .39$; $p < .001$) to

the Pearson coefficient for the corresponding index measures in Table 3 (r=.61; p<.001). It appears that the association between drug use and peer involvement is not well captured by the 0-1 dichotomies in Table 2.

There are important differences between the findings for this study and those reported by Silberman (1976). Silberman found a positive but insignificant correlation between severity of punishment and the dependent variable, measured using a criminal involvement index. In fact, Silberman (1976) reports positive relationships between the severity of punishment index and all of the individual offenses, except for assault. In the current study, analyses reveal significant although weak negative correlations between the severity of punishment index and both the drug use index and the use variables (see Table 3). In fact, the bivariate correlations are stronger for the severity measure than they are for the certainty of punishment measure. This finding is exactly opposite from the results reported by Silberman.

This discrepancy may result from differences in the measurement of severity of punishment. Silberman (1976:445) measured perceived severity by asking respondents "whether they would be very likely, likely, unlikely or very unlikely to get the maximum [state] penalty if they were convicted of committing each one of the offenses." In the present study, respondents were asked whether they think their "future would be affected negatively" if they were arrested and convicted for crimes related to alcohol, marijuana, and cocaine. Grasmick and Bryjak (1980) used both measures of severity of punishment in their analysis of the deterrence effect. They characterized the former as the conventional measure and the latter as the refined

measure. They found the refined measure of severity, in conjunction with certainty of punishment, to be a better predictor of illegal behavior.

Table 4 presents the zero-order correlation coefficients for all of the index variables. The directions of the relationships are consistent with the hypotheses. Two correlations are particularly interesting: the fairly strong correlation between the morality index and the drug use index (r=-.44) and that between the peer involvement index and the drug use index (r=.63). Both are statistically significant beyond the .001 level. Compared to morality and peer involvement, the severity and certainty of punishment measures have weak associations with drug use. The findings are consistent with those reported by Silberman, except for those concerning the severity index variable. Not only does the current severity measure have a negative association with drug use, but its coefficient is larger than that between certainty and drug use (r=-.24 and r=-.16, respectively).

Controlling for gender

Following Silberman's (1976) lead, I examined the data to consider the effects of gender. A total of 443 females (60.9%) and 285 males (39.1%) responded to the gender question. Both males and females reported drug use. However, a higher proportion of males than females report use. Fifty-six percent of females and 69 percent of males reported being intoxicated at least once in the past month. Thirty-three percent of the females and 49 percent of the males report having used marijuana at least once; six percent of the females, compared to 13 percent of the males, report

having tried cocaine at least once. The differences in frequencies of alcohol and marijuana use between females and males are significant beyond the .001 level ($X^2 = 11.92$ and 20.13, respectively). The gender difference on cocaine use is smaller ($X^2 = 9.37$; $p < .01$).

Looking at the drug use index, the mean score for males is 1.31 compared to 0.95 for females. This difference is significant beyond the .001 level (data not shown). The differences in rates of usage by males and females for each drug are not extreme. Rather, generally males report higher frequencies of use on all drugs. This is consistent with the findings reported by Aday and Anderson (1990).

When comparing the correlations among the index measures of the independent and dependent variables for males and females (see Table 5), there are very slight differences. Some noticeable differences are in certainty of punishment, where there is a weaker association between certainty and drug use for males ($r = -.12$; not sig.) than for females ($r = -.16$; $p < .001$). Also, the association between peer involvement and drug use is slightly stronger for males ($r = .66$) than for females ($r = .60$). These correlations do not support Silberman's (1976) finding that the deterrence effect is felt more strongly for males. In fact, it appears that deterrence may apply more to females; however, the results here do not support any substantial conclusions.

Testing for interaction

Many researchers have suggested possible interactions among deterrence variables. Silberman (1976) examined interactions in his analyses. Following his

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example, I dichotomized the index measures of the independent variables by dividing their distributions above and below the means. The resulting categories are groups that are "low" and "high" on each variable. The means for each of the indexes are presented in Table 6.

I looked at mean drug use scores for the groups categorized as "low" or "high" on each of the following variables: morality, peer involvement, certainty and severity. I then looked at drug use scores for those low and high categories on each of those variables while controlling for other variables. For each index, there is a significant difference between the means of the low and high groups. The most significant difference occurs between those scoring low on the peer involvement index compared to those scoring high (t=-17.60; p<.001). Another significant difference is obvious for the mean drug use scores of those who scored low versus high on the morality index (t=10.39; p<.001). A close look at this table reveals that the t-scores for the differences between the low and high drug use scores for groups on the peer involvement index and on the morality index are on average higher than the t-scores for the differences between the low and high groups on the severity and certainty indexes.

Before testing for interaction, I did a regression analysis with the drug use index as the dependent variable, and index measures of the core independent variables (morality, peer involvement, severity and certainty). The results of this analysis are shown in Table 7.

I decided to test for interaction among the independent variables by using

product terms in a multiple regression analysis.[6] Using the four index variables, I computed six interaction terms based on the total number of possible combinations: MORALITYxPEERS, MORALITYxSEVERITY, MORALITYxCERTAINTY, PEERSxSEVERITY, PEERSxCERTAINTY, and SEVERITYxCERTAINTY. The formula for the test is

$$I' = a + ß_1MP + ß_2MS + ß_3MC + ß_4PS + ß_5PC + ß_6SC,$$

where a is the constant and $ß_n$ is the standardized regression coefficient (Grasmick and Bryjak, 1980:483). The results of the analysis using the interaction terms are shown in Table 8.

I compared the model with interaction terms to the original model. The interaction term model explains 43 percent of the variance in the drug use index, whereas the four index variables account for 44 percent of the variance. The interaction terms do not increase the explanatory power of the model. However, the product term for morality and severity is significant ($ß=-.198$; $t=-3.009$; $p<.01$). I ran a third model regressing drug use on peer involvement, certainty, and the morality-severity term to see if any improvements were made on the original model (see Table 9). The third model had explained variance (r^2) of .44 and the Beta coefficient for morality-severity increased only to $-.224$ ($p<.001$), not much improvement over the original model. The explanatory value of interactions among the independent variables appear to be negligible.

The full model

Table 10 presents results of the regression analysis using the full model, which includes the four index measures of the primary independent variables and the control variables, gender and urbanism. Standardized coefficients only are presented because of the differing metrics among the independent variables. Of the four core independent variables, only morality and peer involvement are significant predictors of drug use. Forty-five percent of the variance is explained by the full model, and most of this is attributable to the peer involvement index.

Based on the findings here and an examination of articles dealing with path analysis, I do not feel that a replication of Silberman's (1976) causal model is warranted. This point is developed further in the following discussion.

VII. DISCUSSION

Hypotheses

Hypothesis I: The higher the degree of moral support for the legal regulation of drug use, the lower the probability that individuals will use drugs (the moral commitment hypothesis).

There is support for the moral commitment hypothesis, based on the moderate

negative correlation of .44, found between the morality index and the drug use index.

The bivariate Pearson correlations are presented in Table 4.

Hypothesis II: The greater the perceived threat of punishment for drug use, the lower the probability that individuals will use drugs (the deterrence hypothesis).

I tested the two hypotheses that are the components of the deterrence hypothesis.

Hypothesis IIA: The greater the perceived certainty of punishment for drug use, the lower the probability that individuals will use drugs.

Based on the negative correlation of .16 found between certainty and drug use,

there is support for this hypothesis.

Hypothesis IIB: The greater the perceived severity of punishment for drug use, the lower the probability that individuals will use drugs.

This hypothesis is also supported, based on its -.24 correlation with the drug use index.

Hypothesis III: The greater the degree of association with peers who have used drugs, the greater the probability that individuals will use drugs (the differential association hypothesis).

This hypothesis is supported by the strong correlation of .63 found between the peer involvement index and the drug use index.

Hypothesis IV: The greater the perceived threat of punishment for drug use, the greater the degree of moral support for the legal regulation of drug use.

The bivariate relationships reported in Table 4 suggest overall support for this hypothesis. I find that the relationships between the three index measures of moral commitment, certainty of punishment, and severity of punishment are in the correct, positive direction. Furthermore, when comparing group means of certainty and severity of punishment on the level of moral commitment, those who scored high on the severity and certainty index measures had a higher level of moral commitment as well. Silberman, who examined deterrence on both the individual and offense levels of analysis, found this hypothesis to be valid only for the offense level of analysis.

Hypothesis V: The greater the degree of moral support for the legal regulation of drug use, the smaller the degree of association with peers who have used drugs.

The bivariate correlation of -.39 in Table 4 between the moral commitment and peer involvement indexes supports this hypothesis. Silberman found this

hypothesis to be true only for the individual level of analysis.

Hypothesis VI: The greater the degree of association with peers who have used drugs, the greater the degree of perceived threat of punishment.

This is the only hypothesis that cannot be supported here. In fact, there are inverse relationships between the peer involvement index measure and both the certainty and severity of punishment indexes, as can be seen in Table 4.

Some researchers have argued that the effects of the threat of punishment (in this case, certainty and severity) on criminal behavior are dependent on either peer involvement (Tittle and Rowe, 1974) or moral commitment to the norm (Zimring, 1971). Silberman's research and that reported here provide empirical support for these findings. I find that although the effects of the severity and certainty indexes on the drug use index are direct, it appears that these effects are mediated by morality and peer involvement.

Addressing Silberman's critics

In their review of his article, Grasmick and McLaughlin (1978) argued that Silberman's (1976) research made a significant contribution to deterrence research. They noted that it was the first deterrence study to be published in the American Sociological Review or the American Journal of Sociology. Yet, they also noted some theoretical and methodological problems with the research that they comment on

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at length. The research reported here responds to some of the identified problems.

First, Grasmick and McLaughlin contend that Silberman (1976) failed to test for the "credibility of severe sanctions" hypothesis (see Tittle and Logan, 1973), which asserts that "...perceived severity of punishment has a deterrent effect only when the perceived certainty of punishment is high. In other words, certainty is a conditional variable in the relationship between severity and criminal involvement" (Grasmick and McLaughlin, 1978:274). As noted earlier (see especially Table 4 and related discussion), not only is the zero-order correlation between severity and drug use higher than the correlation between certainty and drug use, the partial correlation between severity and drug use drops to -.21 (p < .001) when controlling for certainty. Furthermore, if I select only those respondents who scored high on the certainty index, and then compute a zero-order correlation between severity and drug use, the coefficient is practically unchanged (r = -.23; p < .001).

The second criticism concerns Silberman's use of an inadequate measure of severity of punishment. As noted earlier, the refined measure of severity of punishment suggested by Grasmick and Bryjak (1980) was used for this research. Although it cannot be empirically demonstrated that the difference in findings between this paper and Silberman's (1976) is attributable to the use of different measures of severity of punishment, the replication of Silberman's hypotheses, and findings concerning the relationships between the index variables suggests that this incongruity is not attributable to sample characteristics. The stronger effects of the refined measure of perceived severity of punishment is consistent with Grasmick and Bryjak's

findings.

Third, Grasmick and McLaughlin believe that Silberman should have treated peer involvement and moral commitment as separate conditional variables mediating the effects of certainty and severity of punishment on criminal involvement. Table 6 presents results of analyses that respond to the criticism. It is clear that moral commitment and peer involvement by themselves mediate the effects of the threat of punishment measures on drug use.

The last criticism offered by Grasmick and McLaughlin concerns Silberman's use of path analysis. According to these critics, "given the pattern of relationships [Silberman] uncovers and his interaction hypotheses, he should not have chosen to present the combined effects of the independent variables on Criminal Involvement in the form of a path analysis." Grasmick and McLaughlin also note that the path diagram Silberman chooses "does not depict the causal chain he describes [Silberman 449]" (276).

I agree that path analysis is inappropriate here. If Silberman (1976) was correct in describing the relationship between the independent and dependent variables as one approaching a causal chain, then the reviewers are correct in their assessment of Silberman's actual path diagrams (1976:450; 452). Although Silberman discusses causality and his path analysis assumes it, his propositions are not causal. Because the data here and in Silberman's research are cross-sectional, there is no a priori knowledge of the temporal ordering of the independent and dependent variables. Silberman (1976:444) addresses this problem when he states:

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Respondents are asked at a given point in time what their *current* beliefs are regarding the efficacy of the law enforcement process and then asked to report their *past* criminal behavior. In order to assert that these beliefs affect the individual's behavior, we must assume a degree of stability in those beliefs. However, it is equally reasonable to assume that the respondent's current beliefs are a product of his past behavior, particularly if he has committed an offense and was not caught. Are we really testing deterrence theory? Or are we measuring the effects of past experiences on current beliefs regarding the certainty and severity of punishment? The truth probably lies between the extremes. In other words, beliefs and behavior interact in such a way as to suggest a two-way process. Those who commit an offense and get away with it are less likely to believe that people like themselves are caught by the police for committing these offenses. In turn, the belief that one is unlikely to be caught predisposes the person to commit the offense. To resolve this methodological and theoretical problem requires a longitudinal study observing the interaction between beliefs and behavior over time.

Path analysis assumes additive relationships among the independent variables. Although minor interaction effects were found in the regression analyses, it is clear from a glance at Tables 7 and 10 that morality and peer involvement are the dominant variables in the model. Therefore, because the effects of certainty of punishment, and, to a lesser degree, severity of punishment are dependent on morality and peer involvement, these variables would not have the same exogenous relationships with the dependent variable as those in Silberman's path diagram. Nevertheless, the main purpose here was to test Silberman's hypotheses, and that has been done.

Conclusion

Deterrence is broadly defined as the constraining effects of rules, laws, and sanctions. It is a notion that has become a part of the thinking of agents of social control. However, research to date on deterrence does not allow any definitive

conclusions. Like many of the concepts used by social researchers, there has been disagreement over how deterrence, and at times its component terms, should be measured or conceptualized.

In the 1970's, more researchers began exploring specific deterrence. They measured deterrence in terms of individual perceptions rather than, or along with, measures of imposed punishment certainty and/or severity (e.g., punishment rates). This research was advanced through the use of self-reported data on criminal behavior.

Matthew Silberman's (1976) paper was the first to take a broader look at the deterrence doctrine's place among other criminological theories. By infusing terms from social learning and social control theories, he sought to provide an axiomatic theory of deterrence. This paper solidifies what Silberman found: 1) a general theory of deterrence is plausible; 2) there are definable relationships among all of the independent variables and the dependent variable; and 3) moral commitment to norms and peer involvement are the most significant predictors of criminal involvement and/or drug use.

Aday and Thomson (1992:425) have suggested that a broader definition of deterrence than that implied by current national drug policies is needed to be able to understand the dynamics of deterrence. In particular, they point to the importance of informal social control in the deterrence process. Findings with regard to peer involvement, though primarily supporting the importance of associations with delinquent peers, also suggest the potential power of informal social controls through

peers.

Silberman (1976) has broadened the deterrence model to include potentially powerful theories of differential association and moral commitment to norms. Further research with a sample more representative of the general population is needed. At present, some of the more frequently used national longitudinal samples of juveniles and young adults contain no items that could be identified as deterrence items (i.e., perceptions of certainty or severity of punishment). Longitudinal data are needed to more fully investigate the temporal aspects of behavior and beliefs with respect to deterrence. Although future researchers may want to consider the deterrent effects on general criminal involvement as Silberman did, it is felt that drug use should be treated as a separate dependent variable. It seems likely that not all crimes are the same, and that deterrence is affected by the character of the behavior under study.

APPENDIX I: INDEXES

I. MORALITY INDEX

Regardless of how safe or dangerous (alcohol; marijuana; cocaine) might be, it is wrong to use if it is illegal to use.

1. Alcohol = ALCL9
2. Marijuana = MARL9
3. Cocaine = COCL9

All responses were Likert-scaled as follows: 1 'strongly disagree', 2 'disagree', 3 'no opinion', 4 'agree', 5 'strongly agree'. The index is the sum of ALCL9, MARL9, and COCL9.

	Range	Mean	S.D.
Morality Index	3 to 15	9.6	3.56

Dichotomized as follows:

3 to 9   = Low Morality
10 to 15 = High Morality

II. PEER INVOLVEMENT INDEX

Out of your five closest friends, estimate how many have ever used (marijuana; cocaine).

1. Marijuana = FRIENMAR
2. Cocaine = FRIENCOC

The index is the sum of FRIENMAR and FRIENCOC.

	Range	Mean	S.D.
Peer Index	0 to 10	2.6	2.41

Dichotomized as follows:

0 to 2 = Low Peer Involvement
3 to 10 = High Peer Involvement

III. SEVERITY OF PUNISHMENT INDEX

If you were arrested and convicted for (drinking in public; possession of marijuana; selling a pound of cocaine), do you think your future would be affected negatively?

1. Alcohol = CONVALC
2. Marijuana = CONVMAR
3. Cocaine = CONVCOC

All three items are likert-scaled as follows: 1 'no', 2 'yes, a little', 3 'yes, somewhat', 4 'yes, seriously'. The index is the sum of CONVALC, CONVMAR, and CONVCOC.

	Range	Mean	S.D.
Severity Index	3 to 12	9.7	1.75

Dichotomized as follows:

3 to 9   = Low Severity
10 to 12 = High Severity

IV. CERTAINTY OF PUNISHMENT INDEX

A. What do you think is the chance that you would be arrested if you were under 21 and drinking at a bar?

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1. Alcohol = PROBALC

B. If you were selling (marijuana; grams of cocaine) from an apartment, what do you think would be the chance of getting arrested?

1. Marijuana = PROBMAR
2. Cocaine = PROBCOC

All three items are Likert-scaled as follows: 1 'no chance at all', 2 'a slight possibility', 3 'somewhat likely', 4 'almost certain'.

	Range	Mean	S.D.
Certainty Index	3 to 12	7.6	1.43

Dichotomized as follows:

      3 to 7 = Low Certainty
   8 to 12 = High Certainty

V.   DRUG USE INDEX

A.   Estimate the number of days within the past month on which you became intoxicated from alcohol.

        Recoded: 0 to 0 'Have not been intoxicated'
            All else to 1 'Have been intoxicated'

B.   About how old were you the first time you had any type of (marijuana; cocaine)?

        Recoded: Never used it to 0 'Have not used'
            All other responses 1 'Have used'

	Range	Mean	S.D.
Drug Use Index	0 to 3	1.1	.93

APPENDIX II: TABLES

Table 1
Indicator Variable Recodings

Moral commitment:	Alcohol	Marijuana	Cocaine
Strongly disagree	0	0	0
Disagree	0	0	0
No opinion	1	1	1
Agree	1	1	1
Strongly agree	1	1	1

Peer involvement:		Marijuana	Cocaine
0		0	0
1-5		1	1

Perceived severity:	Alcohol	Marijuana	Cocaine
No	0	0	0
Yes, a little	0	0	0
Yes, somewhat	1	1	1
Yes, seriously	1	1	1

Perceived certainty:	Alcohol	Marijuana	Cocaine
No chance	0	0	0
Slight chance	0	0	0
Somewhat likely	1	1	1
Almost certain	1	1	1

Table 2
Independent Indicator Variables and Three Drug Use Variables
Phi Coefficients (Unequal N's)

Offense	Moral Commit	Certainty of Punishment	Severity of Punishment	Peer Involve	Percent Commit Offense
Alcohol	-.30***	-.07	-.18***	N/A	61
Marijuana	-.36***	-.14***	-.13***	.39***	39
Cocaine	-.25***	-.08	.03	.32***	9

***p<.001

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Table 3
Independent Index Variables, Three Drug Use Variables, and Drug Use Index
Zero-order Correlation Coefficients (Unequal N's)

	MORAL	CERTAIN	SEVERITY	PEERS
DRUG USE	-.44***	-.16***	-.24***	.63***
Alcohol	-.29***	-.10**	-.17***	.35***
Marijuana	-.38***	-.14***	-.20***	.61***
Cocaine	-.27***	-.12***	-.15***	.43***

**p<.01   ***p<.001

Table 4
Zero-order Correlation Matrix for Index Variables
Total Sample (N=729)

	MORALITY	CERTAINTY	SEVERITY	PEERS
CERTAINTY	.15***			
SEVERITY	.29***	.25***		
PEERS	-.39***	-.20***	-.23***	
DRUG USE	-.44***	-.16***	-.24***	.63***

***p<.001

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Table 5
Zero-order Correlation Matrix for Index Variables
Male(N=281)/Female(N=432)
Respondents

	MORALITY	CERTAINTY	SEVERITY	PEERS
CERTAINTY	.14**/.11			
SEVERITY	.25***/.27***	.22***/.24***		
PEERS	-.36***/-.40***	-.19***/-.18***	-.20***/-.21***	
DRUG USE	-.39***/-.43***	-.12/-.16***	-.23***/-.21***	.66***/.60***

**p<.01 ***p<.001

Table 6
Mean Scores on Drug Use Index by Independent Variable Indexes

Controls	Low		High		t
	Mean		Mean		
MORALITY	1.46		0.79		10.39***
Certainty	Low	1.64	Low	.88	
	High	1.27	High	.73	
Severity	Low	1.63	Low	.98	
	High	1.25	High	.69	
PEERS	0.64		1.67		-17.60***
Certainty	Low	.74	Low	1.78	
	High	.58	High	1.53	
Severity	Low	.75	Low	1.83	
	High	.59	High	1.46	
CERTAINTY	1.26		0.95		6.77***
SEVERITY	1.35		0.89		4.49***

*** p<.001

Table 7

Base Model: Independent Index Variables Using Drug Use Index
as Dependent Variable
Multiple Regression

Index	Beta	SE Beta
MORALITY	-.207***	.031
PEERS	.533***	.031
CERTAINTY	-.013	.029
SEVERITY	-.058	.030
(Constant)	1.439	
$R^2 = .44$		

*** p < .001

Table 8

Interaction Model: Interaction Terms Using Drug Use Index
as Dependent Variable
Multiple Regression

Term	Beta	SE Beta
MP	-.005	.072
MS	-.198**	.066
MC	-.054	.070
PS	.263*	.113
PC	.264*	.106
SC	-.057	.040
(Constant)	1.277	
$R^2 = .43$		

* p < .05
** p < .01

Table 9
Drug Use Index on Index Measures of Peer Involvement and
Certainty with MoralityxSeverity Term
Multiple Regression

Index	Beta	SE Beta
MS	-.224***	.031
PEERS	.539***	.031
CERTAINTY	-.010	.029
(Constant) 1.067		
$R^2 = .44$		

*** $p < .001$

Table 10
Full Model: Regression of Drug Use Index on All Variables
Multiple Regression

	r	Beta	SE Beta
MORALITY	-.44***	-.192***	.032
PEERS	.63***	.534***	.031
CERTAINTY	-.16***	-.008	.029
SEVERITY	-.24***	-.053	.030
Gender	.19***	.066*	.029
Urbanism	-.05	-.035	.028

(Constant) 1.277***
$R^2 = .45$

* $p < .05$
*** $p < .001$

NOTES

1. Aday (1990) traces this formal/informal dichotomy to Max Weber's three types of authority: rational, traditional, and charismatic (For a more detailed discussion, see Aday, 1990 or Aday and Thomson, 1992).

2. Silberman (1976) found that severity of punishment had no effect on the dependent variables, criminal involvement and crime rate. This has been an interesting variable in the deterrence literature. Some have found severity of punishment to have a significant and important effect on criminal involvement, whereas others have found that severity of punishment is a superfluous concept (Meier and Johnson, 1977; Grasmick and Bryjak, 1980). However, Geerken and Gove (1975:501) note that severity of punishment is entangled with certainty of punishment, and although severity may not have a direct effect on criminal involvement, it has at worst an indirect relationship.

3. For the current research, it is assumed that the prevailing norm (law) is that it is wrong for college students to use drugs.

4. Silberman (1976:455) highlights the relationship between peer involvement and the threat of punishment by suggesting that the threat of peers being sanctioned is significant. He states: "The threat of punishment is an effective deterrent only when the referent is an extremely personal one, i.e., 'someone like yourself.' The arrest of others, although personally acquainted, apparently can be rationalized away; after all, they are "not like me." This would imply that it is the threat of others being sanctioned rather than their arrest which has a deterrent effect.

5. Silberman (1976:457) notes that the only proposition which systematically appears to hold true according to his findings is the first one. The others have their own sets of contingencies.

6. Grasmick and Bryjak (1980:483) provide support for this test in their own analysis of deterrence. It is their contention that any controversy which may have existed concerning the use of product terms in testing for interaction with multiple regression has been quashed by recent researchers (see e.g., P. Allison. 1977. Testing for Interaction in Multiple Regression. American Journal of Sociology 83(July):114-53).

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