Explaining Delinquency and Drug Use

by

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The National Youth Survey was initiated in June of 1975 with a five-year grant from the Center for Studies of Crime and Delinquency, NIMH. The focus was the epidemiology of delinquent behavior in the American youth population and a test of a new integrated theory of delinquency (Elliott et al., 1979). The NIMH study design called for an initial survey in 1977 with a national sample of youth aged 11 through 17 in 1976, and two follow-up surveys in 1978 and 1979 with those in the original odd-aged cohorts i.e., those 11, 13, 15, and 17 in 1976. Prior to the 1978 survey, a second grant was obtained from the National Institute for Juvenile Justice and Delinquency Prevention, OJJDP, to study the epidemiology of drug use and the relationship between delinquency and drug use among youth in the original even-aged cohorts (12, 14 and 16). As a result, the 1978 and 1979 annual surveys were jointly funded by NIMH and OJJDP and involved the total original youth panel. A continuation grant from NIMH funded the 1980 and 1981 surveys, again for the entire national youth panel. The overall study, which includes five annual surveys with the entire national youth panel selected for the initial survey in 1977, is referred to as the National Youth Survey.

This report is a final report to OJJDP and an interim report to NIMH on the explanation of delinquency and drug use, utilizing longitudinal data from the first three surveys (1976-1978). However, the results presented here represent both a joint funding effort involving OJJDP and NIMH and also a joint effort of the research staffs working on these separate grants. While

those preparing this written report are acknowledged as authors, each member of the combined National Youth Survey staff made a substantial contribution to this report. These persons are identified, together with their formal grant roles, on the title page as the National Youth Survey staff.

While there were independent research staffs for the two separate grants involved in the National Youth Survey, there was a single field staff which was responsible for preparing field materials and forms, hiring and training inteviewers, supervising field work, verifying completed interviews, tracking respondents, and editing, coding, and processing data for each survey. Catherine Bender was the field supervisor for each of the five annual surveys and is the person most directly responsible for the high quality of the NYS data set. Judy Beth Entler provided extensive editorial assistance on project reports. Others contributing to the field effort, data processing, and report preparation are listed below.

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TABLE OF CONTENTS

FIGURES

TABLES

CHAPTER ONE - AN INTEGRATED THEORETICAL PERSPECTIVE ON DELINQUENCY AND DRUG USE

Introduction

Our purpose in this report is to test an integrated theoretical paradigm developed specifically as an explanatory model for patterned delinquent behavior (Elliott, et al., 1979) and to investigate its explanatory power for drug-using behavior as well. The extension of an explanatory model for delinquency to drug use may be justified on two grounds. First, illicit drug use may be considered a specific form of delinquent behavior in that the possession of these substances involves the violation of criminal statutes and carries the risk of formal legal sanction. While alcohol is not generally defined as an illegal substance, its use by youth under a specific age violates local and state welfare codes and may result in police arrest and court adjudication as a delinquent youth. Second, there is considerable empirical evidence that the use of alcohol and marijuana, the most frequently used drugs, is part of a general deviance syndrome which involves a wide range of minor criminal acts and other forms of norm-violating behavior (Brennan, et al., 1981; Huizinga and Elliott, 1981; Jessor et al., 1968; Elliott & Ageton, 1976; Robbins & Murphy, 1967; Hindelang and Weis, 1972; Kandel, 1980; Kandel et al., 1978; Jessor & Jessor, 1977; Bachman et al., 1978). The presence of both delinquency and drug use in this general syndrome suggest a common set of causes for both types of behavior.

An Integrated Theoretical Model

The proposed explanatory model expands and synthesizes traditional strain, social control and social learning perspectives into a single paradigm which accounts for a sustained pattern of delinquent behavior and drug use. The

integration takes place at an individual level, providing an explanation for how and why individuals become involved in sustained, repetitive delinquent acts. No attempt is made to integrate these theoretical perspectives at the micro- or macrosociological levels although it is clear that both strain and control theories address the problem of delinquency at multiple levels (Short, 1979).

It is also the case that the integration requires some modification or extension of the "pure" forms of these theoretical perspectives. In each instance, the extension or modification proposed is justified on both logical and empirical grounds. In no case is the modification so severe as to essentially deny the major causal argument intended. Rather, the pure theoretical statements are viewed as partial explanations which are strengthened or enhanced by the integration. In the process of testing the integrated model, we will also examine the pure forms of these traditional explanations of delinquency and compare their independent predictive power to that of the integrated model.

The General Organization of the Report

In chapters two and three, the integration of traditional strain, social control and social learning perspectives is described and justified. Chapter four discusses the fully integrated model. The general design of the present study, the sample, data, and analysis plan are all described in chapter five. Chapter six presents the results of an initial multivariate test of the integrated theoretical model and a replication of this test. In chapter seven we examine the conditional relationship specified in the integrated model in a more precise test of the model. Finally, in chapter eight, the implications of these findings are discussed and several modifications of the theoretical

model are proposed. To simplify the description of the theoretical model and the presentation of research findings, the term delinquency will be used as a generic term which includes drug use behavior, unless the reference is specifically or exclusively to drug use.

CHAPTER TWO - THE INTEGRATION OF STRAIN AND CONTROL THEORIES

Strain Theory

Strain theory, in its simplest form, postulates that delinquency is the result of frustrated needs or wants. The earliest statements of strain theory as an explanation for delinquency viewed this frustration as resulting from a breakdown in the relationship between socially induced aspirations and socially approved ways of achieving these aspirations. Cloward and Ohlin thus hypothesized that "...adolescents feel pressures for deviant behavior when they experience marked discrepancies between their aspirations and opportunities for achievement." (1960:87) For Cloward and Ohlin (1960) and Merton (1957), this discrepancy or "strain" was experienced primarily by lower class youth who had internalized conventional success goals but were faced with limited access to these goals because of their class positions. The primary variable influencing aspiration-opportunity discrepancies was thus differential opportunity for achieving common success goals, and strain was linked directly to the class structure.

> Many lower class persons, in short, are victims of a contradiction between the goals toward which they have been led to orient themselves and socially structured means of striving for these goals. Under these conditions, there is an acute pressure to depart from institutional norms and to adopt illegitimate alternatives" (Cloward and Ohlin, 1960:105).

More recent statements of strain theory have postulated that the goal-opportunity disjunction which provides the motivation for delinquency results from variations in commitment to success goals (Simon and Gagnon, 1976) or from variations in both commitment to success goals and access to opportunities (Elliott and Voss, 1974). The significance of these new conceptualizations of the aspiration-opportunity disjunction is that

they change the expected relationship between strain and social class. Simon and Gagnon (1976) argue that the disjunction described by Merton and Cloward and Ohlin which focuses upon differential opportunities to achieve common success goals is characteristic of societies during periods of scarcity. They propose that during periods of affluence when nearly all persons have reasonable access to opportunities for achieving success goals, it is a differential commitment to traditional success goals which generates strain and a motivation for deviance among those from higher socioeconomic levels in society. The Elliott and Voss (1974) conceptualization of strain is the most general; they postulate that middle-class youth are just as likely to aspire beyond their means as are lower-class youth. While the absolute levels of both aspirations and opportunities may vary by class, the discrepancy between personal goals and conventional opportunities for realizing these goals need not vary systematically by class. This conceptualization of strain is thus logically independent of social class.

With the exception of the Simon and Gagnon formulation, all of these statements of strain theory assert that delinquency is a response to actual or anticipated failure to achieve socially-induced needs or goals (status, wealth, power, social acceptance, etc.). Those who are unable to revise or adjust their goals in the face of this failure are forced to consider unconventional alternative means. The delinquent response is thus postulated to take one of two forms: delinquent acts may in fact provide for the satisfaction of these needs which could not be satisfied by conventional, law abiding means; or delinquent behavior may constitute an attack upon the perceived external cause of the failure or the source of the frustration (Cloward and Ohlin, 1960). In either case, the individual is motivated to

violate the law because of his/her failure to satisfy personal goals or needs (which are generally encouraged and approved by the society at large) through conventional means.

Control Theory

Control theory asumes that strain is a universal state of man: all persons have frustrated wants and unfulfilled needs. This motivation to delinquency which is the critical variable in strain theories is thus a constant for control theories. The critical variable for control theorists is the strength of social controls which serve to regulate behavior and thus restrain this natural impulse to delinquency. These controls involve rewards and punishments which are expected to result from one's behavior; they may be either personal (internal) or social (external), i.e., invoked by the self or others. These rewards and punishments constitute the real or potential costs of delinquency, and it is the variability in these anticipated costs which determines one's vulnerability for delinquency.

The use of conventional or deviant means is thus dependent upon the gratification which results from these behaviors. To the extent individuals are involved in rewarding social relationships that would be jeopardized by delinquent behavior and/or anticipate personal discomfort or guilt from violating norms they believe are morally binding upon them, the costs of delinquency are very high. Conversely, if individuals have few rewarding social relationships which would be jeopardized by delinquent activity and anticipate no personal guilt or moral anxiety from such behavior, the costs are low. And since delinquent means are often more expedient means, low costs (i.e., weak controls) greatly increase the likelihood of delinquency.

The focus of control theories has thus been upon the socialization process i.e., upon differences in the extent to which the norms have been internalized, providing weak or strong internal controls, and upon the degree of integration or bonding to conventional groups and activities which determines the strength of external controls on behavior. It is not the motivation for delinquency, but the strength of the internal and external controls which is problematic.

While the focus of many early control theorists was upon the childhood socialization process and the internalization of conventional norms (internal controls), weak controls may result from other processes or conditions as well. Reiss (1951:196) identifies several conditions which result in weak controls and a vulnerability to delinquency:

> Delinquency results when there is a relative absence of internalized norms and rules governing behavior in conformity with the norms of the social system to which legal penalties are attached, a breakdown in previously established controls, and/or a relative absence of or conflict in social rules or techniques for enforcing such behavior in the social groups or institutions of which the person is a member.

In sum, weak controls may be a consequence of (1) the failure to develop internal controls during childhood; (2) the breakdown or weakening of previously established internal controls, particularly during adolescence, and/or (3) social disorganization in particular social units which results in weak external controls. In most instances, control theorists focus upon adolescent bonds to the family, school, community organizations and future work roles as the major sources of social control influencing youths' vulnerability to delinquency.

The Integration of Strain and Control Perspectives

Kornhauser's (1978) review of the historical development and logical structure of sociological theories of delinquency led her to conclude that

strain and control are both variants of social disorganization theory. While acknowledging their differences, she notes that their logical structures do not preclude their integration.

> The strain and control variants of social disorganization theory are very different, but they do not begin from such opposed premises that their combination is precluded. (Kornhauser 1978:46)

The primary difference between strain and control perspectives is that strain assumes a constant socialization outcome and variable strain whereas control theory assumes a variable socialization outcome and constant strain. Current strain models assume that all youth are adequately bonded to the family, school, and community and are committed to conventional norms. The source of delinquency lies in youths' differential opportunities or success in realizing these goals through these conventional means. In contrast, control theory assumes a constant strain and variable levels of bonding to the family, school, and community and a differential commitment to conventional norms.

In reviewing their logical structures, Kornhauser argues that the constant strain assumption is neither warranted nor necessary to control theory:

> The strain theorist rightly protests that the motivation to deviate is not in fact the same for everyone. It is, I think, plausible to assume that strain is a variable and it is not logically necessary for control theory to assume otherwise. The gratification-deprivation balance cannot really be identical for all (1978:47). . . Control theory must, I think, grant that strain is a variable not a constant (1978:48).

Granting that strain is indeed variable, Kornhauser goes on to argue that control theory is the more general perspective and that it is not necessary to consider the variation in strain, i.e., that variations in controls are adequate to account for delinquency without reference to variations in strain. Since we disagree with this conclusion, it is important to consider Kornhauser's argument in some detail.

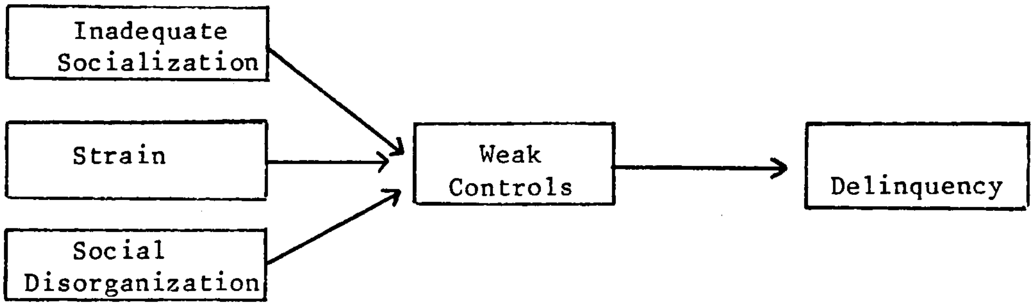
Kornhauser presents two arguments for her position that control theory can ignore variation in strain as a cause of delinquency. First, she argues that the variation in strain is relatively limited compared to variation in controls and therefore delinquency is primarily a function of social controls. Second, she argues that strain causes delinquency by weakening controls, i.e., that strain results in an attenuation of previously strong controls, and the weakening of controls causes delinquency. Strain is thus one possible antecedent cause of weak controls but adds no independent explanatory power to the control explanation of delinquency. On the other hand, weak controls effect delinquency independent of the presence or absence of strain since strain is only one source of weak controls. Control theory thus incorporates all the explanatory power of strain theory without specific reference to strain.

While we may question Kornhauser's first argument on empirical grounds (as we will shortly), it is also unwarranted on logical grounds. First, even if there were a more limited variation in strain, that fact does not logically preclude strain being an independent causal factor in delinquency. The critical question for integration is whether strain accounts for any variation in delinquency which is independent of social controls, not whether strain or bonding is the more plausible or stronger causal influence. It is thus possible to argue that strain is a cause without denying that weak controls is a stronger cause. Second, the limited variation argument does not even support the latter argument, i.e., that greater variation in bonding logically requires that it be a stronger cause of delinquency. There may be more variation in the music preferences or level of sugar intake among adolescents than in their levels of family bonding, for example, but that fact does not

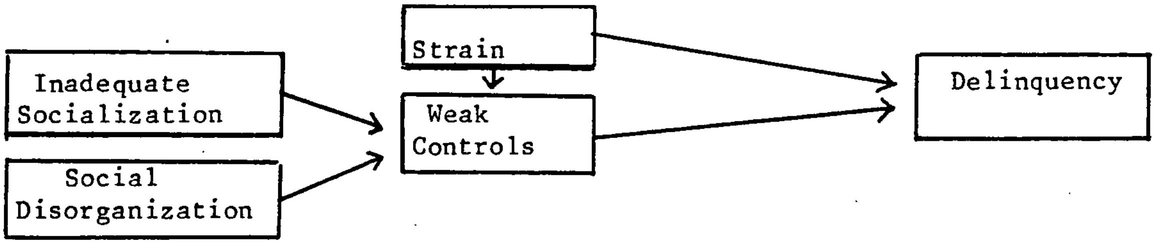
insure or logically require that music preferences or sugar intake levels be more highly predictive of delinquency than family bonding. While the variation in an explanatory variable may set a potential upper limit on the size of its predictive relationship to other variables, there is no other necessary relationship between variation in the explanatory variable and the size of its relationship to a dependent variable.

The second argument is more difficult to set aside. First we agree that strain theorists view strain as a source of attenuation on previously strong controls. Both Cloward and Ohlin and Elliott and Voss make such claims (see Cloward and Ohlin 1960:108-9; and Elliott and Voss 1974:28). We acknowledge therefore that the effect of strain is, at least in part, mediated by weak controls. But the critical question is whether the <u>entire</u> causal effect of strain works through an attenuation on controls. It is on this issue that we disagree with Kornhauser and argue for an integrated control-strain model. The difference between the pure control model postulated by Kornhauser and an integrated control-strain model is depicted in Figure 2.1.

The integrated model does stipulate that strain leads to weak controls and that part of its effect on delinquency is an indirect effect mediated by weak controls. It differs from a pure control model, however, by specifying a direct causal path from strain to delinquency. The pure control model depicted here is based upon the sources of weak control proposed earlier by Reiss (1951), in which strain leads to an attenuation of existing controls but is only one possible antecedent cause of weak social control. Inadequate socialization and social disorganization are alternative causes.



A. Pure Control Model



B. Integrated Control-Strain Model

FIGURE 2.1

We believe the integrated control-strain model is defensible on both logical and empirical grounds. On logical grounds, if one concedes (as Kornhauser does) that there is variation in both the motivation for delinquency (strain) and restraints on non-normative behavior (social controls), the youth most vulnerable to delinquency should be those characterized by the combination of high motivation for delinquency and weak restraints on this behavior. The assertion that strain sometimes produces a weakening of controls is perfectly consistent with the model's claim that the joint occurrence of strain and weak controls generates a higher probability of delinquency than either alone. In this sense, strain as a source of attenuation on controls, differs from other sources of weak controls because it simultaneously provides a motivation for delinquency. Inadequate socialization or social disorganization as alternative sources of weak controls (Reiss, 1951), provide no direct or positive motivation for delinquency.

In order to maintain logical consistency for a pure control model, Kornhauser must argue that while there is variation in motivation for delinquency, its effect on delinquency is not independent of variation in controls. This is essentially her argument when she claims that strain's effect on delinquency is totally mediated by weak controls.

Empirical Support for an Integrated Control-Strain Model

Empirical support for the Integrated Model requires that strain account for some variation in delinquency which is independent of that explained by variation in controls. While there are relatively few studies which have included both types of variables and undertaken the types of analyses necessary to address this question, those available do provide support for an integrated model as opposed to a pure control model.

First, we turn to Hirschi's analysis of the relationship between educational aspirations, educational expectations and delinquency (self-reported and official). These data (see Table 2.1) are among the most frequently cited as evidence supporting a control model as opposed to a strain model. They are particularly relevant to a comparison of the effects of strain and control since these two models postulate different relationships between aspirations and delinquency. For control theory, high aspirations represent a commitment to conventional goals and conventional lines of action--evidence of bonding which is postulated to reduce the probability of delinquency. Control theory thus predicts a simple inverse relationship between aspirations and delinquency. Strain theory, in contrast, posits a direct conditional relationship between aspirations and delinquency: High aspirations in combination with low expectations generates strain and an increased likelihood of delinquency; high aspirations with high expectations or low aspirations (regardless of expectations) involve no strain and hence no motivation for delinquency.

Hirschi claims that the data in Table 2.1 provide support for control theory but not for strain theory. First, he notes that the variation in strain is quite restricted with only 19 percent of his sample perceiving any substantial discrepancy between educational aspirations and expectations. He then concludes:

> "Frustrated educational aspirations therefore cannot be an important antecedent of delinquency in the present sample...there being insufficient variation on the independent variable to account for more than a small fraction of the variation in delinquency (1969:172)."

This argument is similar to that of Kornhauser discussed earlier. The fact that only 19 percent of the sample experienced strain while 43 percent were

TABLE 2.1

PERCENT DELINQUENT
BY EDUCATIONAL ASPIRATIONS AND
EXPECTATIONS--THE RICHMOND YOUTH STUDY*

		Educational Aspirations			
Educational Expectations		College Graduation	Some College	Less Than College	Total
College Graduation	SRD**	39(607)	--(6)	--(5)	38(618)
	Official	12(616)	--(6)	--(6)	12(628)
Some College	SRD	42(174)	44(196)	--(12)	42(382)
	Official	18(177)	18(200)	--(12)	17(389)
Less than College	SRD	58(29)	63(33)	56(151)	58(213)
	Official	13(29)	49(35)	33(159)	33(233)
Total	SRD	40(810)	46(235)	51(168)	43(1213)
	Official	13(822)	22(241)	29(177)	17(1240)

* From Table 60, p. 172, The Causes of Delinquency (Hirschi, 1969).

** SRD = one or more self-reported offenses - any offense
Official = one or more police contacts - any offense

classified as delinquent may be used to argue that the variation in strain is insufficient to account for a major portion of the variation in delinquency, but it certainly does not permit one to conclude that strain is not a cause of delinquency. In fact, we question Hirschi's assertion that the observed variation in strain limits its explanatory power to "a small fraction" of the variation in delinquency. Indeed, the variation in aspirations is not as great as that for delinquency with only 33 percent having aspirations for less than college graduation. If the delinquency classification results in 43 percent of the sample being defined as delinquent, then neither aspirations

nor aspiration-opportunity discrepancies is likely to be a major cause of delinquency in this sample. On the other hand, when Hirschi uses an official classification of delinquents, the rate of delinquency is 17 percent and either strain or control could logically account for all of the variance in this measure of delinquency. The "limited variation" argument is thus dependent upon the measure of delinquency used. The definition of delinquency employed in theoretical tests is a critical issue and one we will consider in some detail in a later section of this report.

If the relationship between strain and delinquency in these data is weak, so is the relationship between aspirations and delinquency. While the relationship between aspirations and self-reported delinquency in Table 2.1 is statistically significant, aspirations account for less than 1 percent of the variation in self-reported delinquency--hardly very compelling evidence or grounds for arguing the superiority of a control as compared to a strain perspective.[1] Given the organization of the data in the table, the relationship between strain and self-reported delinquency is not significant; but if strain is defined as having some college aspirations but not expecting to go to college, (i.e., collapsing "some college" and "college" categories), the relationship is significant (X^2=9.2; Phi=.09, $p \leq .01$) and also accounts for about 1 percent of the variance in delinquency. Both strain and aspirations are significantly related to official delinquency but again account for only a small proportion of the variation.

More relevant to the central issue at hand, these data demonstrate that variation in strain is related to variation in delinquency among those with high aspirations. Among youth aspiring to be college graduates, those experiencing strain have a substantially higher rate of delinquency than do

those with no strain; likewise among those aspiring to some college, youth experiencing strain are substantially more likely to be delinquent. Hirschi also cross-classified youth on the basis of fathers' attained education and youths' expected educational attainment. In this analysis he found that the two groups with the highest rates of delinquency were the sons of college graduate fathers who did not expect to graduate from college (1969:173). There is a clear interaction between strain and aspirations in both of these analyses.

Table 2.2 presents an identical analysis with data from the longitudinal delinquency and dropout study by Elliott and Voss (1974). In this study, the delinquency classification based upon self-reported offenses involves a serious prevalence dichotomy rather than a general prevalence dichotomy as used by Hirschi. This is because 90 percent of this sample of 2617 junior high school students (males and females) reported one or more delinquent acts on the self-report delinquency checklist. This checklist included 19 items whereas Hirschi's checklist included only six items. This raises some question about the accuracy and theoretical relevance of a delinquent--nondelinquent classification when a small number of offense items is used in the classification[2]. The use of a serious (felony) prevalence dichotomy in the Elliott-Voss study resulted in a delinquency rate which was very similar to that in the Hirschi study, (44 compared to 43 percent delinquent) although Hirschi used a dichotomy based upon any self-reported delinquency. The second definition of delinquency is identical for both studies--one or more official police contacts.

The data in Table 2.2 involve aspirations and expectations for educational goals reported by the sample in the ninth grade and self-reported

TABLE 2.2
PERCENT DELINQUENT BY EDUCATIONAL ASPIRATIONS AND EXPECTATIONS*

		Educational Aspirations			
Educational Expectations		College Graduation	Some College	Less Than College	Total
College Graduation	SRD**	38(963)	41(17)	0(1)	38(981)
	Official	6(963)	0(17)	0(1)	6(981)
Some College	SRD	43(368)	40(409)	30(22)	42(799)
	Official	10(368)	6(409)	9(22)	8(799)
Less than College	SRD	57(156)	50(234)	54(392)	53(782)
	Official	10(156)	15(234)	7(392)	10(782)
Total	SRD	41(1487)	44(660)	53(415)	44(2562)
	Official	7(1487)	9(660)	7(415)	8(2562)

* Elliott and Voss, 1974
** SRD = one or more serious (felony) self-reported offenses
Official = one or more police contacts - any offense

and official delinquency over the next three years (grades 10-12). The level of strain reported by these youth is greater than that observed for boys in the Richmond Youth Study, with nearly 30 percent perceiving some aspiration-expectation disjunction. Approximately 58 percent of these youth aspire to graduate from college. The variation in strain is thus greater in this sample than in Hirschi's sample.

The relationship between aspirations and the self-reported delinquency classification in Table 2.2 is significant (X^2=18.23, 2 DF, $p \leq .001$, V=.08) as is the relationship between strain and delinquency (X^2=4.97, 1DF, $p \leq .05$, Phi=.04). Official arrest rates are substantially lower in this study than in the Hirschi study (8 as compared to 17 percent). For this measure of delinquency, the relationship between aspirations and delinquency is not significant, whereas the relationship between strain and delinquency is significant (X^2 = 21.63, 1DF, $p \leq .001$, Phi=.09).

Except for the higher incidence of strain in this study and the failure to find a significant relationship between aspirations and police contact, the results are generally consistent with the earlier Hirschi analysis. There is again a clear interaction of strain and aspiration level on delinquency. Within each aspiration level where strain is possible, youth experiencing strain are more likely to be delinquent than youth not experiencing strain. The relationship between strain and delinquency, holding aspiration level constant, is as strong or stronger than the general aspiration-delinquency relationship. Again, the highest rates of delinquency involve youth reporting aspiration-expectation discrepancies. In one case (official delinquency) the combination of low aspirations and strain produces the highest rate of delinquency; in the other (self-reported delinquency), it is the high aspirations-high strain combination which generates the highest rate of delinquency.

Hirschi presents a similar analysis of differences in delinquency rates by occupational aspirations and expectations (1969:183). These data produce the same general results as described above, i.e., evidence of a strain-aspiration interaction within each aspiration category (where differences in strain could exist). Those experiencing strain had higher mean self-reported frequencies than those not experiencing strain.

At only one point does Hirschi acknowledge the interaction between strain and bonding variables. In a separate analysis limited to boys expecting to go to college, Hirschi reports on an interaction between parental pressure and grades: among those receiving good grades, the greater the parental pressure, the lower the delinquency; among those receiving poor grades, the greater the parental pressure, the greater the delinquency. The combination of high

educational aspirations, high parental pressure for achievement and poor school performance was associated with very high rates of delinquency; high aspirations, high parental expectations and good grades was associated with low rates of delinquency. Hirschi then acknowledges ". . . and we have again uncovered a small group whose delinquency could be interpreted as resulting from a condition of strain" (1969:177).

It is not surprising that Hirschi makes no reference to the obvious interaction in the earlier educational and occupational aspiration/expectation data in Table 2.1. His focus was generally upon a comparison of strain, control and cultural deviance models, to determine which model received the most compelling and consistent support. We have only minor quarrels with his general conclusion that his data and analyses are more supportive of control than strain theory, if they are viewed as competing explanations. However, Hirschi's data appear to be even more supportive of an integrated control-strain model. It appears that the combination of strain and weak controls could account for more variation in delinquency than either a pure strain or control model alone.

In sum, these data from Hirschi (1969) and Elliott and Voss (1974) while not definitive, do provide support for an integrated control-strain model: 1) the explanatory power of the control and strain variables were generally similar;[3] 2) There was obvious variation in strain within levels of bonding and this variation was systematically related to variation in delinquency, and 3) the combination of strain and weak controls produced the highest probabilities of delinquency in three of the four analyses[4]. All of these findings are contrary to Kornhauser's argument and the claims of a pure control model.

There are a number of other studies which have examined the relationship between educational (and occupational) aspirations, expectations and delinquency (Spergel, 1967; Elliott 1962; Short et al., 1965; Short, 1964; Stinchcombe, 1964; Wiatrowski, 1978). In general, the results of these studies are similar to those of Hirschi and Elliott and Voss reviewed above; high rates of delinquency were typically observed for both the low aspiration-low expectation and the high aspiration-low expectation conditions (See Liska, 1971). Thus, there is little support in this body of research findings for either a pure strain or a pure control model. The findings are, however, generally consistent with an integrated control-strain model.

A problem with the previous analyses is that they involve a single variable (aspirations) representing a single dimension of social control (commitment to conventional goals). A more definitive test for an independent effect of strain requires a more general test of control theory in which multiple dimensions of social control are considered along with strain variables. There are several such analyses involving multiple regression and path analysis approaches to determine the independent effects of strain given a set of control variables.

Cernkovich (1978) examined the predictive utility of pure strain and control models as well as an integrated model. The analysis was limited to four variables: a measure of SES, a scale of perceived blockage to conventional goals (strain) and two scales representing social control variables. The delinquency measure involved a thirty item self-reported delinquency checklist which was scored so as to take into account both the frequency and seriousness of offenses. Cernkovich completed a series of stepwise regression analyses in which the order of strain and control

variables as predictors was reversed. Based upon these analyses he concluded that strain and control as models each account for significant, though small proportions of the variance in delinquency (strain 8 percent; control 13 percent). Further, when control variables were entered into the stepwise analysis first, the addition of the strain variable produced a small but significant increase in explained variance. This stepwise procedure provides a rather conservative test of the independent effects of strain since all shared variance was assigned to the control variables. But these data clearly support an integrated model: 1) there was a small but significant independent effect of strain on delinquency and 2) the combined effect of strain and control variables accounted for more variance in delinquency than did either a pure strain or control model. Based upon these data, Cernkovich suggests an integrated model, which is very similar to that proposed here, in which strain causes delinquency both directly and through an attenuation of social controls.

Meade and Marsden (1981) also tested an integrated theoretical model which included strain, social control and differential association variables. This study, based upon the Illinois statewide survey in 1972, involved a stratified probability sample of 3110 youth aged 14-18. Social control variables included measures of involvement and identification with parents, school, and religion, as well as a measure of norm attenuation reflecting the degree of tolerance for deviant behaviors.[5] The strain variable involved a three item scale reflecting estimates of achievement or success chances. The delinquency measure was a 30 item self-report checklist. Three offense subscales were employed in the analysis based upon a factor analysis of the total set of offenses: 1) theft and violence, 2) drug and 3) status offenses. These scales involved a prevalence measure weighted to take into account different periods of risk.

The zero order correlations (r) between strain and the three measures of delinquency ranged from .10 to .21, the relationship being strongest for theft-violence offenses. The social control composite correlations ranged from -.19 to -.32 with the strongest relationship involving the status offense scale. Norm attenuation correlations with delinquency ranged from .19 to .36 and the strongest relationship was with the drug scale. The strength of strain and control variables thus varied by the type of delinquent offenses involved.

In a path analysis involving all variables as predictors of theft-violence offenses, both strain and control variables had weak but significant independent effects. Further strain had a significant indirect effect which was exerted primarily through norm attenuation. When the drug or status offense scales were the dependent variable, there were no significant direct effects for strain; however in both cases, strain had weak but significant indirect effects, primarily through norm attenuation. In a final path analysis employing the general delinquency measure (all offenses) strain again had weak, but significant direct and indirect effects.

Based upon this analysis, Meade and Marsden recommend that all of the "...hypothesized causal antecedents of delinquency involvement be retained within a mixed model of delinquency causation (1981:24)." These data thus offer support for both causal paths proposed for strain in our integrated model; a direct path and an indirect path through attenuated social controls. This latter finding suggests that the impact of strain on social controls is primarily upon the belief dimension, attenuating one's commitment to conventional norms. Strain was not related to involvement or identification with parents, school, or religious activities. Further, these data indicated

that strain and weak controls, when considered as independent causes, are related to different types of delinquent activity; weak controls are predictive of status offenses and strain is predictive of theft and violence. These findings together with the finding that strain is partially mediated by weak controls suggest that the more serious forms of infraction may require both a motivation for delinquency and weak controls.

Eve (1978) utilized a slightly different approach to assess the interaction of strain, control and culture conflict variables in the explanation of delinquency. This study involved 300 11th and 12th graders in a suburban high school. Two measures of deviance were used: a traditional deviance scale comprised of six offense items including such things as cheating on exams, skipping classes, and fighting; and a measure of drug use. Multiple measures of strain and social control were utilized. The strain measures included economic strain, educational strain, and strain relative to expected marital status and school grades. Twenty-three social control measures were designed to represent Hirschi's (1969) four dimensions of the social bond: attachment, belief, commitment and involvement. The three strongest strain variables were combined into a strain index and the seven strongest control variables were combined into a control index. A six item scale reflecting the degree of adherence to the youth subculture was also used in the analysis as an index of culture conflict.

Eve reports that all three of these indices were significantly related to both measures of deviance, with the control index being the strongest predictor. He then considered the hypothesis proposed by Kornhauser that the relationship between strain and delinquency was explained by the level of social control. He tested this hypothesis by controlling for the level of

social control and re-calculating the correlation (r) between strain and deviance. The results of this test indicated that partialing on level of control specified the general relationship between strain and the traditional deviance scale ($r=.25$, $p \leq .001$); among those with strong controls the correlation was .11 ($p \leq .001$), among those with weak controls, the correlation was .31 ($p \leq .001$). The relationship between strain and deviance was thus substantially weaker, but still significant, among youth with strong controls. Among those with weak controls, the strain-deviance relationship was increased substantially relative to the general relationship.

These findings are clearly at odds with Kornhauser's position. Given her argument we would expect both conditional relationships to be non-significant indicating that the general strain-deviance relationship was explained or interpreted (Hyman, 1955) by differences in control. The finding that partialing on level of control specified the general relationship is consistent with the expectations based upon an integrated model.

When drug use was the dependent variable, the conditional relationships both declined. The general correlation between strain and drug use was .21 ($p \leq .001$); among those with strong controls, this correlation was .02 (NS); among those with weak controls it was .19 ($p \leq .03$). These findings are partially supportive of Kornhauser's position. Among those with strong controls, variation in strain was unrelated to drug use. However, variation in strain continued to be significantly related to drug use among those with weak controls. With regard to drug use, the results are thus mixed and only partially supportive of an integrated model. Nevertheless, Eve concluded:

> "It is apparent that all three theoretical perspectives account for some significant proportion of the variation in traditional high school deviance as well as drug use. Thus the attempt in recent years to prove one theory correct but the other two wrong may be non-productive (1978:9)."

Summary

There is little empirical support for Kornhauser's contention that the effects of strain are entirely mediated by weak controls and that strain has no unique or independent causal influence on delinquency beyond that exerted by weak controls. On the contrary, there is substantial evidence that strain has an independent causal effect on delinquency and when combined with control variables in an integrated model, results in an increased predictive utility.

The integrated control-strain model received the most consistent support when the dependent variable involved more serious forms of delinquency; strain was less likely to account for any unique variance in drug use or minor offenses. But when more serious forms of delinquency were involved, the addition of strain variables increased the predictive power of the model. Krohn and Massey (n.d.) in a comprehensive multivariate test of control theory also note that a pure control model is less efficient in explaining more serious forms of delinquency (as compared to relatively minor forms) and they argue that this difference is not a statistical artifact related to the variances of these two delinquency measures. Burkett and White (1974), Kelly and Pink (1973) and Johnstone (1981) also report that bonding variables have a more direct influence on minor offenses than serious ones. In any event, strain variables contribute some unique explanatory power when either a general or a serious measure of delinquency is used as the dependent variable.

It also appears that part of the effect of strain is mediated by weak controls, as stipulated in the integrated model, i.e., that there is both a direct and an indirect causal path from strain to delinquency, the latter going through weak controls. We thus conclude, on both logical and empirical grounds, that strain and control models can be successfully integrated into a more general model which has greater predictive efficiency than either pure model alone.

At the same time it must be acknowledged that the overall predictive efficiency of the integrated control-strain model is still relatively weak. Clearly there is room for improvement over this model. In our earlier research we attempted to integrate strain and social learning perspectives and found that the inclusion of social learning variables added substantially to the predictive power of strain variables (Elliott and Voss, 1974). Several others have attempted to integrate social control and social learning perspectives (Meade and Marsden, 1981; Braukman et al., 1980; Johnstone, 1981; Akers, 1977; Conger, 1976, 1980; Linden and Hackler, 1973; Johnson, 1979). and have found that social learning variables also add substantial explanatory power to traditional control variables. Our own prior experience with tests of theoretical models in conjunction with these recent attempts by others to to test integrated models, led us to consider an integration of all three perspectives, i.e., strain, social control and social learning. In the next chapter we review social learning theory, the logical problems involved in integrating this perspective with strain and control perspectives and present the empirical evidence for an integrated strain-control-learning model.

NOTES

1. Statistical significance is based upon a Chi Square test with $p \leqslant .05$. Variance explained is estimated by squaring the Phi Coefficient for dichotomized variables.

2. National prevalence estimates indicate that over 80 percent of American youth report one or more offenses when a comprehensive self-report measure is used (Gold and Reimer, 1975; Elliott et al., 1981).

3. In the Hirschi analyses the time ordering of delinquency and aspirations/expectations variables is the reverse of that postulated theoretically, i.e., the self-reported delinquency measure reflects acts occurring in the year prior to the point at which aspirations and expectations were measured. The official measure reflects police records in the two years preceding and one year after the measure of aspirations and expectations. In the Elliott and Voss study, the measures of aspirations and expectations were obtained when the cohort was in the ninth grade and the delinquency measures (self-report and official) reflect delinquent acts occurring in the tenth to twelfth grades. With one exception, the strength of the relationships examined were as strong or stronger in the Elliott-Voss study where aspirations and strain were in the correct predictive position. The exception involves the aspiration-official delinquency relationship which was not significant in the Elliott-Voss study but significant in the Hirschi study. In all cases the relationships were weak, with Phi or Contingency values ranging from .04 to .15.

4. Hirschi's conclusion from his data is clearly at odds with that presented here. He states (1969:185): "Discrepancies between the students' hopes and expectations are either unrelated to delinquency or are related in the direction opposite to that which these theories (strain) lead us to expect." Yet, the only analyses he presents involving direct measures of aspiration-exectation discrepancies are those discussed here, and there is no evidence here that those experiencing strain had lower rates of delinquency than did those with no strain, either in general or within aspiration categories. His conclusion thus seems unsupported by his data.

5. Meade and Marsden combined the parent, school and religion measures into a single composite which they called social control. Norm attentuation was considered a separate construct in their theoretical model, but we consider it here as another dimension of social control.

CHAPTER THREE - THE INTEGRATION OF STRAIN, CONTROL AND LEARNING THEORIES

Social Learning Theory

In contrast to pure strain and control perspectives, social learning theory assumes neither a constant motivation for crime nor a constant (conventional) socialization outcome. There is thus no inherent tendency toward either conformity or deviance from this perspective. Both types of behavior are viewed as outcomes of variations in the socialization process which result in differential social reinforcements for conventional and deviant behavior. From this perspective, delinquency is the result of a direct socialization to deviance. Youth are not pushed into delinquency by strain or unable to resist a natural impulse toward delinquency because of weak social controls; rather, they observe and learn in group interaction that some delinquent behaviors are rewarded by the group, and that these rewards outweigh the potential costs or punishments associated with these behaviors.

While most social groups have a conventional orientation and provide social reinforcements for conforming behavior, others have an orientation which tolerates or encourages delinquent behavior (hereafter referred to as delinquent groups). These latter groups provide a setting in which attitudes, motives, and rationalizations which tolerate or encourage delinquency are learned; where these behaviors are modeled; where those circumstances which facilitate or inhibit a successful delinquent performance are identified; and where social rewards and reinforcements are provided for these acts (Sutherland, 1947; Akers, 1977; Burgess and Akers, 1966; Conger, 1976; Bandura, 1969; Bandura and Walters, 1963; Rotter, 1954).

Most social learning theorists acknowledge that there are both social and nonsocial rewards and punishments. Yet the primary focus of most theoretical statements is upon social interactions or exchanges in which the real or anticipated actions and responses of other persons or groups provide the reinforcement for behavior. For the most part, nonsocial experiences of the individual are given meaning by these social exchanges, i.e., individuals come to perceive their experiences as rewards or punishments in the light of the group's reactions or responses to them. Nonsocial experiences are thus mediated by social exchanges within the group.

Those individuals and groups that control the major sources of rewards and punishments during childhood and adolescence (i.e., the family, the school and the peer group) are postulated to have the greatest influence upon adolescent behavior (Sutherland, 1947; Akers, 1977; Akers et al., 1979). It is the behavioral and normative orientations of these groups and the types of reinforcements learned in each of these settings which are critical for the generation of delinquent or conforming behavior during adolescence. For the most part, neither the family nor the school is seen as a deviant learning context, i.e., as providing a direct socialization to delinquency; with few exceptions, both are quite conventional in their normative orientations and types of behavior modeled and reinforced (Kornhauser, 1978; Zigler and Child, 1969; Kohn, 1959; Eve, 1975; Hirschi, 1969; Lerman, 1968)[1]. The primary deviant learning context is the adolescent peer group; the greatest variation in normative orientations, delinquent behavior patterns, and social reinforcements for delinquent behavior are found in this social context.

This is not to say that the individual's experiences in the family and school are always supportive of conventional behavior. Individuals'

experiences in these conventional contexts may, in fact, provide little positive reinforcement for conventional behavior and may provide reinforcement for deviant behaviors even if there is no modeling of these behaviors by these socializing agents (e.g., failure at school may support cheating on exams even though this is not modeled or approved of by teachers). Likewise, exposure to delinquent groups may result in a set of negative reinforcements for delinquent acts. Thus, learning theory does not postulate a uniform, all powerful socializing impact of the group on the individual. But without some exposure to delinquent behavior patterns and some positive social reinforcements for these behaviors, delinquent acts are unlikely to be initiated and even less likely to be maintained over time. Both conforming and deviant behavior patterns are maintained by social reinforcements.

In sum, learning theory postulates that there is a direct socialization to delinquency primarily within adolescent peer groups. While there are obvious variations in socialization experiences in other contexts, it is primarily the variation in exposure to delinquent behavior patterns in the peer group which results in 1) differences in the range and balance of delinquent and conforming behaviors in the individual's behavioral repertoire, 2) differences in the reinforcement expectations for delinquent and conventional forms of behavior, and 3) differences in the perception of the contingencies associated with these reinforcements. Individual patterns of delinquent behavior are thus initiated and maintained by social reinforcements for these behaviors provided by individuals and groups in the larger society.

The Integration of Strain, Control and Learning Theories

The historical tradition of social learning theory is clearly different from that of strain and control theories (Kornhauser, 1978; Akers, 1977;

Conger, 1980). Yet there are some similarities in the basic assumptions of control and learning theories. First, both view delinquency as the result of variations in socialization experiences. Both theories assert that the most important source of controls or reinforcements are found in the web of social relationships. Second, both view behavior as resulting from a rational evaluation of the relative costs and rewards associated with particular acts. Thus both theories employ some version of differential costs or reinforcements resulting from variations in bonding or socialization as an explanation for behavior. The mechanism which maintains conforming behavior is the same for both--more positive and/or less negative consequences for conforming as compared to deviant acts. Conger (1980) thus notes that the delinquency prevention strategies suggested by control and learning theories are identical: both involve strengthening social bonds to conventional groups and activities so as to increase positive reinforcements for conforming behavior and negative reinforcements for delinquent behavior.

While the explanations for conforming behavior are similar, there is a clear difference in the explanations for deviant behavior. Control theory assumes a natural motivation to deviance; delinquency occurs because of weak or non-existing bonds to conventional norms and groups and the resulting absence of conventional restraints on behavior. The only recognized source of bonding or control involves conventional socializing groups and institutions; the only recognized source of social reinforcements for behavior are conventional social groups and institutions.

In contrast, learning theory postulates the presence of both conventional and deviant socializing agents, both conventional and deviant learning environments, and bonding to both conventional and deviant groups. The same

basic socialization processes operate in both learning contexts. The individual may become bonded to either conforming or deviant groups and as a result may receive either positive or negative social reinforcements for deviant behavior. There is no need to assume an inherent or natural predisposition to deviance since deviance is learned and maintained in the same way that conforming behavior is learned and maintained.

While both learning and control theories view delinquency as a result of variations in socialization, the specific source of variation is thus different. For control theory, the content of socialization is uniformly conventional and the variation is in how well the socialization process works; socialization is " . . . always more or less effective, never perfect" (Kornhauser, 1978:39). Thus youth vary in their ability to learn, internalize norms and maintain the personal relationships required for social integration (social disability argument); parents vary in their ability or skill for adequately socializing their children (defective socialization argument); and there are variations in social conditions and circumstances, some of which are more favorable to learning, internalization, and social integration than are others (the social disorganization argument). For learning theory, it is variation in the content of socialization which accounts for delinquency; it is variation in exposure to delinquent and conforming groups and variations in what is learned, internalized, and socially reinforced which is critical for the explanation of delinquency. While learning theorists do not deny variation in the effectiveness of socialization, they do not consider this source of variation to be the major cause of delinquency since it may characterize the socialization process in either conventional or deviant contexts.[2]

The resolution of this difference is critical to an integration of control and learning theories. Is delinquency the result of a defective socialization in conventional groups which results in weak restraints on an inherent predisposition to delinquency?; or are delinquents adequately socialized youth who have been exposed to delinquent as well as conventional behavior patterns, who have developed stronger bonds to delinquent than conventional persons and groups, and who have learned that under some circumstances there are more social rewards for delinquent than conforming behavior?

Our integrated model takes the latter perspective, i.e., that delinquency is the result of a differential bonding to conventional and delinquent groups. Such a position requires a modification in the pure form of control theory so as to take into account the orientation of the group to which one is bonded; i.e., youth may be strongly bonded to conventional groups with little or no modeling of delinquency and uniformly negative reinforcements for this type of behavior, or they may be more strongly bonded to groups in which delinquent behavior is frequently modeled and positively reinforced. Given our earlier position that the family is a conventional learning context and the adolescent peer group is the primary setting where one is exposed to pro-delinquent influences there is a logical time ordering in the experiences of youth in these two social contexts. One's bonding relationship to conventional groups particularly the family, is thus largely determined prior to one's exposure to delinquent peer groups, and the strength of these bonds may well be a causal factor in the selection of adolescent companions or the recruitment of the individual by deviant groups. Given this life stage sequence we propose that bonding to delinquent or conventional peers is conditioned by the strength of one's prior bonding to conventional norms and

groups. At the same time, the integrated model asserts that weak conventionsl bonds, by itself, is insufficient to cause a sustained involvement in delinquent behavior and that it is the joint occurrence of weak bonding to conventional groups/norms and strong bonding to deviant persons and groups which maximizes the probability of a sustained involvement in delinquent behavior. Only under this set of circumstances is the individual both free from conventional restraints and positively rewarded for delinquent acts.

Logical Support for the Integration

There are logical and empirical grounds for the proposed modification of control theory. First, control theory's assumption of a constant motivation for deviance is an unreasonable assumption. We noted earlier in our discussion of integrating strain and control theories that Kornhauser (1978:47) acknowledges that it is more reasonable to assume that the motivation for delinquency is not the same for everyone. Further, the empirical evidence presented earlier provided no empirical support for a constant motivation assumption. Finally, Hirschi's (1969) test of control theory led him to this same conclusion:

> The theory underestimated the importance of delinquent friends; it overestimated the significance of involvement in conventional activities. Both of these miscalculations appear to stem from the same source, the assumption of 'natural motivation' to delinquency. If such natural motivation could legitimately be assumed, delinquent friends would be unnecessary and involvement in conventional activities would curtail the commission of delinquent acts. In other words, failure to incorporate some notions of what delinquency does _for_ the adolescent probably accounts for the failure of the theory in these areas (1969:230).

Clearly then, the natural motivation assumption is untenable and control theory must be modified to account for variation in positive motivation for delinquency. The acknowledgement that youth may become bonded to groups in

which delinquent behavior is socially rewarded provides an explanation of what delinquency does _for_ youth. Just as bonding to conventional groups provides positive rewards for law-abiding behavior, bonding to delinquent groups provides positive rewards for delinquent behavior.

Second, a long-standing logical criticism of pure control theory has been that weak bonds to conventional groups and an absence of restraints on behavior, by itself, cannot account for the specific form or content of any resulting behavioral adaptation (Cohen and Short, 1966). Why do some youth with weak conventional bonds turn to crime or drug use, others to various types of unconventional but legal behavior and still others maintain an essentially conforming pattern of behavior? The natural motivation assumption fails to account for the variations in behavior among those with weak bonds to conventional society. The argument that delinquents have become more strongly bonded to delinquent than conventional groups does provide an explanation for this variation. Not all youth with weak bonds to conventional groups are expected to adopt a pattern of behavior which includes delinquent acts; only those who subsequently become bonded to groups which provide positive reinforcements for these acts are predicted to adopt a delinquent behavior pattern.

If control theory is modified to acknowledge variation in the content of socialization in addition to variation in the effectiveness of socialization, the relationship of each type of variation to delinquency must be explicated. Figure 3.1 indicates the expected outcomes for the combined effects of these two sources of variation in simplified form. As noted in Figure 3.1 the effectiveness of socialization varies in both conventional and delinquent learning contexts. Those factors identified by control theory as contributing

Deviant Socialization Agents	Conventional Socialization Agents	
	Strong Bonds	Weak Bonds
Strong Bonds		Sustained Delinquent Behavior
Weak Bonds	Sustained Conforming Behavior	Occasional Non-Serious Delinquent Behavior

Expected Behavioral Outcomes by Variation in the Content and Effectiveness of Socialization

Figure 3.1

to ineffective socialization should operate equally in both contexts. Frustrated personal needs or goals, unskilled or inadequate socializing agents, social disabilities in particular youth, and social disorganization in the learning context (e.g., unstable membership, weak leadership structure, strong environmental stress, etc.) should all contribute to low bonding, whether the socialization context is conventional or deviant.

Figure 3.1 indicates that the youth most likely to engage in sustained delinquent behavior are those with weak bonds to conventional groups and strong bonds to groups with a delinquent orientation. Likewise, those least likely to engage in delinquent behavior are those with strong bonds to conventional groups and weak or non-existing bonds to groups with a delinquent orientation. In the first case, those behaviors which are positively rewarded by the group include some delinquent acts (as well as many conventional acts); in the second case, the behavioral set which is positively rewarded is not likely to include any delinquent acts. However both types of youth are integrated into a web of social relationships and are receiving positive social reinforcements for their behavior.

Those characterized by weak bonds to both conventional and delinquent groups have little positive reinforcement for either delinquent or conventional behavior. Such youth are marginal to all social groups and institutions. While they may not be receiving many positive reinforcements for conventional behavior, neither are they receiving positive reinforcements for delinquent behavior. There may be some occasional exploratory involvement in non-serious forms of delinquent behavior, but there is no informal or formal group mechanism to maintain any sustained involvement in such behavior, particularly with regard to the more serious forms of delinquency which are

more likely to result in punitive sanctions from the police and court. In the absence of informal constraints or rewards from primary group relationships (which are the most powerful determinants of behavior) more formal control mechanisms present in the community (i.e., the police, school officials, and courts) remain and should serve to constrain delinquent behavior. There are no social rewards to offset the potential costs of delinquency for such youth, and if non-social rewards are in fact mediated by social exchanges, there are no substantial benefits which can be derived from delinquent acts. We do expect some occasional minor violations from weakly bonded youth because the potential risks and costs are very low but no serious delinquent acts are expected nor any sustained pattern of involvement in non-serious acts.

Finally, the integrated model postulates on logical grounds that youth cannot be strongly bonded to both conventional and delinquent groups. Control, Strain and Learning theories are all rational models, i.e., they all assume a rational view of man. Since our view of bonding includes the internalization of group norms and beliefs as well as involvement and commitment to these groups, strong bonding to both conventional and deviant groups over an extended period of time necessarily involves a dissonant state. It might be that some youth could maintain strong bonds to both conventional and deviant groups by a psychological and social compartmentalization of their lives but we believe this condition is relatively rare. It is much more likely that empirical evidence of this condition reflects a temporary phase during a period of shifting commitments. In any case, there is no logical prediction about delinquent behavior for those falling into this class. Questions about the numbers of youth who might be characterized as maintaining strong ties to both conventional and deviant groups and for how long are empirical questions which must be addressed by longitudinal research.

Empirical Support for the Integration: Direct Socialization to Delinquency

Moral Beliefs. The integration of control and learning theories which acknowledges variation in both the strength and normative orientation of bonding raises a number of empirical questions. First, is there any evidence for the direct socialization position; are there groups which provide positive reinforcements for delinquent acts?

This question should not be confused with the question about the reality of delinquent subcultures. A social learning model, while similar in some respects to a cultural deviance model, (i.e., both posit a direct socialization to deviance) is not dependent upon the presence of a delinquent subculture, i.e., a subculture which endorses values in direct opposition to those endorsed by conventional society, where delinquent acts are viewed as morally superior to conforming acts and prescribed by the subcultural values. There is little research evidence that delinquent youth see their delinquent behavior as morally superior to conventional behavior; or that they personally espouse values which are truely oppositional to those of conventional society (Short and Strodtbeck, 1965; Hirschi, 1969; Kornhauser, 1978; Michael, 1963; Conklin, 1971; Rossi et al., 1974; Empey and Lubeck, 1968; Buffalo and Rogers, 1971; Gold, 1970; Lerman, 1968; Jensen & Rojek, 1980). But research does document the presence of delinquent youth and peer groups in which delinquent attitudes, skills and behavior are encouraged, rewarded, and modeled.

While there is little evidence that delinquent groups directly challenge the ultimate "rightness" or moral superiority of conventional values and behavior, socialization processes in such groups do undermine the significance and salience of moral evaluations as determinants of behavior. This is accomplished in several ways. First, there is evidence that delinquent groups

view the moral dimension of evaluation as irrelevant or inapplicable to their circumstances. Suttles found that moral evaluations are considered irrelevent to slum life:

> The subculture of the slum does not consist of moral evaluations that overturn the cannons of conventional morality. Slum subculture lacks an evaluative dimension and consists instead of cognitive orientations sought in a quest for order when the precepts of conventional morality are inapplicable (Suttles, 1968 as cited by Kornhauser, 1978:224).

Suttles notes that gang boys in slum areas do not view criminal acts as "desirable" but rather as inevitable, a routinely occurring fact of life. If asked whether these criminal acts were "right" or "wrong" these youth would probably report that they were "wrong," but such an evaluation would have little relevance for their involvement in such behavior. The Schwendingers (1967) also report that when delinquent youth were asked to argue against the commission of an assault or robbery, they employed tactical (e.g., "will get caught") rather than moral arguments. Non-delinquent youth were much more likely to use moral arguments as reasons for not committing crimes. Buffalo and Rogers (1971) study of inmates in training school also suggests that moral evaluations of behavior may be irrelevant for delinquent youth. These youth were presented a series of hypothetical situations and asked 1) what they <u>should</u> do and then 2) what they <u>would</u> do. Their responses to the first question for the most part reflected conventional moral evaluations, yet their responses to the second question often involved delinquent acts. The youth were not unaware of the conventional moral evaluations, but such evaluations did not appear to be a major determinant of their anticipated behavior.

Second, there is some evidence that delinquent youth neutralize moral evaluations of their behavior on the grounds that their situation or circumstances excuse or justify this type of act (Matza, 1964; Ball, 1966;

Hirschi, 1969; Hindelang, 1973; Minor, 1981). In the only predictive test of the relationship between neutralizing beliefs (excuse acceptance) and subsequent delinquent behavior, Minor (1981) found that those youth accepting excuses for delinquent behavior were more likely to engage in subsequent delinquent acts. This relationship was strongest among youth who expressed moral disapproval of the delinquent act in question, but was also found for those who did not disapprove and who had engaged in that behavior previously. Minor concludes that acceptance of excuses for delinquent acts changes one's moral evaluations of delinquent acts over time, i.e., those accepting these excuses for delinquency subsequently become less disapproving of these acts. The fact that excuse acceptance was related to subsequent delinquency for those who did not disapprove of these acts led Minor to suggest . . ."that neutralizing excuse may not only allow deviance, but also encourage it (1981:313). We suggest that excuse acceptance is a part of the socialization experience in delinquent groups and serves to encourage delinquent behavior as an expected and approved outcome under certain conditions.

Third, there is evidence of a heirarchy of values among delinquent youth in which both conventional and delinquent abilities and behaviors are positively valued. The fact that virtually all adolescent groups when asked to evaluate conforming and deviant acts, acknowledge the moral superiority of conforming behavior, does not necessarily imply that delinquent acts are not valued or are negatively valued. A number of studies indicate that delinquent skills and behaviors are positively valued by delinquent groups (Short and Strodtbeck, 1965; Lerman, 1968; Wilson et al., 1965; Hindelang, 1970, 1974; Austin, 1977; Kornhauser, 1978; Minor, 1981). For example, Lerman (1968) asked youth from a New York slum area to choose the ability they most admired

(now and 2-3 years ago) from a list which included both conventional (e.g., to get good grades; to do well in the job world) and deviant abilities (e.g., to make a fast buck; to make connections with a racket). While getting good grades had the highest overall ranking among these youth at both times, 15 percent chose a deviant ability for the present and 26 percent chose a deviant ability for the earlier period. Further, admiring a deviant ability was related to a youth's involvement in delinquency. More relevant to the issue of positive reinforcement for delinquent acts, respondents were also asked how much their friends admired these abilities. A majority of these youth perceived that 5 of the 6 deviant abilities (the exception being making connections with a racket) were attractive to their friends. Boys who perceived that their friends admired deviant abilities were more likely to have been involved in delinquent behavior than were those who perceived little admiration for these abilities by their friends. As a group, these youth ranked good grades most highly but there were a subset of youth who valued deviant abilities most highly and more importantly, most youth perceived that their friends valued these deviant abilities. The perception that their friends value "making a fast buck," "being hard and tough," "finding kicks," and "outsmarting others" suggests a perceived social approval and reward for a number of delinquent acts (e.g., petty theft, simple assault, alcohol and drug use, con games, etc.).

Short and Strodtbeck (1965) also found that gang and non-gang boys evaluated conventional images (e.g., works for good grades and saves his money) equally highly. While both groups evaluated conventional images higher than deviant images, gang boys rated the deviant images (e.g., makes easy money off pimping and uses drugs) higher than did the non-gang boys. In sum,

it appears that the hierarchy of values is different for delinquent and non-delinquent groups. Both groups evaluate conventional goals and skills similarly. They differ on their evaluations of unconventional goals and skills with delinquent groups placing more value on these goals and skills than non-delinquent groups. It appears that delinquent persons and groups endorse both conventional and unconventional values whereas non-delinquent persons and groups endorse only conventional values.

While subcultural theories place a great emphasis upon the moral dimensions of beliefs, neither social learning nor control theories view this dimension of bonding as the only, or even a major determinant of behavior (Jensen & Rojek, 1980; Linden and Hackler, 1973; Akers, 1977; Langer, 1976). Even if moral evaluations were relevant to behavior in delinquent groups, we would not expect this particular aspect of the belief bond to mediate all bonding influences on behavior. In fact the available evidence suggests that compared to the other dimensions of bonding, the belief dimension of bonding is one of the weaker predictors of behavior (Hirschi, 1969; Krohn and Massey, n.d.; Johnson, 1979; Johnstone, 1981; Empey, 1978; Meade and Marsden, 1981). Also, from a learning perspective the knowledge that one's behavior will be evaluated by others as "good" or "right" is only one of a number of possible social rewards and reinforcements for behavior. Conger thus notes:

> A social learning view is not antithetical to the notion that such beliefs (moral norms) should decrease the chance of juvenile deviance, but they certainly would be considered secondary to attachment and commitment in their influence (1980:133).

Clearly, involvement, attachment, and commitment to conventional or delinquent groups have relevance for delinquency irrespective of what an adolescent personally believes to be right or wrong. Herein lies a critical difference

between cultural deviance theories and social learning/bonding theories. One thing is clear: many adolescents report involvement in delinquent acts even when they acknowledge that such acts are morally wrong (Jensen, 1972; Hindelang, 1974; Minor, 1981; Jessor and Jessor, 1977; Buffalo and Rogers, 1971; Jensen and Rojek, 1980). Socialization by delinquent persons and groups appears to attenuate the influence of personal moral evaluations on behavior but not reverse them. A number of studies indicate that peer influences override personal beliefs and have a stronger influence on behavior (Wheeler, 1967; Briar and Piliavin, 1965; Luckenbill and Sanders, 1977; Liska, 1974). In any case, the explanation for delinquent behavior appears to depend more heavily upon other dimensions of belief, group processes, and types of social reinforcements.

Other Dimensions of Belief. While delinquent acts are not perceived as normative in a moral sense, delinquent youth do perceive that such behavior is normative in a statistical sense, i.e., they believe that most youth are involved in criminal acts. While crime may not be viewed as moral behavior, it is nonetheless expected behavior. Gold (1970) asked a normal sample of youth to estimate the percent of their friends and all youth who commit specific delinquent acts. Gold notes that nearly all respondents attributed more delinquency to their peers than they actually committed. He also found that the more delinquent a respondent, the greater the overestimate of delinquency among all youth. For those involved in delinquent behavior, delinquent acts were perceived to be very frequent among all adolescents. In fact, delinquent youth typically saw themselves and their friends as less delinquent than teenagers in general. Gold suggests that delinquent youth justify their delinquent acts by perceiving that they are not much different

from other teenagers in this regard. He goes on to note that this distorted perception may result from the fact that their friends are in fact more delinquent and they assume that their friends' behavior was typical of other adolescents. Buffalo and Rogers (1971) report a similar finding, noting that delinquents in their sample perceived that "most boys their age" were involved in more delinquency than they were; and Lerman (1968) found that all boys in his sample believed that their friends admired delinquent abilities and skills. For those involved with delinquent groups, there may be a general sense of approval for these behaviors which results from the belief that everyone is involved in such behavior. Delinquency is thus perceived as normative in the sense that it is perceived as common to all youth and expected in a probabilistic sense. This type of normative expectation provides some justification for delinquent acts as one can hardly be singled out and condemned for doing what everyone is doing.

Modeling Delinquent Acts. The evidence that delinquent youth are exposed to more modeling of delinquency by their friends than are non-delinquent youth is substantial (Hirschi, 1969; Hardt and Peterson, 1968; Elliott, 1961; Gold, 1970; Hindelang, 1973; Elliott and Voss, 1974; Johnson, 1979; Glueck and Glueck, 1950; Erickson and Empey, 1965; Voss, 1964; Short, 1957; Krohn, 1974; Kandel, 1973; Jessor, 1981; Jessor and Jessor, 1977; Knowles, 1979; Jensen, 1972; Jensen and Rojek, 1980; Johnstone, 1981; Akers et al., 1979). Reiss and Rhodes (1964), Conger (1976) and Akers et al. (1979) report even more direct evidence of modeling. Using sociometric groups (triads), Reiss and Rhodes found that the probability of an individual committing a specific kind of delinquent act depended upon the commission of that act by other group members.[3] Conger found that delinquent friends were more likely to engage

in similar than dissimilar kinds of criminal acts and Akers et al. found that the more respondents had observed parents, friends and other "admired" models using alcohol or drugs, the more likely the respondent reported using these substances.

Social Approval for Delinquent Acts. Many of the above referenced studies indicate that delinquents also perceive social approval for delinquent acts from their friends. Hindelang (1970, 1974) found that youth engaging in each of a variety of delinquent acts were substantially more approving of these acts than were youth not engaging in them and that both types of youth perceived that their friends were equally or more approving of delinquent acts than they were themselves.[4] Analyzing data from a national sample of adolescents, Jessor (1981) found a strong relationship between friends modeling a behavior and approving of that behavior and the respondents reporting some involvement in that act. These two variables accounted for nearly all the explained variance in marijuana use, drunkenness, and a global measure of deviant behavior which included both serious and non-serious criminal acts. In an earlier longitudinal study, Jessor and Jessor (1977) report a similar finding. Buhler et al. (1966) and Akers et al. (1979) also present evidence that delinquents directly reinforce one another's delinquent behavior. In the Akers et al. study the perception of approving or disapproving attitudes on the part of parents and peers towards alcohol and marijuana use together with anticipated rewards or punishments for these acts from parents and peers, accounted for 50 percent of the variance in alcohol use and 65% of the variance in marijuna use. Johnson's (1979) study also indicated that delinquents perceived social approval for delinquent acts from their friends. Johnson attempted to separate the influence of perceived

approval for delinquency by friends from simply associating with delinquent friends. Based upon a factor analysis, he reports that friends' approval for delinquency and number of delinquent friends were not empirically discriminable, i.e., to have delinquents as friends is to perceive positive social rewards for delinquent behavior.

These data would appear to confirm the presence of persons and groups which provide positive reinforcements for delinquent behavior.[5] That such persons or groups provide rewards and support for delinquency is clearly contrary to the logic of a pure control model of delinquency, but consistent with an integrated control-social learning model which considers the conforming or delinquent orientation of persons and groups to which adolescents are bonded.

<u>The Strength of Bonds to Delinquent Friends</u>. The second empirical question raised by the integration of control and learning perspectives concerns the extent to which delinquent youth are truly bonded to other adolescents, whether they be delinquent or non-delinquent. A pure control model asserts that delinquent youth are unbonded youth, either unwilling to or incapable of developing and maintaining ties to other persons or groups and hence not subject to normal group influences and socialization processes (Hirschi, 1969; Kornhauser, 1978). The integrated model asserts that delinquents are youth who have weak bonds to conventional persons and groups but strong bonds to deviant persons and groups. Both models view bonding to conventional groups as a deterrent to delinquency. At issue is the question of whether delinquent youth are strongly or weakly bonded to delinquent persons and groups.

Evidence for the pure control position is claimed by Hirschi (1969). Hirschi found that those who identified most closely with their friends were less likely to have committed delinquent acts. However, this relationship was very weak, (Phi=.07) and does not control for the delinquent or non-delinquent orientation of friends.[6] In a second analysis, Hirschi looked at the number of self-reported delinquent acts by the number of delinquent friends and level of identification with friends. For those with three or more delinquent friends, there was again a weak negative relationship between level of identification (i.e., bonding) and self-reported delinquent acts. Hirschi concludes that these data confirm the control model assertion that delinquent youth are weakly bonded to delinquent peers.

In fact Hirschi's data provide little support for the pure control model. First, the negative relationship between identification with friends and delinquency held only for those with three or more delinquent friends; it did not hold for those with 1 or 2 delinquent friends. Second, an examination of the table reveals that the major determinant of self-reported delinquency was the variation in the number of friends who were delinquent; variation in identification had relatively little influence on self-reported delinquency. Third, in a reanalysis of the data in this table, Conger (1980) found that 83 percent of those subjects with one or more delinquent friends compared to 90 percent of those with no delinquent friends wanted to be like their best friend in at least some ways. The fact is that the vast majority of those with delinquent friends <u>did</u> identify with these friends. There is little evidence here which suggests a differential level of bonding to delinquent and non-delinquent friends. It is also the case that these data involve a single dimension of bonding. A general conclusion about differential bonding to

delinquent and non-delinquent others certainly requires a more comprehensive set of bonding measures which reflect all of the theoretical dimensions of bonding.

A number of studies have found evidence consistent with the integrated model's position on bonding to delinquent peers. In a further analysis of the same body of data utilized by Hirschi, Jensen and Erickson (1977) found no association between peer commitment and delinquency among blacks, i.e., delinquents and non-delinquents had comparable levels of peer commitment. Conger (1976) also found no relationship between attachment to peers and delinquency. Krohn and Massey (n.d.) found no relationship between attachment to peers and non-serious delinquency, but a weak negative relationship (r=-.10) with a serious delinquency measure. Jessor and Jessor (1977) found no relationship between their measure of perceived support from friends and delinquency. Delinquent and non-delinquent youth were equally likely to perceive that their friends would be available when they needed help and encouragement and that their friends were interested in them. Hindelang (1973), West and Farrington (1977), Elliott and Voss (1974), Empey and Lubeck (1971); Erickson and Empey (1965) and Rothstein (1962) all report a positive relationship between commitment to friends and delinquent behavior. These last studies suggest that delinquent youth may be <u>more</u> committed to their friends than are non-delinquent youth.

Jensen and Rojek (1980) point out that the measures of commitment or attachment used by Elliott and Voss (1974), Erickson and Empey (1965), and Empey and Lubeck (1971) all include some element of conflict (e.g., would you go along with your friends if they were getting you into trouble or breaking the law?), whereas the measure used by Hirschi and Krohn and Massey (n.d.)

does not. They suggest that such measures include an attitude towards the proposed activity as well as the strength of commitment to the group and this accounts for the positive relationship between such measures and delinquency. Jensen and Rojek cite a study by Jensen and Erickson (1978) to support this argument. Jensen and Erickson asked subjects whether they would go along with their friends or join their families if their families were planning on going to a show. There was no relationship between responses to this question and delinquency (although slightly more of those choosing "friends" reported delinquent acts). When subjects were asked whether they would go riding with their friends after school if their parents told them never to do that, there was a substantial positive relationship between self-reported delinquency and choosing to go with friends. A similar positive relationship was found between choosing to go with friends who were violating the law. We agree that those measures of peer commitment which involve some conflict element are probably tapping more than a single dimension of one's commitment to his/her friends. But the introduction of some social cost or risk associated with choosing to be with peers, or a forced choice between doing what friends or parents desire, does reflect a dimension of attachment or commitment which is relevant to the strength of one's bond to his/her friends. In this sense, such measures may be more comprehensive measures of peer commitment than that utilized by Hirschi (1969) and Krohn and Massey (n.d.).

In any event, for studies utilizing measures of commitment involving no conflict element, the predominant finding is that there is no relationship between commitment to peers and delinquency. When measures incorporating some conflict element are used, there is a positive relationship between commitment

to peers and delinquency. Neither conclusion is consistent with a pure control model; both are consistent with the integrated model.[7] Delinquent youth as compared to non-delinquent youth are equally or slightly more committed to their peer groups and are thus exposed to peer influences and socialization processes in these pro-delinquent groups to the same degree that non-delinquent youth are exposed to peer influences and socialization processes in conventional groups.

Selective Recruitment and Conditional Influence of Delinquent Groups. The final issue involved in the proposed modification which considers bonding to both conventional and delinquent groups is the question of selective recruitment into delinquent groups and the conditional influence of socialization in delinquent groups. The first proposition is that delinquent groups are more likely to attract or recruit youth who are alienated from and only weakly bonded to conventional groups and activities. The second is that the effect of pro-delinquent group influences is mediated by the strength of one's bond to conventional groups and activities. In essence, the integrated model asserts that youth with strong bonds to conventional groups and activities are less likely to associate with delinquent peers and if exposed to peers with this orientation, are less likely to be influenced by them.

A number of studies have found that attachment to delinquent peers is negatively related to attachment to parents, school, or conventional peers (Hirschi, 1969; Jensen, 1972; Jessor and Jessor, 1977; Elliott and Voss, 1974; Johnstone, 1981; Hindelang, 1973; Johnson, 1979; Toby and Toby, 1963). More direct evidence is provided by studies that have considered the impact of different patterns of bonding to both conventional and delinquent groups on delinquent behavior. Hirschi (1969) presents such an analysis, reporting the

average number of self-reported delinquent acts for youth cross-classified by a stake in conformity index and number of delinquent friends. The stake in conformity index included measures of bonding to the school, parents, and conventional success goals. In this analysis, those with strong bonds to conventional groups and activities and weak attachment to deviant peers (i.e., no delinquent friends), had the lowest rates of self-reported delinquency; those with bonds to delinquent friends and a low stake in conformity had the highest rates of self-reported delinquency; and those with a low stake in conformity and no delinquent friends had relatively low to moderate rates of delinquency.[8] Finally, fewer than 4 percent of Hirschi's sample were classified as having both a high stake in conformity and bonds to delinquent friends; and those youth had lower rates of delinquency than those with the low conventional - high delinquent bonding pattern and higher rates than those in the low conventional - low delinquent bonding pattern.

These outcomes are precisely those anticipated by the integrated model. First, those with the highest rates of delinquency had low stakes in conformity and bonding to delinquent peers. There is further evidence here that the most delinquent youth were bonded youth; those with the weakest bonds (low stake in conformity and no delinquent friends) had low to moderate rates of delinquency. This latter pattern is the pattern predicted by a pure control model to be most conducive to delinquency. Not only were youth in the low stake-delinquent friend pattern more delinquent than these youth but those in the *high stakes* - delinquent friend pattern were also more delinquent. Second, virtually all boys with delinquent friends had low stakes in conformity. While the temporal order is not clear, these results are consistent with a selective recruitment position. Third, the effect of

bonding to delinquent peers on delinquency was conditioned by stake in conformity. Among those exposed to delinquent friends, boys with high stakes in conformity were less delinquent than were those with low stakes in conformity.

Linden and Hackler (1973) report on a study in which they used separate measures of attachment to conventional peers, deviant peers, and to parents. They found that self-reported delinquency was inversely related to ties to parents and conventional peers, but positively related to ties to deviant peers. When they typed youth on the basis of high or low bonding to all three groups, those with high bonding to parents and conventional peers and weak bonding to delinquent peers had the lowest delinquency prevalence rate; those with low bonding to parents and conventional peers and high bonding to delinquent peers had the highest rate. In comparison, those with low bonding to all three groups had a moderate prevalence rate. Again these findings are consistent with the integrated model; the most delinquent youth are bonded to delinquent friends and the impact of delinquent friends is influenced by the level of bonding to parents and conventional peers. In some respects this analysis is more compelling than that of Hirschi's discussed earlier since measures of the strength of respondent's attachment to delinquent and non-delinquent friends were used rather than a report of the number of delinquent friends, i.e., a more direct measure of bonding to delinquent friends was used.

Jessor and Jessor (1977) reported that those respondents in their study who valued peer opinions over those of their parents were more likely to 1) have friends who approved of delinquent behavior, 2) have friends who were involved in delinquent acts, and 3) be involved in delinquent acts

themselves. This study is significant because it involves a different dimension of bonding (i.e., perceived influence of parents and peers on decision making) and because the study was longitudinal and involved a true predictive analysis. In some respects, the measure of the relative strength of peer and parent influence resembles the measures of commitment containing some conflict element described earlier and these findings are consistent with those reported for such measures, i.e., that bonding to peers is positively associated with delinquency. In any event, we may conclude from this study that those with stronger bonds to deviant than conventional groups were more likely to become involved in subsequent delinquent acts.

In another longitudinal study, Elliott and Voss (1974) report on subsequent rates of delinquency for youth initially classified by their commitment to peers and parents. The peer commitment measure involved a conflict element, choosing to be with friends even though these friends were "leading you into trouble."[9] Youth with initially high commitment to parents and low commitment to delinquent peers had the lowest rates of self-reported delinquency over the next three years ($\overline{X}$ = 4.48 offenses); those with an initially low commitment to parents and high commitment to delinquent peers had the highest subsequent delinquency rate ($\overline{X}$ = 9.98 offenses). Those with a low initial commitment to both parents and delinquent peers had a moderate rate of delinquency ($\overline{X}$ = 6.61) over the next three years. In a change analysis which controlled for prior levels of self-reported delinquency, those with high parent - low delinquent peer commitment reported a relative decline in delinquency of approximately 1.3 offenses. Those with low parent - high delinquent peer commitment reported a relative increase of approximately 1 offense; and those with low bonding to both parents and

delinquent peers reported essentially no change in relative rates of delinquency over the next 3 years. Thus the only bonding category reporting an escalation of involvement in delinquency over time involved youth who reported an initially weak commitment to parents and a strong commitment to delinquent peers.

In both the simple incidence and the changing incidence analyses, youth who reported a high initial commitment to both parents and delinquent peers reported moderate rates of delinquency over time. In both cases, youth with this bonding pattern were more delinquent than those with low commitment to both parents and peers and less delinquent than those with a low commitment to parents and a high commitment to delinquent peers. Again, this set of outcomes is consistent with the modification proposed and inconsistent with a pure control model.

The Elliott and Voss (1974) data again confirm that the effect of bonding to delinquent peers on delinquency is influenced by simultaneous bonding to conventional groups (parents). Johnson (1979) and Johnstone (1981) report a similar finding, although their data are not longitudinal and involve no predictive analysis. In the Elliott and Voss (1974) analysis there was also evidence of a genuine interaction effect for parent and delinquent peer bonding on subsequent delinquency. Those with a low commitment to parents and a high commitment to delinquent peers had particularly high rates of delinquency over time, higher rates than could be accounted for by the independent direct effects of low parent and high delinquent peer bonding. Hirschi (1969) also notes an interaction effect for this same pattern (low stake in conformity and several delinquent friends).

Summary

There is considerable support for each of the modifications suggested as necessary for an integration of control and learning theories. There is considerable support for a direct socialization to delinquency position - among delinquent as compared to non-delinquent peers, the moral dimension of belief is perceived to be less salient for behavior; delinquent abilities and skills are positively valued; delinquent acts are perceived as normative in a statistical sense and approved by friends; and delinquent behavior is more frequently modeled by friends. The evidence also indicates that delinquents are equally or more strongly bonded to their friends than are non-delinquents, and that these friends include delinquent youth. Delinquent youth have thus been exposed to pro-delinquent socialization experiences which should be as effective as the conventional socialization experiences provided by conventional groups. Further, the major difference between those with high and low risks for delinquency lies not in the strength of their bonds to other persons and groups, but in the conventional or pro-delinquent orientations of those persons and groups to which they are bonded. The available evidence is consistent with the proposition that youth with weak bonds to conventional groups are more likely to be attracted to or recruited by delinquent groups although the temporal ordering of these variables has not been empirically established to our knowledge. And finally, there is substantial research evidence that the influence of delinquent peer bonding on delinquent behavior is conditioned by the strength of bonds to conventional groups. Uniformly, youth with strong conventional and weak delinquent bonds have the lowest probability of delinquency and youth with weak conventional and strong delinquent bonds have the highest probability of delinquency. In two of the studies reviewed there was evidence of a genuine interaction effect of

conventional and delinquent group bonding on delinquency. There was also evidence supporting the postulated temporal ordering of this relationship, i.e., that the pattern of conventional and delinquent bonding predicted future delinquency.

NOTES

1. Some attention has been given to the direct modeling effects of criminal parents and siblings. See Wootten, 1959; Ferguson, 1952; Glueck and Glueck, 1950; McCord et al., 1959; West, 1973; Severy, 1970; West and Farrington, 1977; Akers et al., 1979.

2. We are not equating social learning theory with cultural deviance theory. Kornhauser (1978) argues that a cultural deviance model presupposes a perfect, uniform socialization effectiveness and classifies Sutherland's theory of Differential Association as a cultural deviance theory. However, most learning theorists do not assume a perfect socialization process (Akers, 1977; Rotter, 1954, Jessor and Jessor, 1977; Bandura, 1969).

3. Reiss and Rhodes (1964) also noted that this dependence varied by type of delinquent act and social class. While there was evidence of behavioral homophyly in these triads, Reiss and Rhodes concluded that close friendship choices were more closely associated with involvement in some form of delinquency than with specialization in specific types of delinquent activity. This conclusion is not inconsistent with a social learning or bonding to delinquent groups hypothesis, but does suggest that more than a simple modeling of specific behaviors is occuring. Our integrated model would lead us to expect that the beliefs and social reinforcements provided by delinquent groups would support a range of delinquent acts and that still aquisition from modeling is a relatively minor aspect of the learning process in delinquent groups.

4. Unfortunately Hindelang used a dichotomy of his approval/disapproval scale for most of his analysis, (indifferent, approved and strongly approved vs. disapprove and strongly disapprove) and he reports the percentages of youth who disapproved of each act for those committing and not committing each act. There is an obvious difference between perceiving that your friends are indifferent to delinquent acts and perceiving that they actually approve of them. However, Hindelang does report some overall percentages of youth in his study who "approve" of specific acts, and it is clear that a substantial percentage of these youth (10 to 35 percent for the offenses listed) responded that they approved of these acts. It is reasonable to assume that these percentages could be substantially higher for the subgroup reporting they committed these offenses and that the percentage reporting that their friends approved of these acts is as great or greater.

5. While we have focused more upon peers and peer groups, it should be noted that there is also evidence that criminal parents and siblings may also provide social reinforcements for criminal behavior (Jessor and Jessor, 1977; Jessor, 1981; Knowles, 1979; Akers et al., 1979; West, 1973; Wootten, 1959; Ferguson, 1952; Glueck and Glueck, 1956; McCord et al., 1959).

6. The Phi coefficient was calculated from Table No.44, p.146, dichotomizing the number of self-reported offenses into "none" and "one or more" and identification levels into "not at all" and "a few or most ways." Krohn and Massey (n.d.) report almost identical findings: the correlation (r) between peer attachment and non-serious delinquency was .00; with serious delinquency it was -.10; with drug use it was -.03.

7. Since the integrated model postulates that delinquent peers are the only persons and groups to which delinquent youth are strongly bonded, while non-delinquent youth are bonded to their families, school, and conventional community groups (e.g. church, YM/WCA, etc.) as well as conventional peer groups, we might expect delinquents to have a slightly stronger bonding to their peers. Delinquents have a greater investment in their bonding to their adolescent friends, as they are likely to perceive little or no support from other groups and institutions.

8. Based upon the data in Table 52, Hirschi, 1969:158.

9. The parent commitment variable also involved a conflict element. The measure involved a three item scale in which parents were chosen over friends and teachers as having the most influence (Elliott and Voss, 1974:236).

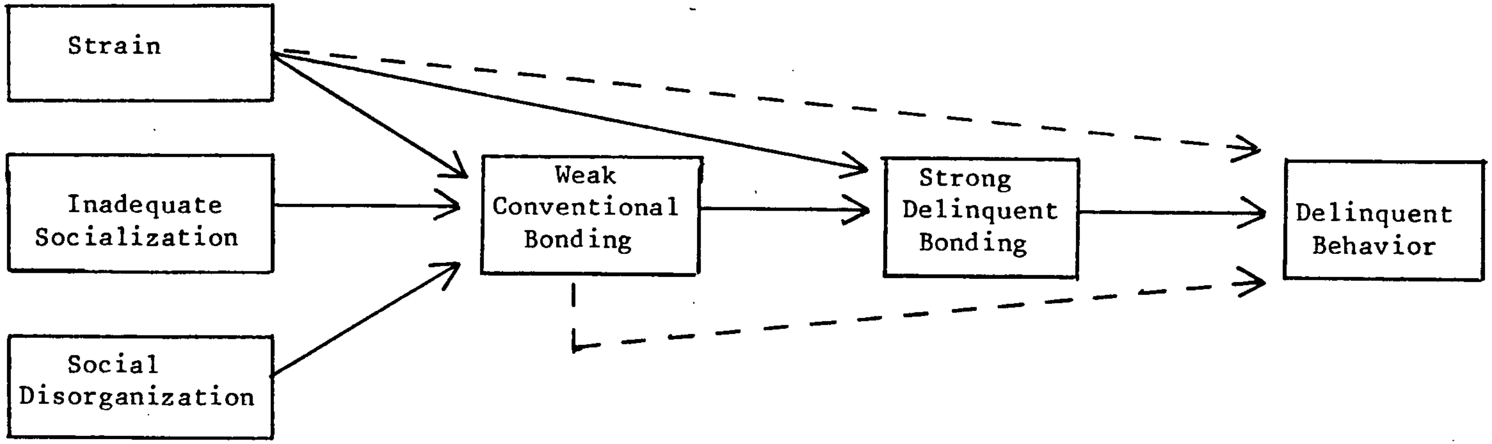
CHAPTER FOUR - THE FULLY INTEGRATED MODEL

The fully integrated model incorporating all of the modifications discussed earlier is presented in Figure 4.1, with the causal relationships identified by the solid arrows. This etiological sequence identifies strain, inadequate socialization, and social disorganization as the primary causes of weak bonding to conventional groups, activities and norms. It further specifies that weak conventional bonding and/or high levels of strain lead some youth to seek out and become bonded to peer groups which provide positive reinforcements for and modeling of delinquent behavior, i.e., delinquent groups. And finally, it specifies that bonding to delinquent groups, when combined with weak bonding to conventional groups and norms leads to a high probability of a sustained involvement in delinquent behavior. The line drawing in Figure 4.1 does not depict the conditional nature of the delinquent bonding - delinquent behavior relationship, but it is intended.

To facilitate our discussion of this model, we have also included pure strain and pure control paths in Figure 4.1, indicated by broken arrows. In this case, the pure strain path refers to the direct effect of strain on delinquency i.e., the effect of strain which is independent of conventional bonding and delinquent bonding. Likewise, the pure control path refers to the direct effect of weak controls on delinquency, given the other variables in the model.

Conceptualization and Logical Structure

Before we turn to a review of the research evidence relative to the empirical claims of this model, several comments about the conceptualization and logical structure of the model are in order. First, we view the model as



The Integrated Model
Figure 4.1

an integrated (or mixed) social disorganization model. We have purposely used the language and concepts found in the social disorganization tradition (e.g., strain, inadequate socialization, disorganized social contexts, and bonding) rather than those in the social learning tradition (e.g., modeling, facilitators, inhibitors, and reinforcement values). At a logical level, the integrated model involves an acknowledgement that there is variation in motivation for delinquency as well as variation in the restraints on delinquency, that there are factors which facilitate as well as restrain delinquency. The assertion that there is variation in motivation for delinquency is not new to the social disorganization tradition as this is the central variable in strain theories. Both sources of variation are thus found within the social disorganization tradition. For example, Shaw and McKay (1942) and Thrasher (1927) included both sources of variation in their explanations of delinquency; both weak conventional controls and exposure to the influence of delinquent companions or groups were postulated causes of delinquency. The proposed model thus lies within a single theoretical tradition although it includes sources of variation which have been emphasized more strongly in other theoretical traditions.

We also employed an integrated social disorganization model to avoid confusion between the explanation of delinquency proposed here and that proposed by Differential Association Theory (Sutherland, 1947). Differential association is a type of social learning theory, which is tied historically to the cultural deviance tradition and subcultural explanations for crime (Kornhauser, 1978; Hirschi, 1979; Hirschi and Gottfredson, 1980). There are certainly some similarities between the model we have proposed and a differential association model, but the two models differ in the following

ways: 1) The integrated model does not require or depend upon the presence of a delinquent subculture; 2) differential association postulates that all group effects on behavior are mediated by their influence on personal attitudes towards the law, whereas the integrated model considers the belief in the legal norms as only one dimension of bonding and only one type of control on behavior; and 3) differential association assumes a relatively passive actor and an unconditonal learning process whereas the integrated model specifies an active selection/recruitment into delinquent groups and a conditional influence of such groups upon behavior.

A second comment on the structure of the integrated model concerns the direct effects of strain and control on delinquency. While not denying the possibility of these direct effects, we believe they will be quite small as compared to that of the major path specified in the model. Each of these paths involves a single source of variation, either variation in restraints or in perceived opportunities for achieving valued goals. We noted in our earlier description of this integrated model (Elliott et al., 1979) that the strain path is likely to involve occasional delinquent acts or a temporary pattern of criminal behavior rather than a sustained pattern. This is because there are no social supports for delinquency in this etiological path and a prolonged involvement in delinquency substantially increases the risk of discovery, which places the offender's stake in conventional groups and activities in jeopardy. We also postulate that the direct control path involves an occasional as opposed to a sustained pattern of delinquency since there are no group supports or rewards for this behavior. Further, given the findings of Meade and Marsden (1981) and Krohn and Massey (n.d.) presented earlier, it appears that a pure control path may account for some trivial,

minor violations but has little or no explanatory power for serious delinquent behavior. These two paths are expected to account for a small part of the variance in total deliquency as measured at a given point in time, but little or no variance in sustained delinquency which reflects a pattern of delinquency covering longer periods of time.

Third, the model is not fully specified. There are two intervening variables in the model - conventional bonding and delinquent bonding. The model does identify the major causes of weak conventional bonding as specified by control theorists, i.e., strain, inadequate socialization and social disorganization. The causes of bonding to delinquent groups, however, are not fully specified. The model does identify high levels of strain and weak bonding to conventional groups and activities as conditions leading youth to develop bonds to delinquent groups. However, youth may become bonded to delinquent groups for other reasons as well, i.e., as a result of residential location, shared interests, common activities or tasks, and other selective social processes. These causes are not identified in the model. This does not pose a problem for the explanation of delinquency since the causal connection between bonding to delinquent peers and delinquency is postulated to hold only for those with weak conventional bonds. It does mean that in our test of this model we do not expect to account for all of the variation in bonding to delinquent groups.

Empirical Support

We have previously reviewed much of the research evidence related to particular relationships specified in the integrated model. While the evidence has been limited and far from conclusive in some instances, it has

been generally consistent with the empirical claims of the model. Our focus here is upon two final issues: 1) the research evidence relative to the claim that the direct effects of conventional bonding and strain are mediated by bonding to delinquent peers and 2) the question of the correct temporal ordering of the variables in the model.

The research to date clearly establishes that association, attachment, commitment, and other dimensions of bonding to delinquent friends are related to involvement in delinquent behavior and drug use (Short, 1957, 1960; Glueck and Glueck, 1950; Voss, 1964; Erickson and Empey, 1965; Akers et al., 1979; Elliott and Voss, 1974; Jensen, 1972; Jensen and Erickson, 1977; Conger, 1976; Hirschi, 1969; Jessor and Jessor, 1977; West and Farrington, 1977; West, 1973; Knight and West, 1975; Brennan et al., 1978; Thompson et al., 1982; Jensen and Eve, 1976; Hindelang et al., 1981; Matsueda, 1982; Glaser, 1960; Johnson, 1979; Kandel, 1978; Ginsberg and Greenly, 1978; Meade and Marsden, 1981; Meier and Johnson, 1977; Cressey, 1952, 1953; Lerman, 1968; Reiss and Rhodes, 1964). More importantly, multivariate studies employing a delinquent peer bonding measure have nearly always found this measure to be the strongest single predictor of delinquency. The significance of this uniformity in research findings is that it provides some empirical support for the causal ordering of conventional and delinquent bonding variables specified in the integrated model i.e., the pattern of relationships is such that delinquent bonding can logically mediate the total influence of conventional bonding, whereas the reverse is not true (Blalock, 1964; Kornhauser, 1978). Bonding to delinquent peers appears to be a more proximate (temporal) cause of delinquency than is bonding to conventional groups and norms.

If we tentatively accept this causal ordering for our explanatory model, the critical empirical question is then whether strain and conventional bonding have any substantial impact on delinquent behavior once the influence of bonding to delinquent peers is removed. The integrated model asserts that independent effects of strain and conventional bonding will be non-existent or very small and that any significant effects of these variables will be mediated by bonding to delinquent peers. A number of studies provide evidence relative to this issue, i.e., they involve analyses in which the influence of bonding to delinquent peers is controlled or removed so that the independent effects of conventional bonding and/or strain on delinquency can be determined.

Hirschi (1969) examined the simultaneous effects of stakes in conformity (attachment to parents, attachment to school and commitment to conventional achievement) and delinquency of companions on delinquent behavior. He reports that all of the conventional bonding variables were related to delinquency when controlling for the delinquency of one's companions. In an independent analysis of Hirschi's data, Jensen (1972) found that paternal supervision and emotional support were significantly related to delinquency while holding the number of delinquent friends constant. The number of delinquent friends was clearly the strongest independent predictor in both analyses, and controlling for this variable substantially reduced the magnitude of the relationship between conventional bonding and delinquency, but conventional bonding did have a significant effect upon delinquency which was independent of the number of delinquent friends. However, the magnitude of this independent effect was weak in both analyses (r=-.14 or gamma=-.28).

Johnstone (1981) tested a causal model which included five predictors of delinquency: 1) neighborhood affluence, 2) family SES, 3) perceived opportunities for crime, 4) family integration and 5) attachment to delinquent peers. The family integration measure was a composite of measures of attachment to parents, shared activity in the family, the extent to which parents set rules, and respect for parental authority. The general model accounted for 28 percent of the variance in self-reported delinquency. With regard to the effects of particular variables, attachment to delinquent peers accounted for the vast majority of the explained variance in delinquent behavior while the effect of family integration was quite weak (betas of .422 and -.156 respectively). The analysis also indicated that the effect of family integration was partially mediated by attachment to delinquent peers. Nearly 40 percent of the total influence of family integration was exerted through attachment to delinquent peers. When the effect of delinquent peers was removed, the remaining portion of the total explained variance attributable to the combined effect of family integration, neighborhood affluence, SES, and perceived opportunities for crime was less than 5 percent. Further, the path coefficients for the remaining variables suggest that family integration has about the same relative influence on delinquency as the remaining three measures. Taken together these findings indicate a statistically significant independent influence of family integration upon delinquency but one which is very weak, contributing relatively little to the overall explanation of delinquency.

Johnson (1979) also tested a rather complex causal model incorporating ten predictors of delinquent behavior. Included in this set of predictors were

several conventional bonding measures (e.g., love/concern of parent for child, attachment to parents, success in school performance, attachment to school) and delinquent bonding measures (e.g., delinquent friends and delinquent values). The results of a path analysis revealed several findings relative to our concern about the effects of conventional bonding measures once the effect of bonding to delinquent peers has been removed. For males, there was no direct effect of attachment to parents, love/concern of parent, or attachment to school on self-reported delinquent behavior. The only conventional bonding measure with a direct influence on delinquency was school performance. The effects of the other conventional bonding measures were indirect, mediated by the delinquent bonding measures. The only conventional bonding measure with a direct effect upon delinquency for females was attachment to school. All of the other conventional bonding measures exerted indirect influences on delinquency through attachment to school or delinquent friends. In this study, bonding to parents was not significantly related to delinquency for either males or females. For both, there was a significant direct effect of one of the two school bonding measures. While a precise estimate of the independent predictive power of school bonding variables was not provided, the path coefficients again indicate that these measures were weak predictors compared to the delinquent friends measure.

Meade and Marsden (1981) tested an explanatory model which integrated social control, strain and differential association perspectives. This model included a composite measure of conventional bonding (involvement and identification with parents, school, and religion), a composite measure of strain (perceived achievement chances), a norm attenuation measure (perceived tolerance for deviant acts), and a measure of attachment to delinquent peers.

While norm attenuation is treated as a separate theoretical construct in this analysis, it might be considered a measure of the belief dimension of conventional bonding. Three measures of delinquency were utilized as dependent variables in a causal modeling analysis: theft-violence, drug use, and status offenses.

Attachment to deliquent peers was the strongest correlate of delinquency, regardless of which measure of delinquency was employed. The strength of strain and conventional bonding predictors was similar when the theft-violence scale was the measure of delinquency, but the conventional bonding predictor was stronger than the strain predictor for the other two measures of delinquency.

The causal modeling analysis revealed that for all measures of delinquency the primary explanatory variable was attachment to delinquent peers. When the criterion was the theft-violent measure of delinquency, both strain and conventional bonding (including norm attenuation) were only weakly predictive of delinquency. Over 23 percent of the variance in theft-violent behavior was explained by attachment to delinquent peers while the remaining strain and conventional bonding measures combined accounted for an additional 3.8 percent of the variance. This analysis also revealed that the effects of conventional bonding were partially mediated by attachment to delinquent peers. The effect of strain, on the other hand, was not mediated by attachment to delinquent peers.

For both drug use and status offense measures of delinquency, conventional bonding measures again had a weak independent impact upon delinquency. The predictive power of conventional bonding was greater for status offenses than for drug use or theft-violence offenses, but was still weak relative to attachment to delinquent peers. There was no signifiant direct effect of

strain on either drug use or status offense measures. In both cases, strain had weak indirect effects upon delinquency through conventional bonding and attachment to delinquent peers.

Although the specific linkages proposed and the conceptualization of variables is clearly different, the Meade and Marsden study does include measures appropriate for a general test of the integrated model proposed here, considering the direct and indirect effects of all three major variables in a single causal model. In this sense this analysis presents particularly important evidence relative to the empirical claims of the integrated model. The findings are generally consistent with these claims: bonding to delinquent peers accounts for the vast majority of the explained variance in delinquent behavior; the affects of strain and conventional bonding are at least partially mediated by bonding to delinquent peers, and direct effects of these variables are small or non-significant.

Two additional studies focusing upon marijuana and alcohol use also provide estimates of the effects of strain and conventional bonding. Meier and Johnson (1977) report the results of a multiple regression analysis involving 16 predictors of marijuana use. These predictors were organized into four conceptual sets: 1) social background; 2) legal sanctions (perceived certainity and severity of punishment and knowledge of the law); 3) number of friends using marijuana;[1] and 4) respondent attitudes (belief that marijuana use is an immoral activity and fear of marijuana use). Both the perceptions of legal sanctions and respondent attitude sets can be construed as measures of the belief dimension of conventional bonding. The study sample involved adults (age 18 and over) living in Cook County, Illinois, a subset of participants in a 1971 national drug survey (Abelson et al., 1972).

The total set of 16 predictors accounted for 72 percent of the variance in marijuana use in this sample. Once the influence of the friends using marijuana measure was removed, the remaining variables accounted for an additional six percent explained variance. Given that the social background variable set was a substantially stronger predictor than either the perceived legal sanctions or respondent attitudes set (when considered alone), it appears that the two conventional bonding sets contribute relatively little to the explanation of marijuana use in this sample.

Winfree et al. (1981) investigated the impact of peer support for drug use, parental social support, attitudes towards the law, and age and sex on the use of marijuana and alcohol. The sample involved approximately 600 students in a rural school district. The findings from a multiple regression analysis were presented separately for caucasians and native Americans. With regard to drug use among caucasians, the total explained variance in marijuana use was 41 percent with peer support for drug use accounting for 28 percent of the variance. The remaining variables accounted for an additional 13 percent explained variance. The total explained variance in alcohol use was 27 percent with peer support accounting for 21 percent of the variance. The combined effect of the remaining variables was thus 6 percent.

For native Americans, total explained variance in marijuana use was 47 percent with peer support accounting for 30 percent and the other variables an additional 17 percent. Considered alone, age/sex was the strongest predictor among the remaining variables (R^2=.223) followed by parent support (R^2=.118) and attitudes towards the law (R^2=.042). Peer support accounted for virtually all of the explained variance (15 percent) in alcohol use by native Americans, the remaining variables accounting for less than a one percent increase.

All of the above studies involve cross-sectional designs. As a result, the tests are not genuine predictive tests and may inflate the true causal significance of some or all of the predictor variables in the model since cause and effect relationships are confounded (Elliott and Voss, 1974; Kandel et al., 1978).[2] Fortunately there are several longitudinal studies which have examined the relationships between these variables and delinquency and drug use. Kandel et al., (1978) reported on a longitudinal study of the interpersonal influences of parents and peers upon initiation into drug use. This study involved a two-wave panel of high school students in New York State during the 1971-1972 academic year. Four variable clusters obtained at the beginning of the academic year were used as predictors of initiation into drug use which occurred at some point during the academic year. The four variable clusters were: 1) parent influences, (parent behavior, attitudes and values and quality of parent-adolescent relationship), 2) peer influences (peer behavior, attitudes and values, quality of subject-best friend relationship, and drug availability), 3) subject values and beliefs, and 4) subjects' prior involvement in delinquent behavior and drug use. The variance explained by each cluster alone and the increments of additional variance explained by each cluster in a stepwise multiple-regression analysis were determined. Three stages of initiation were considered: initiation into the use of hard liquor, initiation into the use of marijuana, and initiation into the use of other illicit drugs.

The total explained variance due to peer influences, parental influences, and beliefs-values was 12 percent for initiation into hard liquor use, 18 percent for initiation into marijuana use and 25 percent for initiation into other illicit drug use.[3] When the effect of peer influences was removed,

parent influences and beliefs-values accounted for an additional three percent in explained variance for initiation into hard liquor use, a seven percent increase in explained variance for initiation into marijuana use, and a 15 percent increase in explained variance for other illicit drug use. The additional effects of parent bonding and conventional beliefs were thus small for initiation into hard liquor use but substantial for initiation into other illicit drug use. It was also the case that parent and peer influences were essentially independent influences in this analysis, i.e., there was little evidence for an effect of parent influences through peer influences. A substantial part of the influence of beliefs-values on the other hand, did appear to be operating through parent and/or peer influences.

Ginsberg and Greenly (1978) compared the predictive utility of the following measures: 1) attachment to delinquent (drug using) peers; 2) attachment to conventional social institutions (political, religious and economic); 3) involvement in school work and conventional activities and organizations; and 4) psychological stress (e.g., anxiety, loneliness, depression) in a longitudinal study of marijuana use. The subjects were a probability sample of students registered at the University of Wisconsin-Madison in the Fall of 1971 (Time 1) who also participated in a follow-up questionnaire administered in the Winter of 1974 (Time 2). The analyses involved multiple regression and path analysis, estimating the effect of Time 1 predictors on subsequent marijuana use, controlling for Time 1 marijuana use.

The measure of attachment to delinquent peers was again the strongest single predictor of marijuana use, whether considering cross-sectional or lagged relationships. Involvement in conventional activities and

organizations was unrelated to marijuana use at either Time 1 or Time 2. Commitment to conventional institutions and psychological stress were related to marijuana use at both time periods. In the predictive analysis, the only measures having any direct effect upon marijuana use were marijuana use at Time 1 and attachment to deviant peers at Time 1. Together these two variables accounted for 44 percent explained variance in marijuana use at Time 2. With prior marijuana use and attachment to deviant peers controlled, neither of the conventional bonding measures nor the psychological stress measure was significantly related to marijuana use at Time 2. In a separate analysis predicting use or nonuse of marijuana at Time 2 for those subjects reporting no use at Time 1, attachment to deviant peers was again the only significant predictor of initiation into marijuana use. The conventional bonding measures in this study had no causal influence on either initiation into marijuana use or changes in level of use over time.

In a longitudinal study of delinquency, Elliott and Voss (1974) predicted the change in level of self-reported delinquency between junior and senior high school years with a set of predictors which included both strain and conventional bonding measures, as well as measures of bonding to delinquent peers.[4] Both origin (9th grade) and change scores (9th-12th grades) for each predictor were included in a stepwise multiple regression analysis. Unfortunately, the predictors were treated as individual variables and not introduced into the stepwise analysis as variable sets or in any predetermined order. Separate analyses were completed for males and females.

The level of total explained variance was similar for both sexes (21 percent) and commitment to delinquent peers (gain score) was the strongest predictor for both.[5] Traditional measures of strain contributed no

significant increase in explained variance. In fact, had these measures entered the stepwise analysis first, they would have accounted for less than one percent explained variance in the change in delinquency over time. The relationship between strain and prior delinquency was slightly stronger, but these measures had essentially no predictive power. Conventional bonding measures, on the other hand, made significant contributions to the prediction of delinquency. While the exact increase in explained variance for the set of bonding variables was not presented, it was approximately 10 percent for both sexes.

The simple (zero order) and multiple correlations between predictors and prior delinquency were uniformly stronger than the relationships with future delinquency or the change in delinquency (controlling for prior delinquency). This finding suggests that cross-sectional studies do promote inflated estimates of the predictive power of these variables, but in this case the relative power of strain, conventional bonding and deviant bonding measures was quite similar regardless of the time location of the delinquency measure.

A final longitudinal study providing evidence on the predictive power of conventional bonding and deviant bonding measures is that of Jessor and Jessor (1977). The theoretical model tested was a social learning model which incorporated a set of personality predictors and a set of perceived environment predictors. The former included several measures which have been used as internal control measures, e.g., expectations for academic achievement and tolerance for deviance (commitment to conventional norms); and the latter included measures of external controls, e.g., parental support, parental controls, friends approval, and friends modeling of deviance. Criterion measures utilized in a series of stepwise multiple regression analyses

included a General Deviance Scale, marijuana use, and a Multiple Problem Behavior Index, a composite measure which included problem drinking, marijuana use, non-virginity, activism, and a set of delinquent acts.

A general test of the model incorporating the strongest individual predictor variables from each of the six conceptual domains in the personality and perceived environment variable sets (designated a field test) produced a total explained variance on the General Deviance scale of 45-46 percent (male-female); for marijuana use the explained variance was 42-46 percent; and for the Multiple Problem Behavior Index, it was 52-55 percent. When the influence of friends modeling deviance was removed, the remaining variables in the analysis accounted for an additional 19-26 percent explained variance in General Deviance; 9 percent explained variance in marijuana use; and 8 to 10 percent explained variance in the Multiple Problem Behavior Index.

In sum, the above review of both cross-sectional and longitudinal studies testing the relative strength of predictor variables in mixed causal models is generally supportive of the empirical claims of the proposed integrated model. Measures of bonding to delinquent peers are clearly the strongest individual predictors of delinquency and drug use. Further, the pattern of relationships is generally consistent with the claim that bonding to delinquent groups mediates some or all of the influence of strain and conventional bonding, particularly in studies of delinquent behavior. This claim is less well supported in drug studies. Strain appears to have little or no independent causal influence on delinquency or drug use; any significant influence appears to be weak and/or indirect, mediated by weak conventional bonding and/or bonding to delinquent peers. However, few studies incorporated both strain and bonding to delinquent peers measures and any conclusions about the independent effects of strain on delinquency and drug use may be premature.

The findings relative to the independent effects of conventional bonding measures on delinquency and drug use are mixed. Several studies found no significant effects once the influence of attachment to delinquent peers was removed; others found significant but very weak effects; and still others found these measures had a substantial influence on delinquency or drug use. Since these differences were found among the longitudinal as well as the cross-sectional studies, these findings must be viewed as equivocal on this issue.

Temporal Order

The final issue to be addressed concerns the temporal ordering of the variables in the model. We have argued earlier that the family and school are nearly always conventional socializing agencies and that the earliest exposure to pro-delinquent influences occurs in peer groups, typically during early adolescence when the peer group influence comes to compete with that of parents and teachers. From a historical perspective then, one's earliest experiences are in pro-social contexts and for most persons, exposure to pro-delinquent influences typically doesn't occur until late childhood or early adolescence. On these grounds we have postulated that involvement with and commitment to delinquent peers is the most proximate cause of delinquency and drug use and mediates the influence of weak bonding to parents, school, and conventional norms. We also believe there is some limited empirical support for the view that weak conventional bonding leads to bonding to delinquent peers which leads to delinquent behavior (cited earlier). Clearly the size of the zero-order relationships between delinquent peers-delinquency and conventional bonds-delinquency indicates that if one of these predictors

mediates the influence of the other, it is delinquent peers which mediates conventional bonds.

This causal ordering is not critical to the empirical claims of the integrated model however, since we postulate that the delinquent peer-delinquency relationship is conditioned by conventional bonding. It is the joint occurrence of weak conventional bonds and bonds to delinquent peers which causes a sustained involvement in delinquency. Which occurs first ceases to be critical since both are required. It is thus possible for a person to acquire delinquent friends before his/her bonds to family, school and conventional norms become attenuated. We are not claiming that this is the typical ordering, but only that this ordering is not inconsistent with the claims of the integrated model.

The critical temporal ordering issue is whether bonding to delinquent peers, the most proximate variable in the causal model, precedes or follows delinquent behavior. A number of researchers have argued that attachment and commitment to delinquent peers may be an effect of delinquency rather than a cause (Hirschi, 1969; Gould, 1969; Kornhauser, 1978; Hirschi and Gottfredson, 1980). These two possible causal orderings of the delinquent bonding-delinquent behavior relationship have become known as the "feathering" and the "flocking" hypotheses and Hirschi viewed the task of determining the relative validity of these two hypotheses "the key theoretical problem in the field of delinquency (1969:159)." Fortunately, there is some empirical evidence which bears upon this question.

The longitudinal studies reviewed above provide direct evidence for the association between bonding to delinquent peers and delinquency with the temporal order of these variables controlled. These data thus provide

indirect evidence of a causal relationship between bonding to delinquent peers and delinquency.[6] They do not, of course, allow us to reject the claim that delinquency also leads to delinquent bonding or the claim that delinquency has a stronger impact on the selection of one's peer group than the reverse. Nonetheless the consistency of the predictive power of the bonding to deviant peer measures over different samples, different periods of follow-up (ranging from less than 9 months to over 3 years), and for initiation as well as changing involvement in delinquency and drug use, provides impressive evidence in support of the claim that bonding to deviant peers is a cause of subsequent delinquency and drug use. It is important to remember however, that verification of the causal role of delinquent peers does not logically require the rejection of the claim that delinquent behavior leads one to acquire delinquent friends, nor does it require the delinquent friends-delinquent behavior relationship to be the stronger of the two relationships.

More direct evidence on the relative strength of the alternative causal orderings of these two variables is provided by two studies which compared group selection and group socialization influences as determinants of drug use homogeneity within adolescent groups. Both Cohen (1977) and Kandel (1978) established group affiliation at two points in time on the basis of sociometric choice data. Using these longitudinal data on group membership, they examined how joiners and leavers influenced group homogeneity in drug use, and how individual changes while in the group influenced group homogeneity in drug use.

Both studies concluded that selection and socialization were reciprocal processes, i.e., homogeneity in drug use behavior was achieved both by socialization processes within the group and by the selection/termination of

group members over time. In the Cohen study, selection appeared to be the stronger influence. In the Kandel study which involved a much larger sample, diads as compared to larger group structures, and a more sophisticated data analysis, socialization appeared to be of slightly greater importance in generating group homogeneity in drug use behavior. In both studies, the short time lag over which these effects were examined probably resulted in an underestimation of socialization as compared to selection influences, since the former requires interaction over an extended period, whereas the latter may not. In any case, both studies confirm that attachment to deviant peers and involvement in delinquent and drug use behavior are reciprocal processes; bonding to delinquent and/or drug using groups does lead to the initiation of those behaviors, and the use of drugs does increase the liklihood of one's joining a drug using group.

Given the strong evidence for group homogeneity in behavior, involving both selection/termination and socialization process, bonding to delinquent groups takes on particular importance when attempting to account for a sustained involvement in delinquency or drug use. Kandel notes:

> Adolescents coordinate their choices of friends and their behavior so as to maximize congruency within the friendship pair. If there is a state of imbalance such that the friend's attitude or behavior is incongruent with the adolescents, the adolescent will either break off the friendship and seek another friend or will keep the friend and modify his own drug behavior (1978:433-435).

Both the Cohen and Kandel studies provide evidence of strong group pressures for behavioral congruence. Under these circumstances, it would be extremely difficult for an adolescent to maintain a delinquent or drug use behavior pattern while continuing his/her membership in a conventional peer group which rejected or disapproved of this behavior.

In the longitudinal study of marijuana use by Ginsberg and Greenly (1978) these researchers noted that attachment to drug using peers at Time 1 predicted marijuana use at Time 2 only slightly better than marijuana use at Time 1 predicted attachment to drug using peers at Time 2. They concluded that the attachment to drug using peers and marijuana use relationship was a reciprocal causal relationship of approximately equal strength. They pursued this relationship further through a 16 fold table analysis. Lazarsfield's (1973) Index of Mutual Effect confirmed that the causal influence of each variable was approximately equal. They then calculated Kessler's (1977) indices for generating and preserving effects and found that both variables had primarily generating effects (producing increases rather than decreases in the other variable) and that neither was causally dominant.

Summary

It must be acknowledged that none of these analyses actually demonstrates a causal relationship between bonding to delinquent peers and subsequent delinquent behavior. What is demonstrated is that this variable continues to be strongly associated with delinquency when the hypothesized temporal order is imposed upon the data. Knowledge about bonding to delinquent peers does allow one to more accurately predict future initiation into and changing involvement in delinquent behavior.

These data also support the position that bonding to delinquent groups and delinquent behavior are mutually reinforcing variables with approximately equal influence on each other. The association between bonding to delinquent peers and delinquency/drug use as established in cross-sectional studies thus reflects both socialization and selective processes, both causes and effects of delinquency. It is reasonable to assume, therefore, that these

cross-sectional associations overestimate the causal influence of bonding to delinquent peers. At the same time, the traditional causal claim can not be rejected on the grounds that the association is entirely or even primarily the result of delinquent behavior influences upon bonding patterns. Those studies which control the temporal order of these variables indicate that bonding to deviant peers continues to be the best predictor of delinquency.

The consistency of findings involving different populations, different measures of theoretical constructs, different forms of analysis and the convergence of findings from studies of the relationship between delinquent peer bonding and delinquent behavior with the studies of selection and socialization influences on behavioral congruence in adolescent peer groups is impressive. It provides rather compelling evidence for the claim that bonding to deviant groups is a major cause of delinquency and drug use. The evidence is indirect but substantial.

In sum, the available research evidence is generally consistent with the empirical claims of the integrated model. On some issues the evidence is very limited and on others it is equivocal, but to our knowledge, none of the empirical claims of this model can be rejected a priori on the basis of existing research evidence. We turn, therefore, to a test of this model with longitudinal data from a national probability sample of American youth.

NOTES

1. The set actually included two measures: 1) number of friends using marijuana and 2) social support for marijuana use. This second measure confounded parent and peer support and contributed little to the total variance in marijuana use explained by the set. Virtually all of the explanatory power of this set can thus be attributed to the measure of number of friends using marijuana.

2. In most cases, the temporal ordering of predictor and criterion measures in cross-sectional studies on delinquency and drug use is the reverse of that specified in traditional causal models. Measures of current attachment to parents, current perceptions of limited opportunities, and current involvement with delinquent peers are used to explain delinquency and drug use which occurred in the past year or in one's entire lifetime. In many respects, the most plausible interpretation of these data are that strain, weak conventional bonds, and bonding to delinquent peers, are all effects of one's involvement in delinquent behavior.

3. Total explained variance due to this subset of predictor clusters and the increases in explained variance due to parent influences and beliefs-values clusters, were calculated from the data presented.

4. The theoretical model in this study postulated that strain led to an attenuation of one's commitment to conventional norms; weak bonding to conventional norms, when combined with commitment and attachment to delinquent peers, led to delinquent behavior. It is possible to argue that some of the strain measures, e.g., school achievement, commitment to parents, home success (perceived parental acceptance), reflect conventional bonding rather than strain, although that was not the conceptualization used in the study. The Community Success-Failure and School Status Deprivation Scales on the other hand, were clearly strain measures and not conventional bonding measures. In this discussion these two measures are the one's referred to as strain measures. The others are treated as conventional bonding measures. Normlessness and Social Isolation scales were conceptualized as measures of commitment to conventional norms and perceived involvement with parents/school, i.e., conventional bonding measures.

5. Based upon beta weights in the final regression equation. See Table 7-6, p.184 in Elliott and Voss (1974).

CHAPTER FIVE - DESCRIPTION OF THE STUDY

General Design

The National Youth Survey (NYS), a longitudinal study of delinquency and drug use among American youth 1976-1980, was designed to meet three primary objectives: 1) to provide a comprehensive description of the prevalence and incidence of delinquent behavior and drug use in the American youth population, 2) to examine the causal relationship between delinquent behavior and drug use, and 3) to test an integrated theoretical model of delinquent behavior (Elliott, et. al., 1979). Our concern here is with this last objective.

The NYS involves a longitudinal, sequential design with multiple birth cohorts. The sample, selected in 1976, was a national probability sample of youth aged 11-17 and thus included seven birth cohorts (1959-1965). The total youth sample was initially interviewed between January and March 1977 concerning their involvement in delinquent behavior and drug use during the calendar year 1976. The second, third, fourth, and fifth surveys were conducted during this same period in successive years. By the fifth survey (1981), the panel was 15 through 21 years of age. The research reported in this volume is based on data from the first three surveys, a period during which most panel members were adolescents.

The Sample

The National Youth Survey employed a probability sample of households in the continental United States in 1976 based upon a multistage, cluster sampling design. At each stage, the probabilities of selection were established to provide a self-weighting sample. Seventy-six primary sampling

units were selected, with probability of selection being proportional to size. This sampling procedure resulted in the listing of 67,266 households, of which approximately 8,000 were selected for inclusion in the sample. All youth living in the selected households who were 11 through 17 years of age on December 31, 1976, and were physically and mentally capable of being interviewed were eligible respondents for the study. The selected households generated an estimated total of 2,360 eligible youth. Of these, 635 (27 percent) did not participate in the study due to (1) parental refusal, (2) youth refusal or (3) an inability to make contact with the respondent. The remaining 1,725 agreed to participate in the study, signed informed consents, and completed interviews in the initial (1977) survey. An age, sex, and race comparison between nonparticipating eligible youth and participating youth indicates that the loss rate from any particular age, sex, or racial group appears to be proportional to that group's representation in the population. Further, with respect to these characteristics, participating youth appear to be representative of the total 11 through 17 year old youth population in the United States as established by the U.S. Census Bureau. For a detailed, technical description of the sample and the initial loss analysis see Huizinga (1978b) and Elliott et al. (1981).

Panel Mortality

Respondent loss over the first three surveys was relatively small. The loss rate for the 1978 survey was 4 percent (N = 70) and for the 1979 survey, the cumulative loss increased to 6 percent (N = 99). A comparison of participants and nonparticipants at the second and third waves revealed some selective loss by ethnicity, class, and place of residence. There did not appear to be any selective loss by sex or age, nor did it appear that there

was any selective loss relative to self-reported levels of delinquent behavior. The few significant differences found indicated that those lost reported less delinquency on the first and second waves than those participating each year. Comparisons of participants across the first three waves indicated that the loss by age, sex, ethnicity, class, place of residence, and reported delinquency did not influence the underlying distributions on these variables in any substantial way. We thus conclude that the representativeness of the sample with respect to these variables has not been affected in any serious way by the loss over the first three surveys. For a detailed description of the loss analyses across the first three years, see Elliott et al. (1981).

General Structure of the Analyses

The basic approach to testing the integrated theoretical model described in earlier chapters involves the use of a linear or structural equation model that incorporates measures of the major conceptual variables specified by the theory. The full multivariate complexity and temporal ordering of the theoretical constructs can be analyzed with this approach. Given the longitudinal design of the study and three annual waves of data for each subject, two independent tests of the model were undertaken, using one year lagged predictor and criterion variables. The initial analysis thus involved data from the 1977 and 1978 surveys and this analysis was independently replicated using data from the 1978 and 1979 surveys. Similar results from both analyses would strengthen the interpretation of findings.

Measures of Variables in the Theoretical Model

Predictor Measures.

The use of the above analytical procedure requires the selection of a set of indicators for each of the theoretical constructs in the model. Twenty-five specific measures of strain, conventional bonding and

deviant bonding were organized into variable sets as indicated in Figure 5.1. As our initial plan involved the use of the LISREL technique, at least two measures of each of the major theoretical variables were needed, but it was not practical to include all twenty-five predictors in the analysis, nor was this necessary to adequately evaluate the model or the predictive utility of this set of predictors. Based upon a sequence of correlation and stepwise regression analyses, a smaller set of predictor measures was selected for the causal modeling analysis.

The criteria for selection were: 1) that each variable set be represented by at least one predictor, 2) that each relevent institutional context (i.e., family, school and peers) be represented by at least one predictor and 3) that the predictors selected from each set account for the majority of the explained variance attributable to that entire set of predictors. This process resulted in the selection of eight predictor measures: two strain, four conventional bonding, and two deviant bonding measures (indicated by asterisks in Figure 5.1). Findings based upon this set of eight predictors should approximate the results that would have been obtained had the entire set of twenty-five predictors been utilized in the analysis. The selected predictor measures are described briefly below. The psychometric properties of each of the scales in the total set of measures are presented in Appendix A.

Strain. The strain measures reflect the discrepancy between the subject's aspirations and perceived actual achievement relative to his/her aspirations in the home and school contexts. Specifically, a three point response set, "Very Important," "Somewhat Important" and "Not Important at All," is used to measure aspirations in each of five areas at home and school. Achievement relative to these aspirations is assessed by means of a second three-point

STRAIN

- *Family Aspirations/Achievement Scale
- *School Aspirations/Achievement Scale
- Future Educational Goal/Expectation Discrepancy
- Future Occupational Goal/Expectation Discrepancy

CONVENTIONAL BONDING

A. External (Social)

- *Family Involvement Scale
- *School Scholastic Involvement Scale
- School Athletic Involvement Scale
- School Activities Involvement Scale
- Community Involvement Scale
- Family Labeling Scale
- Teacher Labeling Scale
- Perceived Sanctions in Family Scale

B. Internal (Personal)

- *Family Normlessness Scale
- *School Normlessness Scale
- Family Social Isolation Scale
- School Social Isolation Scale
- Family Aspirations Scale
- School Aspirations Scale
- Future Educational Goals
- Future Occupational Goals

DEVIANT PEER BONDING

A. External (Social)

- *Involvement with Deviant Peers Index
- Peer Sanctions - Involvement Index
- Peer Involvement Scale
- Exposure to Delinquent Peers
- Perceived Sanctions by Peers

B. Internal (Personal)

- *Attitudes Towards Deviance Scale
- Commitment to Delinquent Peers Scale
- Peer Normlessness
- Peer Social Isolation

* Selected measures for the causal modeling analysis

OUTLINE OF THEORETICAL VARIABLES AND SETS OF MEASURES

FIGURE 5.1

response set, "Very Well," "O.K.," and "Not Well at All," which reflects how well the subject thought s/he was doing in each of these areas. A cross-classification of these two responses was scored from 1 ("Very Important" - "Very Well") to 6 ("Very Important" - "Not Well at All") for each item, and summed over the five items.[1] A high score on the strain measures reflects a high perceived discrepancy between personal aspirations/goals and present achievement.

Conventional Bonds

Four scales are used to assess bonding to the conventional social order. The Family and School Involvement scales assess the amount of time spent with the family and on academic concerns at school. These scales reflect involvement in conventional settings and activities. Each context specific scale is composed of three items which ask respondents to report the number of afternoons and evenings in an average week, Monday through Friday, they spend in each setting, in addition to time spent in each setting on the weekends. The first two items in each scale use an open-ended response set (from 0 to 5 afternoons or evenings) while the item on weekend involvement uses a five-point Likert response set ranging from "A great deal" to "Very little." Scores on the three items are summed, with a high score reflecting a high level of involvement in that particular conventional setting or activity.

The Normlessness scales assess the subject's commitment to conventional social norms at home and at school. Conceptually, normlessness refers to the belief that one must violate the rules/norms to achieve personal goals or aspirations. This form of normative commitment is measured in both the family (4 items) and school (5 items) contexts. A five-point Likert response set ranging from "Strongly Agree" to "Strongly Disagree" is employed with this

scale (see Appendix A for psychometric properties). The scale is scored such that a high score reflects a high commitment to the conventional norms in that context.

Bonding to Delinquent Peers

Integration into a delinquent peer group is measured by a joint consideration of the involvement or time spent with peers and the delinquent/conventional orientation of the peer group. The peer involvement measure assesses the amount of time spent with friends during afternoons, evenings, and weekends in an average week. It is scored the same as the family and school involvement measures previously described. The Exposure to Delinquent Peers scale measures the proportion of a subject's close friends who engage in various deviant and illegal acts. These acts range from trivial (e.g., theft less than $5) to very serious, felony crimes. The five-point response set ranges from "All of them" to "None of them." The combined peer involvement-exposure to delinquent peers measure (labelled "Involvement with Delinquent Peers Index") is defined as the peer involvement (PI) score multiplied by the term exposure to delinquent peers (EDP) minus the mean of the exposure scale, i.e., PI x $(EDP - \overline{EDP})$. This Involvement with Delinquent Peers Index is large and positive for youth heavily involved with a delinquent peer group and negatively large for youth heavily involved with conventional peers. Hence, a high positive score implies strong bonding to a delinquent peer group. The Attitudes Toward Deviance scale assesses the subject's personal beliefs about how wrong it is to commit certain deviant acts.[2] A four-point response set ranging from "Very wrong" to "Not wrong at all" is used with this scale. A high score on this scale reflects a conventional, pro-social orientation toward behavior.

Measures of Delinquency and Drug Use. A new self-reported measure of delinquent behavior was developed for the National Youth Survey, designed specifically to address the major criticisms of prior self-report measures (see Hindelang et al., 1975, 1981; Nettler, 1974; Farrington, 1973; Reiss, 1975; Elliott and Ageton, 1980). These criticisms focused upon the unrepresentativeness of items (usually trivial, non-serious offenses including some that were not technically violations of the law); normative response sets ("never," "once or twice," and "three or more times") which did not provide a precise frequency estimate and severely truncated the true frequency distributions; item overlap which produced multiple counting of single events; and extended reporting periods ("ever," "over the past 3 years") which generated serious problems for the accuracy of recall and forward and backward telescoping of events.

The self-report measure developed for the NYS included 47 items which were selected so as to be representative of the full range of official acts for which juveniles could be arrested. The set included all but one of the UCR Part I offenses (homicide was excluded); 60 percent of Part II offenses, and a wide range of UCR "other offenses." We also attempted to construct items with more precise descriptions of behavior so as to reduce or eliminate the potential for item overlap and multiple counting. Two response sets were utilized, an open-ended frequency count and a series of categories for all frequency responses of ten or higher. These response sets provide better discrimination at the high end of the frequency continuum and are more suited to estimating the actual number of behaviors committed. For purpose of this theory test, the categorical responses are used in all but one analysis since they have better distributional characteristics and are less skewed. The one use of the frequency response data is clearly indicated.

Compared with other self-reported delinquency measures, the NYS measure involves a moderate recall period (one year), and permits a direct comparison to other self-report and official measures that are reported for a calendar year. A more detailed review of the criticisms of earlier self-reported delinquency measures and the construction of the NYS measure may be found in Elliott and Ageton (1980). In addition to the self-reported delinquency items, the NYS included fifteen questions about drug use. The items covered all common drug substances (i.e., alcohol, tobacco, marijuana, amphetamines, barbiturates and tranquilizers) as well as a comprehensive range of less common drugs (i.e., hallucinogens, heroin, cocaine, PCP and inhalants). The response sets for the drug items are identical to those for the self-report delinquency questions with the exception that categorical responses were obtained for all drug use responses of one or more.

To test the adequacy of the theoretical model for different types of delinquency and drug use, several delinquency and drug use scales have been constructed as criterion variables. Our use of specific scales was guided by a desire to test the model's explanatory power for general or common delinquency and drug use, as well as its ability to account for serious and minor involvement in these behaviors. The following scales were used as measures of delinquency: 1) General Delinquency - a summary measure of all the delinquency items except some of the more trivial items such as lied about age, hitchhiked illegally and bought liquor for a minor, 2) Index Offenses - a scale including all Part I index offenses (except homicide) and 3) Minor Delinquency - a seven item scale containing a range of minor illegal acts such as joyriding, runaway, disorderly conduct and theft less than $5. As drug use measures, we used the single item measuring marijuana use and a Drug Use scale

which encompasses five different illicit drugs. Figure 5.2 presents these scales and the specific items contained in each.

Temporal Order

The test of the theoretical model includes eight predictor variables reflecting strain at home and school, bonding to the family and school, and bonding to deviant peers. Five specific measures of delinquency and drug use are utilized as criterion variables. Figure 5.3 portrays the time location of these measures. As may be seen from Figure 5.3, some of the variables provide point estimates (i.e., those which reflect attitudes or aspirations at the time of the interview) and others provide interval estimates (i.e., cover the period of the calender year prior to the interview). The time location of the measures is important, since a causal interpretation is strengthened when the temporal order is controlled in the analysis. Given both point and interval estimates, we could not always insure this temporal ordering on an annual basis without a very long time lag (i.e., two years). For example, utilizing only interval estimates, Family and School Involvement 1 (see Figure 5.3) would be used to predict Involvement with Delinquent Peers 2, which would be used to predict Self-Reported Delinquency 3, delinquent behavior occurring two years post the initial predictor variable. We felt this was an unreasonable time lag and opted for a shorter one (one year) by controlling temporal sequences so that predictor measures are either temporally prior to or simultaneous with the criterion measure. Since the delinquency measures are interval estimates, we used interval predictor measures which were concurrent with delinquency/drug use measures, i.e., covered the same time period. Point predictor measures were always temporally prior the criterion measures.[3]

Drug Use

1) Hallucinogens
2) Amphetamines
3) Barbiturates
4) Heroin
5) Cocaine

Minor Delinquency

1) Hit teacher
2) Hit parent
3) Theft LT$5
4) Joyriding
5) Disorderly conduct
6) Panhandled
7) Runaway

Index Offenses

1) Aggravated assault
2) Sexual assault
3) Gang fights
4) Stole motor vehicle
5) Stole something GT$50
6) Broke into bldg./vehicle
7) Strongarmed students
8) Strongarmed teachers
9) Strongarmed others

General Delinquency

1) Stole motor vehicle
2) Stole something GT$50
3) Bought stolen goods
4) Runaway
5) Carried hidden weapon
6) Stole something LT$5
7) Aggravated assault
8) Prostitution
9) Sexual intercourse
10) Gang fights
11) Sold marijuana
12) Hit teacher
13) Hit parent
14) Hit students
15) Disorderly conduct
16) Sold hard drugs
17) Joyriding
18) Sexual assault
19) Strongarmed students
20) Strongarmed teachers
21) Strongarmed others
22) Stole something $5-50
23) Broke into bldg./vehicle
24) Panhandled

SPECIFIC DELINQUENCY AND DRUG USE SCALES

FIGURE 5.2

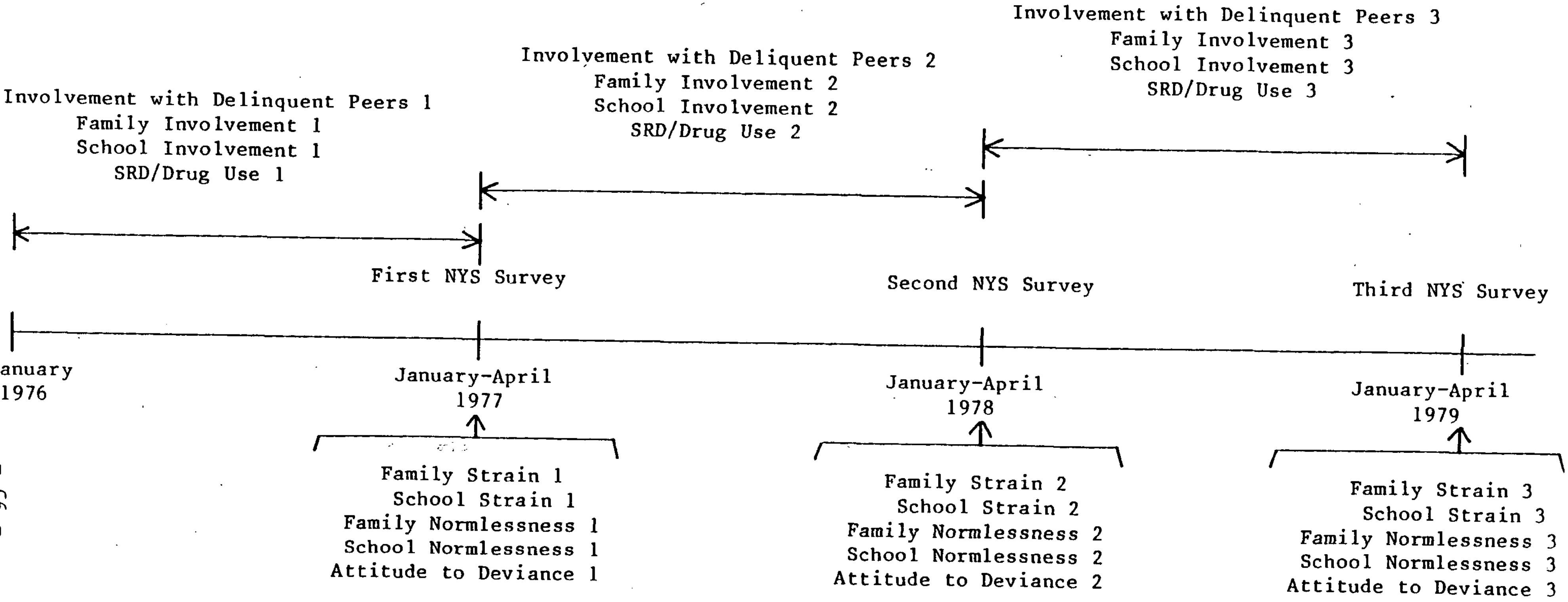


Figure 5.3

Time Location of the Measures

Summary

The test of the theoretical model presented here is based upon a national probability sample of American adolescents who were interviewed annually over three consecutive years (1977-1979). Eight predictor variables were selected from a larger set of predictors to be included in a causal modeling analysis. Five different measures of self-reported delinquent behavior and drug use were employed as criterion measures. The temporal ordering of the variables was controlled in the analysis with all predictor variables being temporally antecedent or concurrent with the measures of delinquency and drug use. The analysis plan involved a initial test of the model's power to explain delinquency and drug use during 1977 using predictors obtained prior to and during this same year, and a replication of this analysis using predictors obtained in 1977 and 1978 to explain delinquency and drug use during 1978. We turn now to an initial multivariate test of the integrated theoretical model.

NOTES

1. Scoring was based upon the following scheme:

		How well are you doing?		
		Very Well	OK	Not Well
How Important?	Very	1	4	6
	Somewhat	2	3	5
	Not at All	3	3	3

2. There is some ambiguity about the conceptualization of this measure. On the one hand, it could be treated as a measure of internal conventional bonding - belief in the moral validity of the norms. It has also been used in prior studies as a measure of commitment to delinquent norms, reflecting socialization processes within delinquent groups. For tests of differential association it has been treated as the critical interviewing variable between association with delinquent peers and delinquent behavior. We reject this latter view, and have conceptualized it here as one dimension of internal bonding to a delinquent peer group. But we acknowledge that it could also be viewed as a measure of commitment to conventional norms derived from early socialization experiences in the family and school. We thus treated it as an independent predictor variable in the analysis, to facilitate its interpretation.

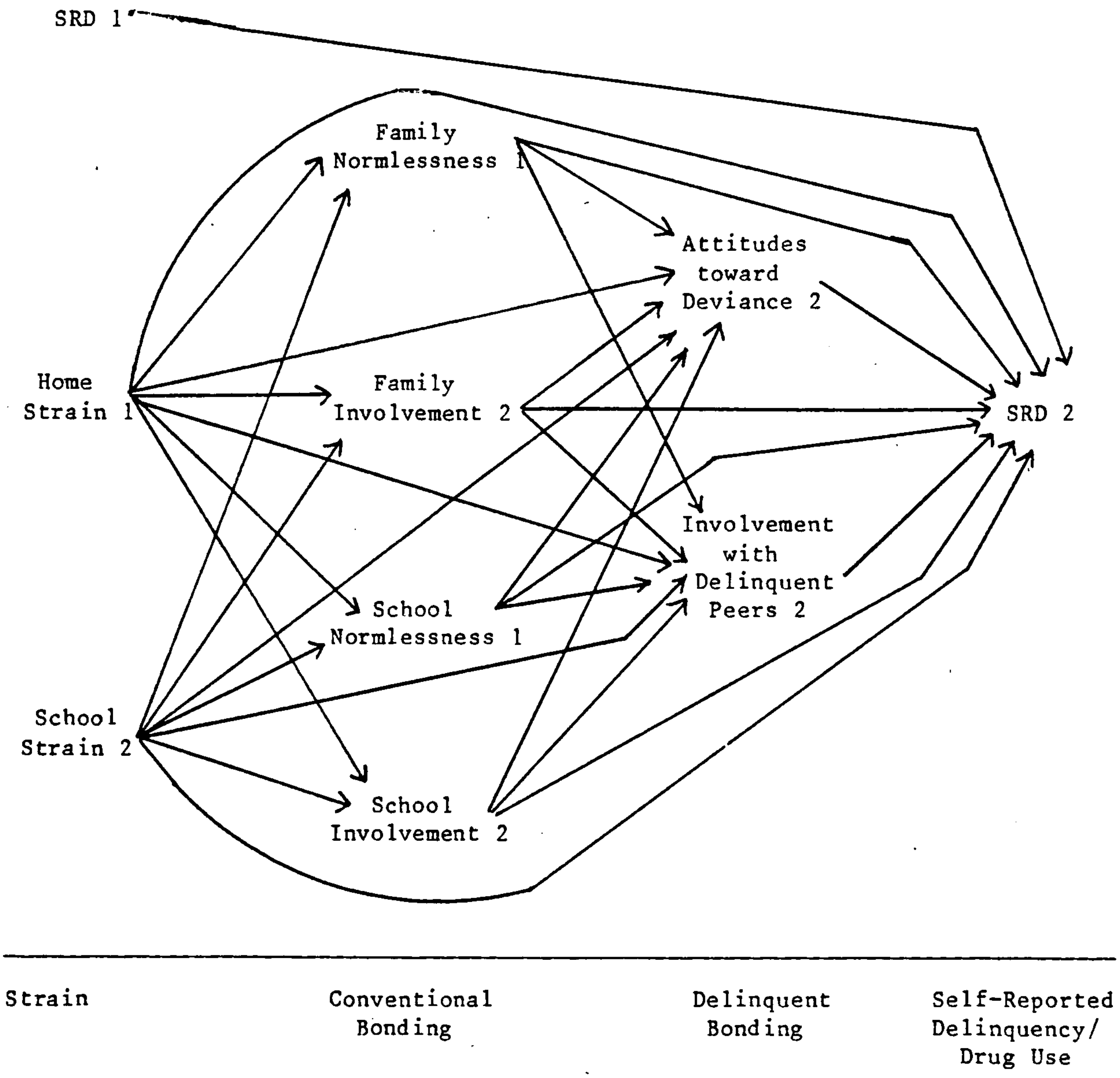
3. There is one exception to this general rule. The Attitudes Towards Deviance measure was conceptualized as an internal bonding to delinquent peers measure, an intervening variable in the theoretical model. Since strain and conventional bonding measures are assumed to be temporally prior to this measure, we used the Time 2 measure of this scale as the predictor measure in the initial test of the model and the Time 3 measure as the predictor in the replication as presented here. We also examined Time 1 and Time 2 measures of this scale in tests of the model. The effect of using the Time 2 and 3 measures rather than Time 1 and 2 measures is minimal and this predictor would not be included in the reduced path model regardless of which time measures were used.

CHAPTER SIX - AN INITIAL MULTIVARIATE TEST OF THE INTEGRATED THEORY

Analysis Design

To examine the empirical relationships among the variables described in the earlier theoretical model, a linear or structural equation model approach was used. This approach allows examination of the full multivariate nature of the theoretical model, determines the relative importance of each of the variables, and provides an examination of whether the empirical relationships among the variables are consistent with various causal propositions of the theory. Initially it was anticipated that the coefficients of the structural equations specifying the relationships between theoretical variables would be estimated by the LISREL program (Joreskog and Sorbom, 1978). However, because of various procedural difficulties in applying the LISREL approach,[1] standard path analyses were used. The use of path analysis requires some caution since the potential problems associated with measurement error may not be handled by standard regression techniques (see Cook and Campbell, 1979). It should also be noted that the hypothesized interaction between conventional and deviant bonding is not addressed here, but will be considered in detail in chapter seven.

The full path model specified by the theory and the variables selected to represent the various theoretical constructs is presented in Figure 6.1. As can be seen in the figure, strain leads to changes in conventional bonding, to changes in delinquent bonding and to changes in delinquent behavior/drug use; changes in conventional bonding lead to changes in the level of bonding with delinquent peers, and to changes in delinquent/behavior and drug use; and changes in bonding to delinquent peers leads to changes in delinquency



The Full Path Model

Figure 6.1

and drug use involvement. Prior self-reported delinquency or drug use is included as an exogenous variable in the model affecting the predicted involvement in delinquency or drug use. Thus, the effect of changes in theoretical constructs on future delinquency or drug use is determined in conjunction with the effect of prior delinquency or drug use.

Because the NYS provides longitudinal data, the time ordering of the variables can be arranged so that it is consonant with the causal ordering of the integrated theory. In all cases, a variable that is assumed to have a causal effect on another is measured prior to or concurrently with the criterion variable. As noted earlier, certain of the variables are measures of behavior over the calender year while others are point estimates of attitudes at the time of interview. The former include self-reported delinquency and drug use, and involvement in family, school, and peer activities. The latter include the strain, normlessness, and attitude toward deviance measures.

The exact time ordering of the variables representing events occurring throughout the calender year cannot be precisely determined. Conceivably, all reported behaviors of a particular kind could have occurred in a given month or week at the beginning of the year while all reported behaviors of another kind occurred at the end of the year. This spacing of events is considered to be highly unlikely and it is assumed that these interval or calender year measures reflect behaviors occurring more evenly throughout the year.

Given the three interview periods under study, it would be possible to have all predictor variables temporally precede the criterion variables. Such an arrangement, however, would require a two year lag between the change in one variable and the related change in another (e.g. strain and delinquency).

This time interval was considered too long for the kinds of effects postulated by the integrated model. As a result, the path model spans only a two year period and certain cause and effect dyads involve variables measured concurrently. The use of the concurrent measures is not necessarily inappropriate, however, since certain relationships may be expected to operate at more or less the same time. For example, involvement in prosocial activities might be anticipated to reduce involvement with delinquent peers on a simple availability of time basis. In the full path model presented in Figure 6.1, the two year time interval is indicated by variables measured in the first year labelled with a 1 and those measured in the second year by a 2.

To examine the relationships described by the theory, path coefficients and their standard errors were obtained for the full model for different kinds of delinquent behavior and drug use. Separate analyses were conducted for the self-reported delinquency scale, the UCR Part I or index scale, the minor delinquency scale, marijuana use, and the illicit drug use scale. To examine potential sex differences, the analyses were performed for the total NYS sample and separately for males and females.

For each of these full models, non-significant paths were deleted producing a reduced or simplified model and the path coefficients were recalculated for the reduced model. Statistical computations were performed by a modified version of an interactive path analysis program described by Nygreen (1971). The determination of which paths were non-significant was based both on standard statistical tests of the regression coefficients and on the percent of variance explained by individual or groups of variables. The use of both requirements is beneficial not only on practical grounds (statistical significance, being dependent on sample size, may indicate

significance of variables that have only trivial effects on other variables) but also because measurement of other effects are most likely not independently normally distributed, especially for the delinquency and drug use measures. These distributional assumptions are needed for the application of the standard statistical tests.

Because the estimation procedure used in determining the path coefficients will take advantage of the unique features of the particular data used, the above analyses were independently replicated. The first analyses were performed using 1976 and 1977 data and the second or replication analyses were performed using the same variables from the 1977 and 1978 data. Dissimilar results from these replications would make the findings of the path analyses questionable.

Given the above, the general analysis strategy can be described as two replications of a sequence of path analyses. Separate path analyses are performed for the total sample, for males, and for females using each of five delinquency or drug use measures (SRD, index offenses, minor offenses, marijuana use, and illicit drug use). For each analysis, a reduced or simplified path model is obtained.

Results from Path Analyses

The path coefficients, standard errors, residual paths, and multiple correlation ratios for the full path model with the SRD scale as the final criterion variable are presented in Table 6.1. The data upon which this analysis is based are the 1976 and 1977 NYS data for the total sample. Examination of the path coefficients and standard errors, suggests that a simplified model could be constructed. Deleting the non-significant paths (i.e., those paths for which a test of the hypothesis that the path

Table 6.1

Path Coefficients, Standard Errors, Residual Paths and Multiple Correlation Ratios for the Full Path Model with Self-Reported Delinquency as the Criterion Variable

Path Analysis

Path Coefficients and Standard Errors

P(4,2) = -.2896 (+/- .030)
P(4,3) = -.0435 (+/- .029)
P(5,2) = -.2500 (+/- .030)
P(5,3) = .0421 (+/- .029)
P(6,2) = -.2175 (+/- .029)
P(6,3) = -.1492 (+/- .029)
P(7,2) = -.1331 (+/- .029)
P(7,3) = -.1042 (+/- .029)
P(8,2) = .0208 (+/- .030)
P(8,3) = .0509 (+/- .029)
P(8,4) = -.0947 (+/- .036)
P(8,5) = -.1461 (+/- .029)
P(8,6) = -.2247 (+/- .036)
P(8,7) = -.1874 (+/- .029)
P(9,2) = .0585 (+/- .030)
P(9,3) = -.0116 (+/- .029)
P(9,4) = -.1840 (+/- .036)
P(9,5) = -.1710 (+/- .029)
P(9,6) = -.1764 (+/- .036)
P(9,7) = -.1414 (+/- .029)
P(10,1)= .3706 (+/- .030)
P(10,2)= -.0225 (+/- .026)
P(10,3)= .0178 (+/- .025)
P(10,4)= .0133 (+/- .032)
P(10,5)= -.0176 (+/- .026)
P(10,6)= .0487 (+/- .032)
P(10,7)= .0052 (+/- .026)
P(10,8)= .4832 (+/- .036)
P(10,9)= .0268 (+/- .031)

Variable List:

Variable No.	Variable Name (Time period indicated by a 1 or 2)
1	..............Self Reported Delinquency - 1
2	..............Family Strain - 1
3	..............School Strain - 1
4	..............Family Normlessness - 1
5	..............Family Involvement - 2
6	..............School Normlessness - 1
7	..............School Involvement - 2
8	..............Involvement with Delinquent Peers - 2
9	..............Attitudes toward Deviance - 1
10	..............Self-Reported Delinquency - 2

Residual Paths and R-Squared

P(4,A) = .9522 (.09)
P(5,B) = .9706 (.06)
P(6,C) = .9544 (.09)
P(7,D) = .9814 (.04)
P(8,E) = .8855 (.22)
P(9,F) = .8772 (.23)
P(10,G)= .6876 (.53)

coefficient is zero cannot be rejected at the .01 level or which are only barely significant) produces the reduced model pictured in Figure 6.2. As seen in this figure, the only direct paths leading to self-reported delinquency are from the Involvement with Delinquent Peers Index and prior SRD measure. The strain variables effect the conventional bonding variables, which in turn affect involvement with delinquent peers, but neither strain nor conventional bonding variables have a direct influence on delinquency.

Reduced models identical to that pictured in Figure 6.2 were obtained for both males and females, for all delinquent and drug use behaviors considered, and across both replications of the set of path analyses. The adequacy of the reduced model in capturing the variances of the full model can be seen in Table 6.2, which lists the correlation ratio for each endogenous variable in the full and reduced models. As seen in the table, the vast majority of the endogenous variables lose less than one percent of explained variance in moving from the full to the reduced model, a few lose two percent, and three lose three percent. Because of the consistent adequacy[2] of the reduced model and the underlying similarity of the path analyses of the full model for different sexes, behaviors, and replications, the tables listing the full path analysis results have been relegated to Appendix B.

The path coefficients and the correlation ratios of the endogenous variables of the reduced path model for SRD are contained in Figure 6.2 This figure summarizes the path analyses for the total sample and for males and females across both replications. Similar summaries of the path analyses of the reduced model for index offenses, minor offenses, marijuana use and illicit drug use are contained in Figures 6.3 through 6.6, respectively. It

Table 6.2

Multiple Correlation Ratios
(Correlations of replication study, 1977 to 1978, enclosed in parentheses)

	Total Sample		Males		Females	
	Full	Reduced	Full	Reduced	Full	Reduced
SRD	.53 (.59)	.52 (.58)	.55 (.58)	.54 (.58)	.44 (.54)	.43 (.53)
Index	.32 (.36)	.32 (.36)	.38 (.37)	.37 (.36)	.13 (.21)	.11 (.21)
Minor	.40 (.45)	.39 (.44)	.42 (.46)	.41 (.45)	.34 (.41)	.33 (.40)
Marijuana	.61 (.60)	.59 (.59)	.64 (.63)	.62 (.62)	.57 (.54)	.55 (.51)
Hard Drugs	.34 (.30)	.34 (.29)	.51 (.36)	.50 (.34)	.15 (.19)	.14 (.18)
Family Normlessness	.09 (.14)	- -	.12 (.14)	- -	.07 (.14)	- -
Family Involvement	.06 (.05)	.06 (.05)	.05 (.05)	.05 (.04)	.07 (.05)	.07 (.05)
School Normlessness	.09 (.11)	.09 (.11)	.11 (.10)	.11 (.10)	.07 (.11)	.07 (.11)
School Involvement	.04 (.07)	.04 (.07)	.06 (.06)	.06 (.06)	.02 (.07)	.02 (.07)
Involvement with Delinquent Peers	.22 (.24)	.21 (.22)	.19 (.26)	.18 (.23)	.23 (.21)	.22 (.18)
Attitudes toward Deviance	.23 (.28)	- -	.22 (.28)	- -	.22 (.25)	- -

should be noted that the analyses for the strain, bonding, and involvement with delinquent peers variables are all identical and only the coefficients of the paths leading to each behavior are altered in these analyses. The full results of the path analyses for the reduced models are also contained in Appendix B.

As can be seen in Figures 6.2-6.6, the relationships among the social-psychological variables are partially those that would be expected on the basis of the earlier theoretical development. For both males and females and the total sample, increases in strain at home lead to decreases in family involvement, school involvement, and school normlessness (recall that normlessness is reverse scored, so that a reduced score implies increasing alienation). Similarly, increases in school strain lead to decreases in school involvement and school normlessness. Increases in the conventional bonding measures, (i.e., family involvement, school involvement, school normlessness) lead to decreases in involvement with delinquent peers. The strain variables do not, however, have a direct effect on involvement with delinquent peers. The magnitude of the relationships are generally consistent across sexes and across replications, but all are relatively small. Examination of the R^2 values for the endogenous social psychological variables indicates that the variables included in the analyses do a relatively poor job in predicting these social-psychological variables.

As noted earlier, this low predictability does not result from the construction of the reduced model from the full model (see Table 6.2), so that increases in the ability to explain changes in the levels of these variables lies in variables not included in the initial variable set selection. The issue of including other variables as measures of strain or conventional

Figure 6.2
Reduced Path Model-Self-Reported Delinquency (SRD)
Path coefficients and correlation ratios of replication analyses (1977 to 1978)
are enclosed in parentheses.

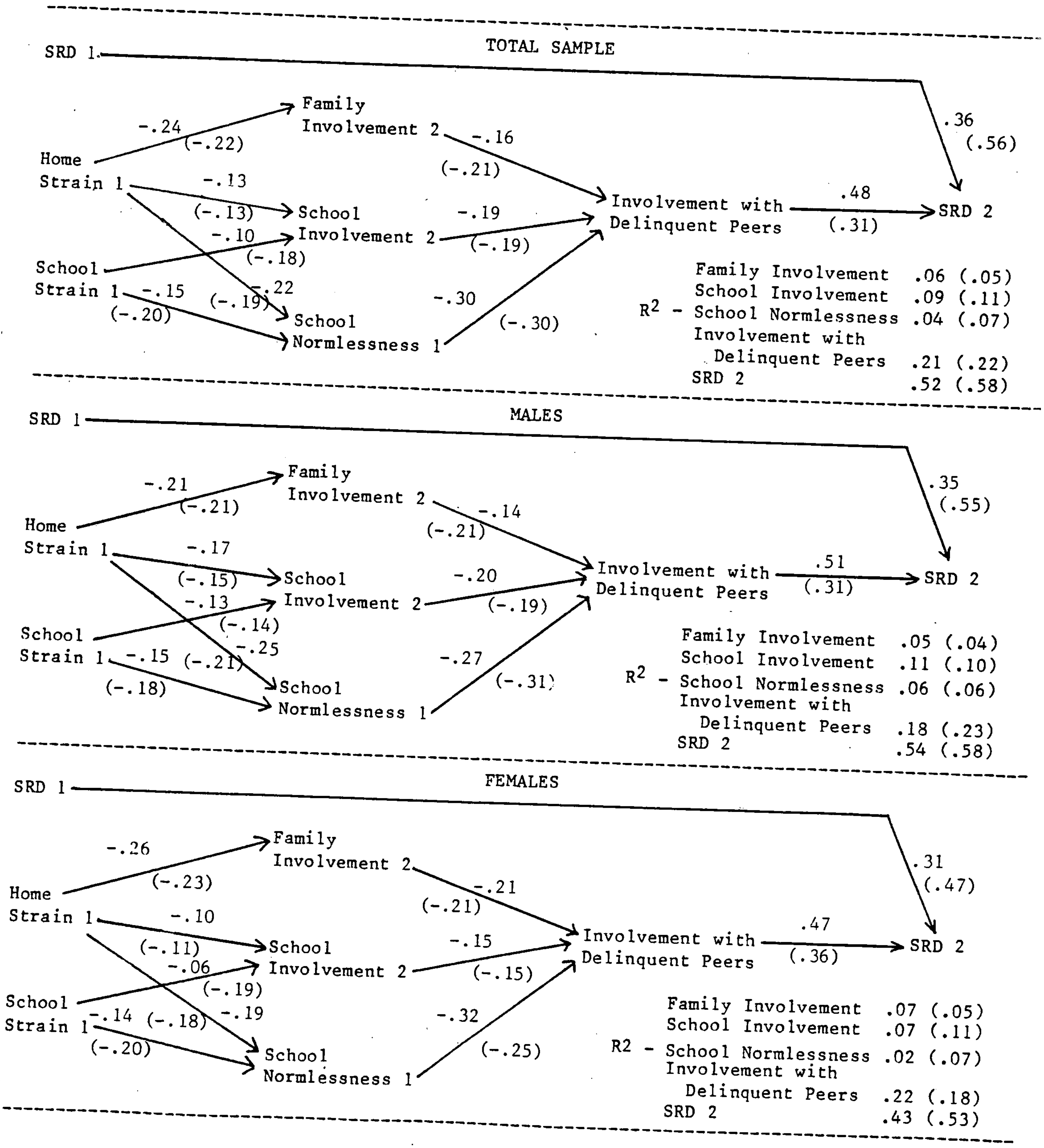
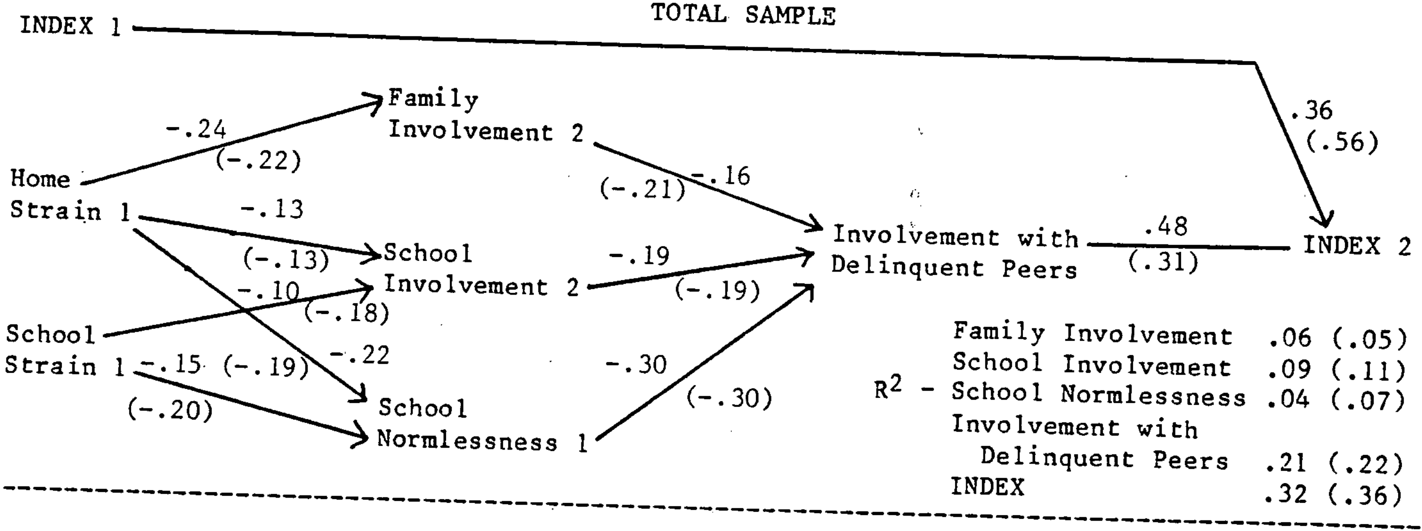
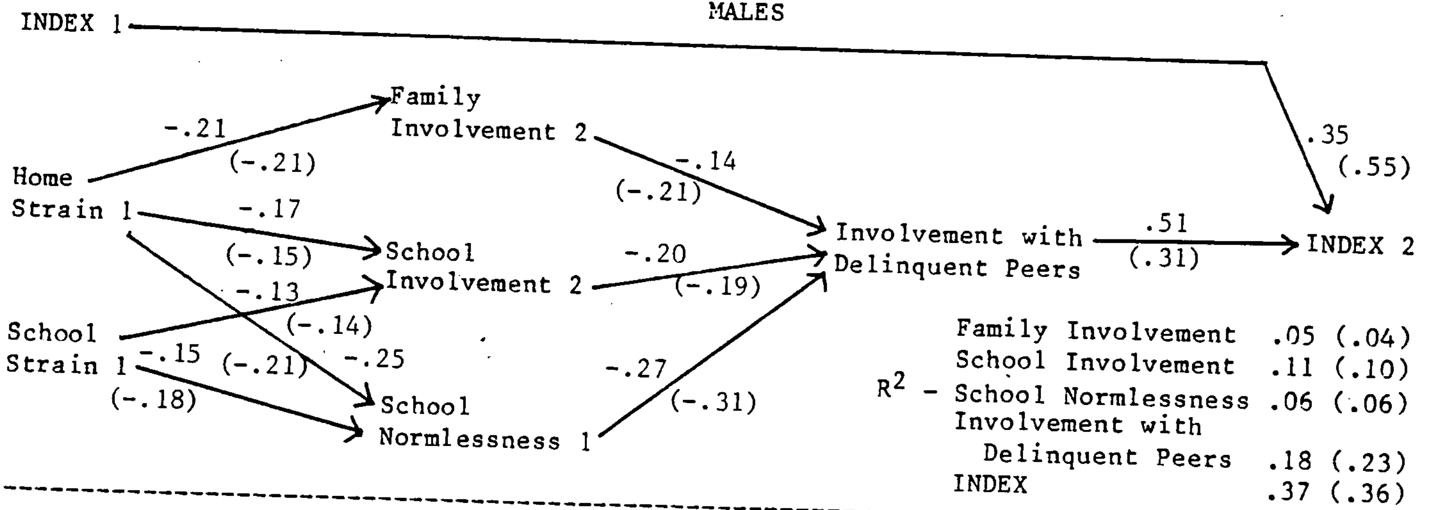


Figure 6.3
Reduced Path Model-Index Offenses (INDEX)
Path coefficients and correlation ratios of replication analyses (1977 to 1978)
are enclosed in parentheses.

TOTAL SAMPLE



MALES



FEMALES

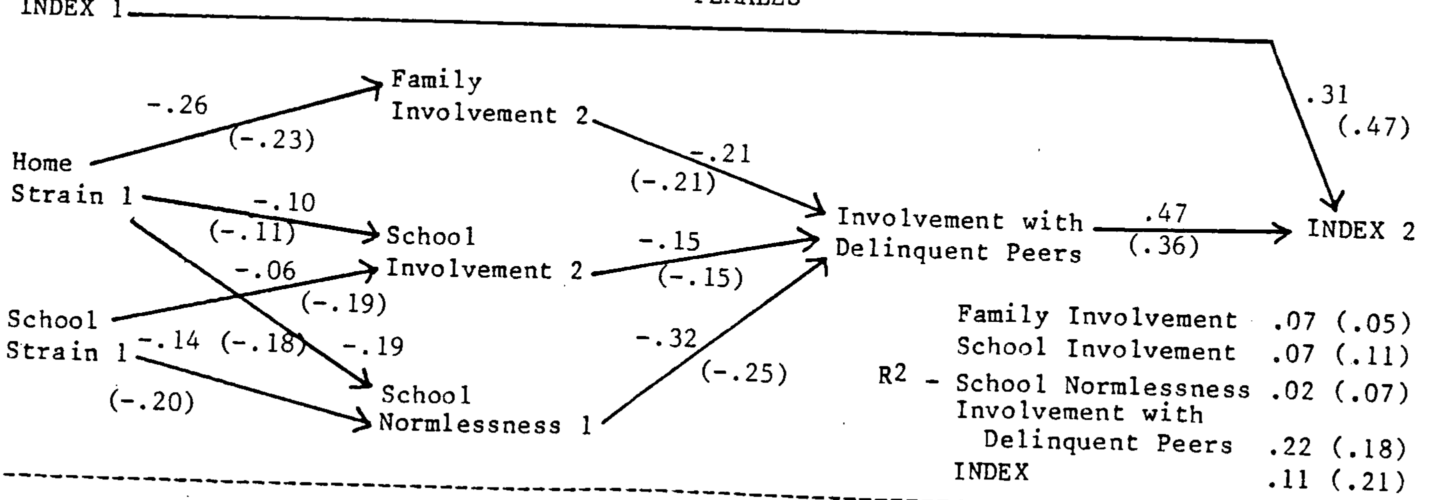


Figure 6.4
Reduced Path Model-Minor Offenses (MINOR)
Path coefficients and correlation ratios of replication analyses (1977 to 1978)
are enclosed in parentheses.

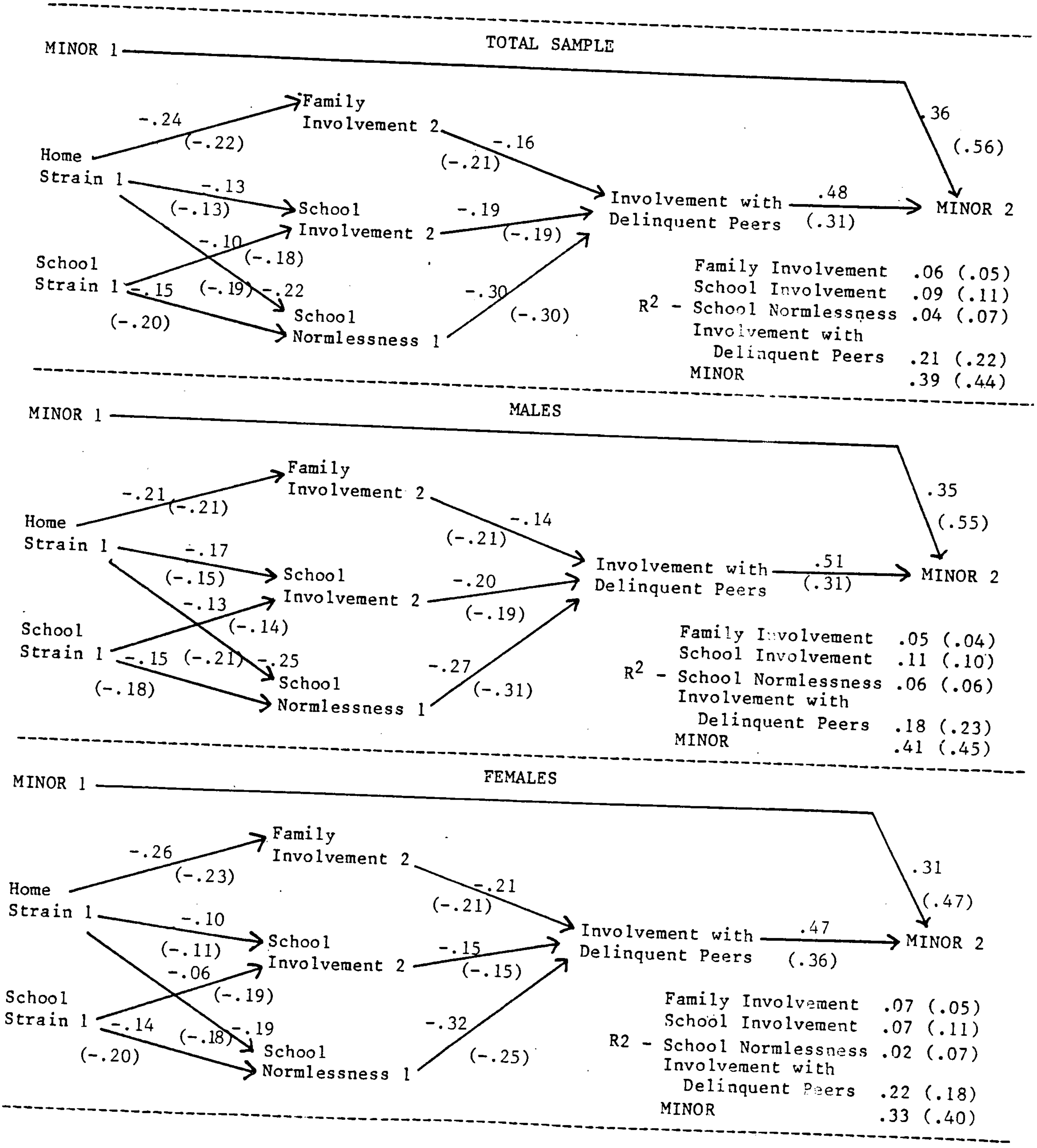
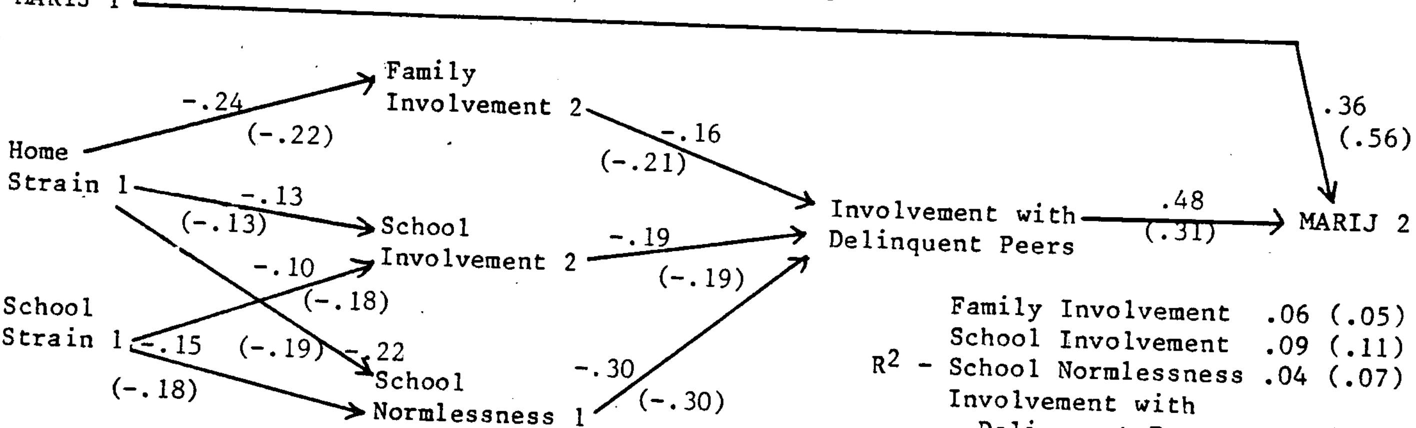


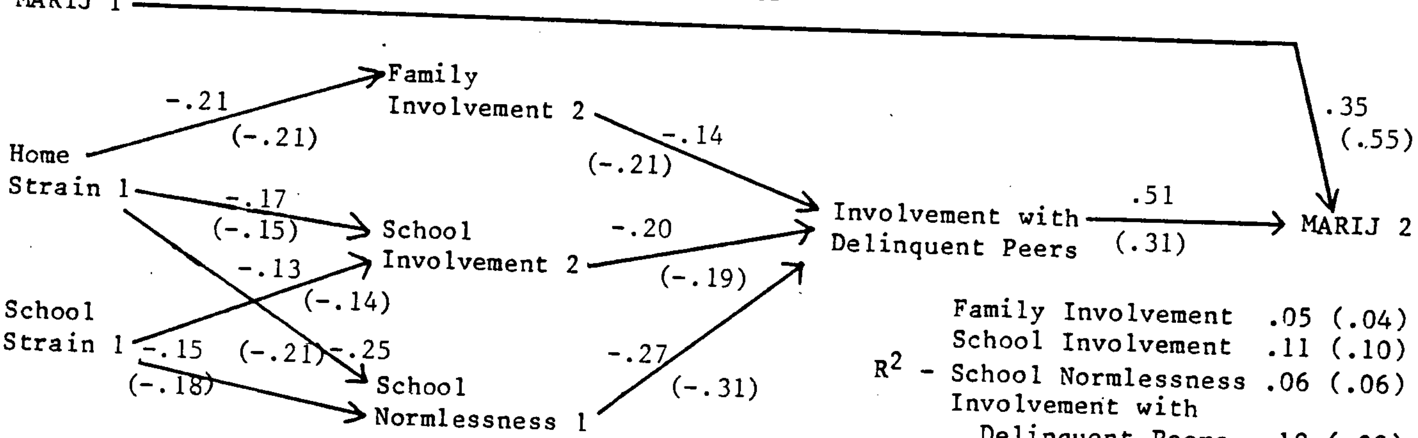
Figure 6.5
Reduced Path Model-Marijuana Use (MARIJ)
Path coefficients and correlation ratios of replication analyses (1977 to 1978)
are enclosed in parentheses.

TOTAL SAMPLE



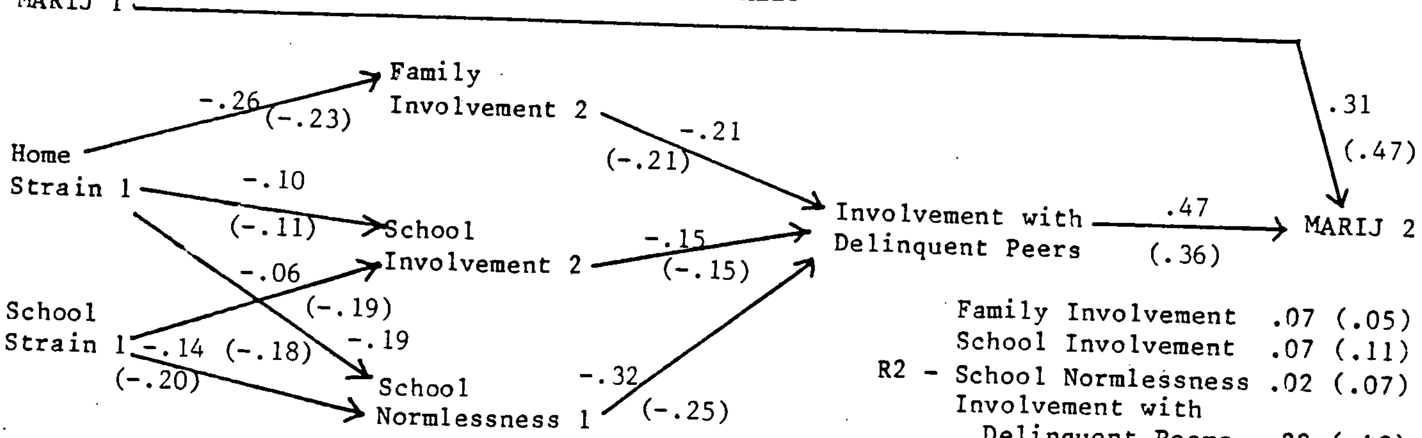
R^2 -	Family Involvement	.06 (.05)
	School Involvement	.09 (.11)
	School Normlessness	.04 (.07)
	Involvement with Delinquent Peers	.21 (.22)
	MARIJ	.59 (.59)

MALES



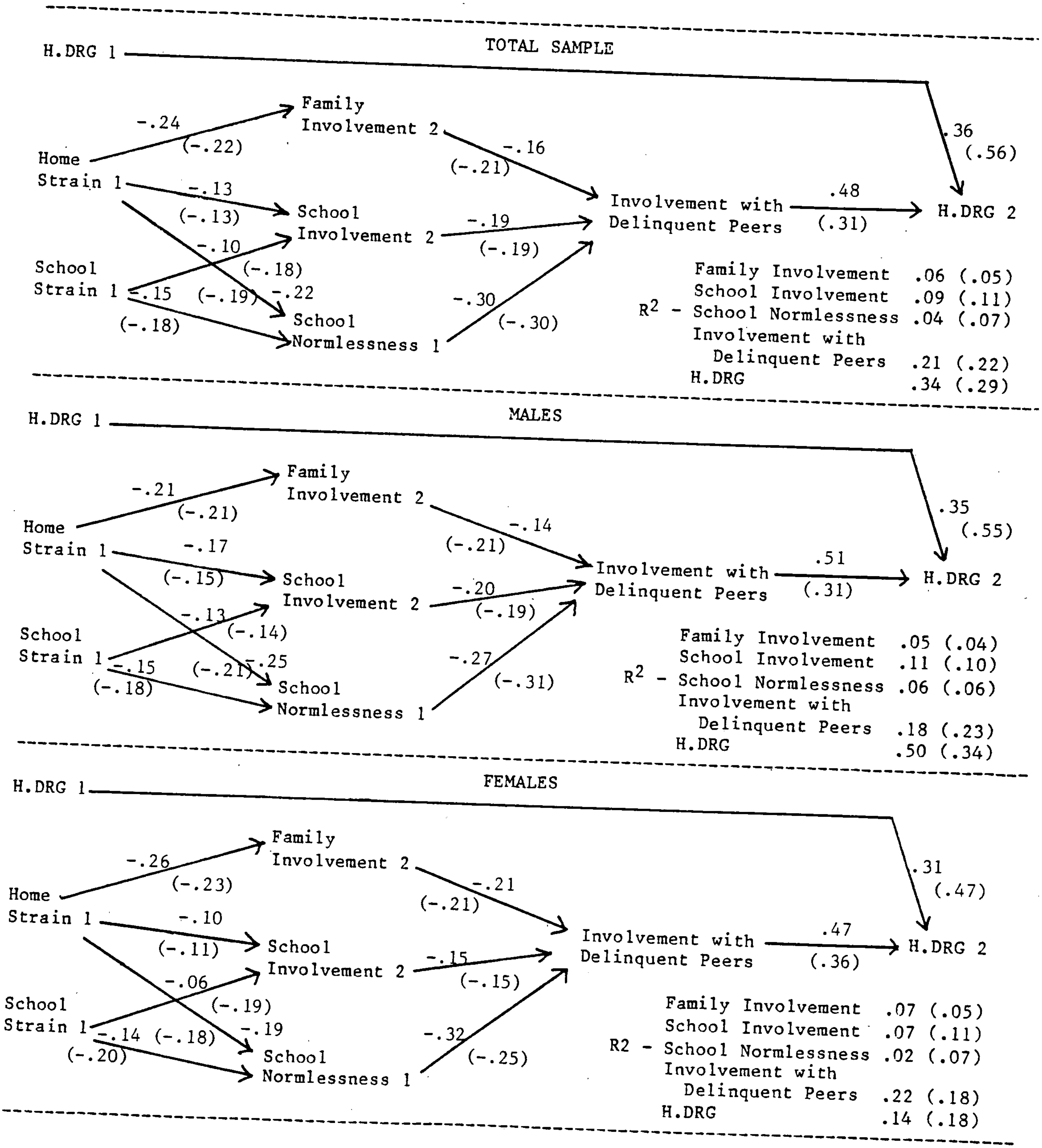
R^2 -	Family Involvement	.05 (.04)
	School Involvement	.11 (.10)
	School Normlessness	.06 (.06)
	Involvement with Delinquent Peers	.18 (.23)
	MARIJ	.62 (.62)

FEMALES



R2 -	Family Involvement	.07 (.05)
	School Involvement	.07 (.11)
	School Normlessness	.02 (.07)
	Involvement with Delinquent Peers	.22 (.18)
	MARIJ	.55 (.51)

Figure 6.6
Reduced Path Model-Hard Drug Use (H.DRG)
Path coefficients and correlation ratios of replication analyses (1977 to 1978) are enclosed in parentheses.



bonding or of other theoretical constructs such as neighborhood social disorganization to increase the level of explanation, raises the potential problem of specification error. Conceivably, the addition of other relevant variables to the model, could alter the computed path coefficients (see e.g. Cook and Campbell, 1979). Given the consistency of the path analyses, however, it would seem that although the magnitude of the coefficients might change, it is unlikely that the basic relationships will change.

The only variables having a direct effect on the delinquency and drug use measures are involvement with delinquent peers and prior delinquency or drug use. Neither the strain nor the conventional bonding measures have a direct effect on delinquency or drug use. Although this pattern is consistent across sexes and replications, it should be observed that the relative importance of involvement with delinquent peers and of prior delinquency in predicting delinquency is often reversed in the two replications. This reversal can be observed for both males and females on the general delinquency measure, and for males on the index and minor offense measures. Prior drug use appears to be a somewhat better predictor of future drug use than involvement with delinquent peers for boys. For girls the influence of the two predictors is approximately equal, except for the second replication for marijuana use. There, prior marijuana use can be seen to have a greater effect on future marijuana use.

Examination of the R^2 values for the delinquency and drug use measures indicates an overall lower level of prediction for females, especially for index offenses and illicit drug use. For both males and females, prediction of overall involvement in delinquent behaviors and of marijuana use is higher than for index offenses, minor offenses, or illicit drug use, with more than

fifty percent of the variance of SRD and marijuana use being explained in most instances. The ability to explain changes in index offenses, minor offenses, or illicit drug use is in general moderate for males (30-50 percent explained variance) and moderate to low (11-34 percent explained variance) for females.

Summary

As an overview of the results of the path analyses across sexes and replications, it appears that prior delinquency and involvement in delinquent peer groups are the main factors directly influencing both delinquency and drug use, and that in many cases the two predictor variables provide a reasonably good estimation of the level of involvement in delinquency and drug use. The social-psychological constructs of strain and conventional bonding, however, have only weak and indirect effects on delinquent behavior and drug use. Although strain leads to changes in conventional bonding and the level of conventional bonding affects the level of involvement with delinquent peers, these effects are relatively small.

NOTES

1. In the attempt to employ the LISREL technique to obtain estimates of the parameters of the structural equations defined by the the theory, several different models or parameter specifications were tried. In all cases, either the iterative minimization procedure used in obtaining maximum likelihood estimates would not converge and successive estimates were becoming more and more unreasonable or the converged solutions were nonsensical, providing negative estimates of variances and inconsistent estimates of certain relationships. It is suspected that the LISREL approach which assumes a multivariate normal distribution, may not be robust in the face of extreme non-normality. Thus, the distributions of the various delinquency scales, that have a mode of zero and are highly skewed, may have led to the difficulties in using the LISREL method.

2. It should be noted that with the variables removed in the reduced model also removed in the full model, the large sample likelihood ratio test of the adequacy of the reduced models indicates that for certain models the fit of the reduced model to each dependent variable is as good as in the full model. For some models, however, the equivalence of the full and reduced models would be rejected at the .05 level. This test is relatively sensitive to sample size, however, and since the NYS sample is relatively large and the calculated Chi-Square values were relatively small in all cases, it was concluded that the fit of the reduced models was adequate.

CHAPTER SEVEN - EXAMINATION OF THE CONDITIONAL RELATIONSHIP BETWEEN CONVENTIONAL AND DELINQUENT BONDING

Introduction

The preceding path analyses indicated that only two variables, involvement with delinquent peers and prior delinquency, had direct effects on the level of involvement in delinquent behavior. The general path model did not, however, include the conditional relationship specified in the theoretical model. In the discussion of the theoretical model we postulated that the effect of involvement with delinquent peers on delinquent behavior varied by the level of bonding to conventional groups and activities. This chapter examines the question of whether there is an interaction between involvement with delinquent peers and level of conventional bonding in predicting delinquent behavior.

Using the same measures of conventional bonding, bonding to delinquent peers and delinquency/drug use, it was anticipated that a linear model approach would be used in examining the potential interaction. However, the use of these methods (regression models, analysis of variance, analysis of covariance) was problematical because of unequal residual variances for different levels of bonding or because of the artificial restriction of range of the delinquency measures and the resulting heteroscedasticity of these measures for groups defined by different levels of conventional bonding. As a result, the interaction between involvement with delinquent peers and bonding levels in relationship to delinquency is examined by comparing the delinquent behavior of different groups of youth characterized by different levels of conventional bonding and different levels of involvement with delinquent peers. As in the previous analyses, two replications of the same basic examination can be made with the three years of data available.

Although the assumptions required for linear model techniques were violated and results from these models could not be unequivocally interpreted, it should be noted that the results from these analyses were consistent with the existence of an interaction between levels of conventional bonding and levels of bonding with delinquent peers. For example, dividing the sample into groups with lower and higher conventional bonds, the correlation between the total delinquency scale (SRD) and involvement with delinquent peers was .42 for the group with high bonds and .65 for the group with low bonds. Similarly, using both prior delinquency and involvement with delinquent peers to predict current delinquency, the multiple correlation ratio was .31 for the high bonds group and .57 for the group with low bonds.

Determination of Types of Youth Characterized by Different Levels of Conventional Bonding and Different Levels of Involvement with Delinquent Peers

Given the multivariate measurement of the conventional bonding domain, a K-means or iterative relocation cluster analysis of the entire NYS sample was performed to locate types of youth with different patterns of conventional bonding characteristics.[1] Using the four measures of conventional bonding corresponding to the first two years of data, the clustering algorithm terminated on a two cluster partition of the NYS sample. The first group was characterized by having, in general, lower than average scores. The group centroid was approximately one-half standard deviation below the mean on each of the conventional bonding variables. The second group was characterized by having higher than average scores, the group centroid being approximately one half standard deviation above the mean on each conventional bonding variable. While these two groups clearly are not distinct types, the analysis provides a minimum variance solution that divides the NYS sample into two groups, those

with stronger than average bonds to conventional groups and activities and those with weaker than average bonds to these groups and activities. This cluster definition is used to identify youth with strong and weak conventional bonds. A replication of the cluster analysis using the bonding measures of the second and third years provided very similar results. Means and standard deviations of the conventional bonding variables for each cluster are compared with population values in Table 7.1.

To separate youth with higher levels of involvement with delinquent peers from those with lower levels, a frequency distribution of the involvement index was obtained. The median value was used to divide the sample into two groups, with the group below the median considered to have a low involvement and the group above the median a high involvement. The medians for the total NYS sample, for males and for females were used as appropriate.

A cross-classification of individuals by conventional bonding level and level of involvement with delinquent peers thus produces four groups: group 1, high conventional bonds and low involvement with delinquent peers; group 2, high conventional bonds and high delinquent peer involvement; group 3, low conventional bonds and low delinquent peer involvement; and group 4, low conventional bonds and high delinquent peer involvement.

Self-Reported Delinquency Scores

To examine the effect of levels of conventional bonding and involvement with delinquent peers on delinquent behavior, it is necessary to adjust the measure of delinquent behavior for prior delinquency. Since prior delinquency predicts future delinquency, if conventional or deviant bonding levels are related to prior delinquency, differences in current delinquency between groups with differing bonding levels (conventional and deviant) may simply result from differences in prior delinquency.

Table 7.1
Mean Scores and Standard Deviations of the Conventional Bonding Measures for the Two Cluster Solutions

			Family Activities	Family Normlessness	School Activities	School Normlessness
1976-1977	Cluster 1 High Bonds N = 912	Mean	11.59	16.61	8.02	20.35
		S.D.	2.87	1.86	2.95	2.20
	Cluster 2 Low Bonds N = 699	Mean	8.06	13.19	5.55	16.79
		S.D.	3.41	2.05	3.07	2.27
	Total Sample N = 1611	Mean	10.06	15.13	6.95	18.81
		S.D.	3.57	2.58	3.24	2.85
1977-1978	Cluster 1 High Bonds N = 770	Mean	11.25	16.90	8.50	20.74
		S.D.	3.23	1.84	2.99	2.18
	Cluster 2 Low Bonds N = 725	Mean	8.23	13.75	5.28	17.14
		S.D.	3.51	2.05	3.18	2.37
	Total Sample N = 1495	Mean	9.78	15.37	6.94	18.99
		S.D.	3.69	2.50	3.48	2.90

To adjust the SRD2 scores, a linear regression equation with SRD2 as the dependent variable and SRD1 as the independent variable was obtained. For each respondent a new or adjusted SRD2 measure was obtained by subtracting the score predicted by the regression equation from the reported SRD2 score. In equation form, this is:

$$\widehat{SRD}_2 = SRD_2 - (b_1 \ SRD_1 + b_o)$$

where $\widehat{SRD}$ 2 is the adjusted score and b_1 and b_o are the regression coefficient and constant. Thus, that part of the SRD2 score that can be linearly predicted by SRD1 has been removed and the adjusted SRD2 score reflects the residual score from the regression line for that individual. It should be observed that the adjusted score can be either positive or negative, since the adjusted score may reflect either an increase or decrease in delinquency from the level of the SRD2 score that would be predicted from the SRD1 score.

The above procedure was followed for each of the five delinquency and drug use scales used in this report. Separate regression lines and adjusted scores were obtained for each scale and for the total NYS sample, for males, and for females.

Analysis Results

The mean scores of the adjusted self-reported delinquency scale, the adjusted index and minor offense scales, and the adjusted marijuana and illicit drug use measures for the total sample and for males and females were computed for the four groups defined by levels of conventional bonding and involvement with delinquent peers. These means were obtained for the 1976-1977 and the 1977-1978 periods and are presented in Tables 7.2-7.7. The statistical difference between the means was examined by unequal variance

Table 7.2
Means of Adjusted Delinquency and Drug Use Category Scale Scores for Groups Defined by Levels of Conventional Bonding and Involvement with Delinquent Peers: 1976 to 1977 for Total NYS Sample

SRD

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	DELINQUENT PEER INVOLVEMENT High
High	-.94	.34
Low	-1.20	1.74

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.28	2,4	.00
1,4	.00	3,4	.00

INDEX OFFENSES

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	DELINQUENT PEER INVOLVEMENT High
High	-.12	-.02
Low	-.21	.31

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.08	2,3	.02
1,3	.13	2,4	.00
1,4	.00	3,4	.00

MINOR DELINQUENCY

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	DELINQUENT PEER INVOLVEMENT High
High	-.42	.20
Low	-.41	.63

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.93	2,4	.00
1,4	.00	3,4	.00

MARIJUANA USE

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	DELINQUENT PEER INVOLVEMENT High
High	-.44	.08
Low	-.43	.73

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.82	2,4	.00
1,4	.00	3,4	.00

ILLICIT DRUG USE

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	DELINQUENT PEER INVOLVEMENT High
High	-.13	-.12
Low	-.07	.30

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.82	2,3	.58
1,3	.47	2,4	.00
1,4	.00	3,4	.00

* Significance - As determined by unequal variance t-test. Groups identified by the following scheme.

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	DELINQUENT PEER INVOLVEMENT High
High	Grp 1	Grp 2
Low	Grp 3	Grp 4

GROUP SIZES

1 - 506
2 - 281
3 - 192
4 - 401

Table 7.3
Means of Adjusted Delinquency and Drug Use Category Scale Scores for Groups Defined by Levels of Conventional Bonding and Involvement with Delinquent Peers: 1976 to 1977, Males

SRD

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	-1.35	1.10
	Low	-1.90	2.26

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.16	2,4	.12
1,4	.00	3,4	.00

INDEX OFFENSES

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	-.22	.18
	Low	-.35	.43

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.36	2,4	.19
1,4	.00	3,4	.00

MINOR DELINQUENCY

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	-.53	.42
	Low	-.71	.80

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.19	2,4	.16
1,4	.00	3,4	.00

MARIJUANA USE

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	-.52	.23
	Low	-.48	.73

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.73	2,4	.02
1,4	.00	3,4	.00

ILLICIT DRUG USE

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	-.19	.01
	Low	-.14	.28

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.01
1,3	.21	2,4	.02
1,4	.00	3,4	.00

* Significance - As determined by unequal variance t-test. Groups identified by the following scheme.

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	Grp 1	Grp 2
	Low	Grp 3	Grp 4

GROUP SIZES
1 - 255
2 - 113
3 - 118
4 - 228

Table 7.4
Means of Adjusted Delinquency and Drug Use Category Scale Scores for Groups Defined by Levels of Conventional Bonding and Involvement with Delinquent Peers: 1976 to 1977, Females

SRD

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	High
High	-.58	-.04
Low	-.46	1.14

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.02	2,3	.19
1,3	.61	2,4	.00
1,4	.00	3,4	.00

INDEX OFFENSES

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	High
High	-.03	-.09
Low	-.01	.15

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.07	2,3	.15
1,3	.64	2,4	.00
1,4	.02	3,4	.09

MINOR DELINQUENCY

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	High
High	-.27	.08
Low	-.10	.43

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.33
1,3	.26	2,4	.07
1,4	.00	3,4	.02

MARIJUANA USE

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	High
High	-.40	.07
Low	-.46	.78

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.24	2,4	.00
1,4	.00	3,4	.00

ILLICIT DRUG USE

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	High
High	-.10	-.18
Low	-.16	.42

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.19	2,3	.69
1,3	.19	2,4	.00
1,4	.00	3,4	.00

* Significance - As determined by unequal variance t-test. Groups identified by the following scheme.

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT Low	High
High	Grp 1	Grp 2
Low	Grp 3	Grp 4

GROUP SIZES
1 - 257
2 - 162
3 - 77
4 - 170

Table 7.5
Means of Adjusted Delinquency and Drug Use Category Scale Scores for Groups Defined by Levels of Conventional Bonding and Involvement with Delinquent Peers: 1977 to 1978 for Total NYS Sample

SRD

	DELINQUENT PEER INVOLVEMENT	
CONVENTIONAL BONDING	Low	High
High	-.77	.18
Low	-.58	1.13

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.27	2,4	.01
1,4	.00	3,4	.00

INDEX OFFENSES

	DELINQUENT PEER INVOLVEMENT	
CONVENTIONAL BONDING	Low	High
High	-.08	-.08
Low	-.10	.20

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.99	2,3	.69
1,3	.48	2,4	.00
1,4	.00	3,4	.00

MINOR DELINQUENCY

	DELINQUENT PEER INVOLVEMENT	
CONVENTIONAL BONDING	Low	High
High	-.30	.18
Low	-.31	.46

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.96	2,4	.04
1,4	.00	3,4	.00

MARIJUANA USE

	DELINQUENT PEER INVOLVEMENT	
CONVENTIONAL BONDING	Low	High
High	-.18	.20
Low	-.33	.58

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.22	2,4	.01
1,4	.00	3,4	.00

ILLICIT DRUG USE

	DELINQUENT PEER INVOLVEMENT	
CONVENTIONAL BONDING	Low	High
High	-.18	-.07
Low	-.18	.40

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.04	2,3	.12
1,3	.96	2,4	.00
1,4	.00	3,4	.00

* Significance - As determined by unequal variance t-test. Groups identified by the following scheme.

	DELINQUENT PEER INVOLVEMENT	
CONVENTIONAL BONDING	Low	High
High	Grp 1	Grp 2
Low	Grp 3	Grp 4

GROUP SIZES

1 - 498
2 - 231
3 - 221
4 - 447

Table 7.6
Means of Adjusted Delinquency and Drug Use Category Scale Scores for Groups Defined by Levels of Conventional Bonding and Involvement with Delinquent Peers: 1977 to 1978, Males

SRD

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT	
	Low	High
High	-1.00	.41
Low	-.83	1.33

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.48	2,4	.11
1,4	.00	3,4	.00

INDEX OFFENSES

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT	
	Low	High
High	-.13	-.05
Low	-.15	.23

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.35	2,3	.20
1,3	.48	2,4	.04
1,4	.00	3,4	.00

MINOR DELINQUENCY

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT	
	Low	High
High	-.42	.25
Low	-.36	.57

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.59	2,4	.13
1,4	.00	3,4	.00

MARIJUANA USE

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT	
	Low	High
High	-.52	.45
Low	-.37	.56

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.21	2,4	.58
1,4	.00	3,4	.00

ILLICIT DRUG USE

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT	
	Low	High
High	-.23	-.06
Low	-.22	.44

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.05	2,3	.14
1,3	.91	2,4	.00
1,4	.00	3,4	.00

* Significance - As determined by unequal variance t-test. Groups identified by the following scheme.

CONVENTIONAL BONDING	DELINQUENT PEER INVOLVEMENT	
	Low	High
High	Grp 1	Grp 2
Low	Grp 3	Grp 4

GROUP SIZES
1 - 227
2 - 89
3 - 144
4 - 268

Table 7.7
Means of Adjusted Delinquency and Drug Use Category Scale Scores for Groups Defined by Levels of Conventional Bonding and Involvement with Delinquent Peers: 1977 to 1978, Females

			DELINQUENT PEER INVOLVEMENT	
			Low	High
SRD	CONVENTIONAL BONDING	High	-.50	.18
		Low	-.64	.93

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.01
1,3	.53	2,4	.05
1,4	.00	3,4	.00

			DELINQUENT PEER INVOLVEMENT	
			Low	High
INDEX OFFENSES	CONVENTIONAL BONDING	High	-.04	-.07
		Low	-.06	.14

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.36	2,3	.94
1,3	.34	2,4	.00
1,4	.00	3,4	.00

			DELINQUENT PEER INVOLVEMENT	
			Low	High
MINOR DELINQUENCY	CONVENTIONAL BONDING	High	-.20	.21
		Low	-.33	.32

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.24	2,4	.56
1,4	.00	3,4	.00

			DELINQUENT PEER INVOLVEMENT	
			Low	High
MARIJUANA USE	CONVENTIONAL BONDING	High	-.38	.14
		Low	-.31	.63

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.00	2,3	.00
1,3	.46	2,4	.01
1,4	.00	3,4	.00

			DELINQUENT PEER INVOLVEMENT	
			Low	High
ILLICIT DRUG USE	CONVENTIONAL BONDING	High	-.14	-.13
		Low	-.13	.28

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.02	2,3	.03
1,3	.50	2,4	.09
1,4	.00	3,4	.00

* Significance - As determined by unequal variance t-test. Groups identified by the following scheme.

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	Grp 1	Grp 2
	Low	Grp 3	Grp 4

GROUP SIZES

1	-	268
2	-	146
3	-	82
4	-	175

t-tests. As noted earlier, this multiple test approach was required because of the unequal variances and unequal sample sizes which precluded use of analysis of variance techniques.

Examination of Tables 7.2-7.7 reveals a relatively strong consistency across sexes for both delinquency and drug use measures. The two groups with low involvement with delinquent peers (the low involvement and high bonding group and low involvement and low bonding group) are never statistically different on any delinquency or drug use measure for either sex or replication. These two groups also have the lowest involvement in delinquency and drug use. For both sexes, the high delinquent peer involvement and high conventional bonding group generally has the next higher level of involvement in delinquency and drug use while the high delinquent peer involvement and low conventional bonding group always has the highest level of involvement in these behaviors. Whenever there are statistical differences between the groups, the increasing rank order of the significantly different groups by their mean values is the order indicated above.

Of particular importance to the theoretical development presented earlier is the comparison of the two groups with high bonding to delinquent peers, since it was expected that the presence of strong conventional bonds might partially ameliorate the influence of delinquent peers on delinquent behavior. The expected difference is observed in all comparisons, although the differences in means are not always statistically significant (for 9 out of 30 tests, $p > .05$). Although the lack of statistical significance implies that in some instances (particularly marijuana use for males, 1978 and minor delinquency for females, 1978) levels of conventional bonding may not have a differential effect on the delinquency of youth who have a high involvement

with delinquent peers, the consistency with which the mean differences exceed or approach a moderate significance level across sexes for both delinquency and drug use measures suggests that high conventional bonding does act as an insulator against the effects of bonding to delinquent peers.

Because the data presented in Tables 7.2-7.7 are based on categorical or rate responses to the self-reported delinquency items, the actual magnitude of group differences in terms of the number of delinquent behaviors is difficult to ascertain. To illustrate group differences in terms of behaviors, the procedure for obtaining adjusted delinquency scores described above was applied to the SRD open-end frequency scores and the means of the delinquent peer involvement - conventional bonding groups on the adjusted frequency scores were calculated. These means are presented in Tables 7.8 and 7.9.

Individuals in the two groups that have lower involvement with delinquent peers have, on the average, a substantially lower number of offenses than would be expected on the basis of their prior delinquency. The group with high delinquent peer involvement and high conventional bonding has, on the average, a somewhat lower number of offenses than would be expected or is close to the expected number. Most striking, however, is the large number of offenses committed by the high delinquent peer involvement - low conventional bonding group. This number is substantially greater than that expected on the basis of their prior delinquency. Among members of this group, males report more than 20 offenses over that expected and females more than 10 offenses over their expected scores. In comparison other groups show either a decrease or a very small increase over the expected frequency. These data most clearly indicate the conditional effect of conventional bonding on the delinquent peers-delinquent behavior relationship. On the basis of the frequency data,

Table 7.8
Means of Adjusted Total Delinquency Frequency Scale Scores for Groups Defined by Levels of Conventional Bonding and Involvement with Delinquent Peers: 1976 to 1977

TOTAL SAMPLE

			DELINQUENT PEER INVOLVEMENT		SIGNIFICANCE OF GROUP DIFFERENCES*			
	CONVENTIONAL		Low	High	Group	Sig.	Group	Sig.
SRD	BONDING	High	-12.43	-2.86	1,2	.00	2,3	.00
		Low	-11.09	23.13	1,3	.43	2,4	.00
					1,4	.00	3,4	.00

MALES

			DELINQUENT PEER INVOLVEMENT		SIGNIFICANCE OF GROUP DIFFERENCES*			
	CONVENTIONAL		Low	High	Group	Sig.	Group	Sig.
SRD	BONDING	High	-17.33	-5.22	1,2	.00	2,3	.06
		Low	-14.85	29.48	1,3	.50	2,4	.00
					1,4	.00	3,4	.00

FEMALES

			DELINQUENT PEER INVOLVEMENT		SIGNIFICANCE OF GROUP DIFFERENCES*			
	CONVENTIONAL		Low	High	Group	Sig.	Group	Sig.
SRD	BONDING	High	-6.46	.99	1,2	.01	2,3	.26
		Low	-3.57	12.24	1,3	.31	2,4	.03
					1,4	.00	3,4	.00

* Significance - As determined by unequal variance t-test. Groups identified by the following scheme.

		DELINQUENT PEER INVOLVEMENT	
CONVENTIONAL		Low	High
BONDING	High	Grp 1	Grp 2
	Low	Grp 3	Grp 4

Table 7.9

Means of Adjusted Total Delinquency Frequency Scale Scores for Groups Defined by Levels of Conventional Bonding and Involvement with Delinquent Peers: 1977 to 1978

TOTAL SAMPLE

SRD

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	-8.63	-4.68
	Low	-6.78	18.38

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.17	2,3	.47
1,3	.35	2,4	.00
1,4	.00	3,4	.00

MALES

SRD

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	-11.95	-3.95
	Low	-9.88	21.32

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.22	2,3	.35
1,3	.51	2,4	.01
1,4	.00	3,4	.00

FEMALES

SRD

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	-4.98	-.81
	Low	-5.18	11.97

SIGNIFICANCE OF GROUP DIFFERENCES*

Group	Sig.	Group	Sig.
1,2	.16	2,3	.21
1,3	.92	2,4	.05
1,4	.00	3,4	.00

* Significance - As determined by unequal variance t-test. Groups identified by the following scheme.

		DELINQUENT PEER INVOLVEMENT	
		Low	High
CONVENTIONAL BONDING	High	Grp 1	Grp 2
	Low	Grp 3	Grp 4

involvement with delinquent peers is a salient factor in increasing delinquent involvement only in the presence of low bonding to conventional groups and activities.

Summary

The findings reviewed above indicate that persons characterized by low bonding to delinquent peers are less delinquent than would be expected on the basis of their previous delinquency, and that the level of conventional bonding has little effect on these persons' delinquency. Persons who are strongly bonded to delinquent peers are more delinquent than those who are not, and the volume of their delinquency is dependent on their level of conventional bonding. Low conventional bonding in conjunction with high bonding to delinquent peers leads to a substantially higher frequency of delinquent behavior than expected.

NOTES

1. Descriptions of the basic K-means clustering algorithm can be found in Hartigan (1975) and Anderberg (1973). The actual method used is a modification of an algorithm described by Sparks (1973), that removes the influence of outlying points and merges clusters whose centroids are separated by a distance less than a given threshold. To provide equal weighting to each of the four variables used in the clustering process, standardized scores were used.

CHAPTER EIGHT - CONCLUSIONS

Introduction

In this final chapter we will review the overall predictive efficiency of the integrated model and compare it to other multivariate tests of theoretical models. The implications of the findings for each causal linkage postulated in the model will then be discussed, and several modifications to the model proposed. Finally we will briefly discuss the policy and treatment implications of these findings.

Predictive Efficiency of the Integrated Model

The overall predictive efficiency of the integrated model appears reasonably good in comparison with the multivariate tests of pure and mixed explanatory models reviewed in chapters one through four. When the general delinquency measure (SRD) was the criterion measure, the model accounted for 52-58 percent of the variance in delinquency (total sample). When the criterion measure involved serious delinquent acts, the level of explained variance was smaller, but still substantial (32 to 36 percent). For marijuana use, the model accounted for 59 percent of the variance (both initial test and replication); and for hard drug use it explained 29-34 percent of the variance. The integrated model thus accounts for a major portion of the variance in general delinquency and marijuana use and a substantial portion of the variance in the more serious forms of these behavior.

None of the predictive (longitudinal) studies reviewed earlier accounted for more than 50 percent of the variance in either delinquency or marijuana use (actual range = 18 to 44 percent). One exception to this generalization involved the study by Jessor and Jessor (1977) which achieved a level of

explanation which was similar to that in this study for both a general deviance measure and a marijuana use measure, when the full set of 14 predictor measures was used in the analysis. However, the field test analysis described in the earlier review of this study involved a reduced set of six predictor measures and produced substantially lower levels of explained variance for both delinquency and marijuana use.[1]

It is more difficult to compare the results for the more serious forms of delinquency and drug use since relatively few studies considered these behaviors. Only one of the studies reviewed earlier involved a multivariate analysis with a serious delinquent criterion variable and this study involved a cross-sectional design (Meade and Marsden, 1981). The level of explanation reported here for index offenses is greater than that reported by Meade and Marsden for violent and theft offenses. The explained variance in hard drug use is also greater than that reported by Kandel et al., (1978) in their longitudinal study or in the cross-sectional study reported by Krohn and Massey (n.d.).

When compared with pure control or strain models, the integrated model's explanatory power is clearly much greater (see for example Spergel, 1967; Elliott, 1962; Hirschi, 1969; Jensen, 1972; Krohn and Massey, n.d.; Thompson et al., 1982; Linden, 1978; Wiatrowski et al., 1981; Thomas and Hyman, 1978). The advantage of the integrated model over social learning models or mixed models is generally less, although still substantial, particularly when delinquency is the criterion. Several cross-sectional studies report similar or higher levels of explanation for marijuana use. These studies involved either a social learning model (e.g. Akers, et al., 1979) or mixed theoretical models (e.g., Meier and Johnson, 1977, and Clayton and Voss, 1981). For

delinquency studies, we know of no cross-sectional or longitudinal studies which provide a higher level of explained variance than that reported here.

In sum, the explanatory power of the integrated model is quite good, given the level of prediction currently reported in the delinquency and drug use literature. Further, the consistency in the initial and replication findings increases our confidence in these estimates of the model's explanatory power.

The fact that the model tested included prior delinquency/drug use as a predictor variable raises the question of how much of the predictive power of the model is due to this measure as compared to the more theoretical measures in the model. To address this question, a separate test was made in which prior delinquency was left out of the model. For the total sample predicting SRD in 1977, the reduced model included the same paths as reported earlier but the overall level of explained variance dropped to 42 percent. Removal of the prior delinquency measure thus resulted in a 19 percent decrease in explained variance (from 52 to 42 percent). This level of explained variance in general delinquency is still better than that reported in earlier predictive studies (except Jessor and Jessor, 1977), and very similar to that reported by the Jessors in their field test.

A comparison of the path coefficients for prior delinquency and involvement with delinquent peers reveals that involvement with delinquent peers was the stronger predictor in the initial analysis. This generalization held for all criterion measures and both males and females. In the replication analysis, this pattern was reversed and prior SRD became the stronger predictor. This change was primarily the result of an increase in the prior delinquency-delinquency relationship rather than a decrease in the involvement with delinquent peers - delinquency relationship. The latter

correlation was relatively stable over the two analysis periods (.59 and .64) while the former correlation increased from .58 in the initial analysis to .71 in the replication analysis. Overall, it appears that the integrated model has good predictive efficiency and that the relationships between theoretical variables in the model are relatively stable.

Evaluation of Specific Causal Linkages in the Model

The findings clearly support the claim that it is the integrated path which accounts for virtually all of the explained variance in delinquency and drug use. The direct cause of delinquency and drug use is bonding to deviant peers and the effects of strain and conventional bonding are almost totally indirect, mediated by the level of bonding to deviant peers. Neither strain nor conventional bonding had any substantial direct effect upon subsequent delinquency or drug use. The consistency of this finding was remarkable; it held for all measures of delinquency and drug use, for both males and females, and for the initial and replication studies. A comparison of the full and reduced models in each of these analyses (see Appendix B) indicates that in 24 of the 30 tests made, strain and conventional bonding accounted for no more than one percent of the variance in the criterion measure; in five cases these measures accounted for two percent of the variance; and in one case (females, marijuana use, replication test) they accounted for an additional three percent in explained variance. There is no support here for either a pure strain or a pure control model.

Given the potential significance of this finding, it is important to ask whether this test constituted a fair and reasonable test of the effects of strain and conventional bonding upon subsequent delinquency and drug use. This question may be approached in several ways. First, it may be argued that the measures of conventional bonding and strain are unusually weak or poor

measures of these theoretical variables and that our failure to find any evidence of direct effects for these measures can be attributed to their unreliability or questionnable validity. We do not believe there is any tangible evidence to support this argument. The reliabilities of these measures as reflected by conventional measures of internal consistency are within the acceptable range for social attitude measures (Helmstadter, 1970); we believe they have reasonably good face validity; and the zero-order concurrent and lagged correlations between these measures and the delinquency/drug use measures are as high or higher than those typically reported for other strain and conventional bonding measures (see Table 8.1). The predictive validity of these measures appears as good or better than many other measures of these constructs used in earlier studies (see for example Hirschi, 1969; Jensen, 1972; Krohn and Massey, n.d.; Elliott and Voss, 1974; Meade and Mardsen, 1981; Cernkovich, 1978; Eve, 1978; Thompson et al., 1982; Linden, 1978; Wiatrowski et al., 1981 and Johnstone, 1981). While we acknowledge that our modeling analysis did not consider measurement error, there is no direct evidence that our measures of strain or conventional bonding were particularly weak predictor measures as compared to others utilized in prior studies.

Second, it may be argued that the four specific measures of conventional bonding used in the test of the integrated model do not adequately represent the relevent dimensions of bonding. Our conceptualization of social controls focused upon two general dimensions; internal controls reflecting personal beliefs in the moral validity of conventional norms; and external controls reflecting involvement in and commitment to conventional groups, institutions and activities. The specific measures used in the path analysis were selected to be representative of these two dimensions in each of two institutions - the

Table 8.1

Concurrent and Lagged (One Year) Correlations Between Strain and Conventional Bonding Predictors and Delinquency/Drug Use Criterion Measures: Initial Test 1976-1977

	Delinquency/Drug Use Criterion Measures									
Predictors	SRD1	SRD2	Index1	Index2	Minor1	Minor2	Marij1	Marij2	HardDrug1	HardDrug2
Strain										
Home Strain 1	.21	.14	.12	.09	.17	.13	.19	.18	.13	.12
School Strain 1	.16	.13	.13	.08	.13	.11	.10	.11	.07	.05
Conventional Bonding										
Family Involvement 2	-.19	-.21	-.12	-.12	-.16	-.21	-.22	-.30	-.15	-.19
Family Normlessness 1	-.31	-.23	-.15	-.15	-.28	-.23	-.25	-.27	-.12	-.15
School Involvement 2	-.22	-.22	-.12	-.12	-.18	-.20	-.18	-.20	-.09	-.13
School Normlessness 1	-.33	-.25	-.26	-.17	-.29	-.21	-.25	-.28	-.12	-.14

family and school. While we cannot assess the effect of including other dimensions of conventional bonding or other institutional settings which are not represented in our set of measures, we can assess the extent to which the reduced set used in the analysis captures the explained variance of the total set of conventional bonding predictors available. In a multiple regression analysis, the total set of five family bonding measures accounted for 13 percent of the variance in SRD2; the total set of five school bonding measures accounted for 16 percent of the variance in SRD2. The two family bonding predictors and the two school bonding predictors selected for use in the path analysis each account for approximately 80 percent of the explained variance attributed to their respective sets of measures. The conventional bonding measures used in the path analysis do appear to capture most of the explanatory power of the total set of family and school bonding measures available in this study.

Third, it might be argued that the relative strength of conventional bonding and deviant bonding measures is influenced by the temporal ordering of the measures in the path model, and that the use of clearly antecedent measures of all predictor variables would have resulted in significant direct effects for conventional bonding and strain measures. Both of the strain measures and 2 of the 4 conventional bonding measures were clearly antecedent to the criterion measures in the path analysis. However, the other two conventional bonding measures (involvement) and the two deviant bonding measures were concurrent with the criterion measures. A path model in which all predictor measures were based upon wave 1 data and the criterion measure (SRD) was based upon wave 2 data was examined.[2] The results of this analysis again revealed a strong direct effect of involvement with delinquent

peers and no direct effects of either strain or conventional bonding measures. The level of explained variance was substantially lower but the analysis essentially replicated the earlier findings.

In sum there is no evidence that the strain and conventional bonding measures used in this analysis were unreliable, invalid or unrepresentative indicators of their respective theoretical constructs. Nor is there any evidence that the failure to find significant direct effects for strain and conventional bonding measures in the original path analysis was the result of using several concurrent predictor meaures. Taken together, these findings provide good support for the claim that bonding to delinquent peers is the most proximate cause of delinquency and drug use, and that the effects of strain and conventional bonding are indirect and mediated by the level of bonding to delinquent peers.

Not all of the causal paths in the model were supported. While the path analyses indicated that conventional bonding influenced deviant bonding, there was no evidence that strain led directly to involvement with deliquent peers. This finding supports Kornhauser's (1978) claim that the effects of strain on delinquency are entirely mediated by weak conventional bonds, i.e., there was no evidence of direct effects of strain on either deviant bonding or delinquency/drug use. The only influence of strain was to attenuate conventional bonds. Home strain did contribute to a declining involvement with the family, a declining involvement at school, and increased school normlessness. School strain contributed only to weak bonding at school (both involvement and normlessness). All of these effects of strain were very weak.

The path analysis did indicate that weak conventional bonds contributed to an increasing involvement with delinquent peers. The three conventional

bonding measures accounted for 18 to 23 percent of the variation in deviant bonding. While this level of explained variance is not high it is substantial and supports the integrated model's claim that weak conventional bonds have an indirect effect upon delinquency. The strongest predictor of involvement with delinquent peers was school normlessness.

With the exception of the strain-deviant bonding relationship, the path analysis supported all the causal relationships specified in the integrated model. The level of explanation for bonding to deviant peers, the major intervening variable in the model is clearly not very high, but we acknowledged at the outset that the model was not fully identified relative to this variable. In our suggested modifications of the model, we will attempt to increase the level of explanation for this critical intervening variable in the model.

The Interaction Between Conventional and Delinquent Bonding

The analyses focusing upon the postulated interaction between conventional and deviant bonding were uniformly supportive. Controlling for the level of conventional bonding clearly specified the relationship between involvement with delinquent peers and delinquent behavior, increasing the strength of the relationship under the condition of weak bonds and decreasing the relationship under the condition of strong bonds. The effect was quite dramatic when the sample was partitioned into groups with high and low scores on each variable and adjusted subgroup means on delinquency and drug use measures were compared. The only subgroup with positive gains in delinquency and drug use over time was the subgroup characterized by low conventional and high deviant bonding. The other subgroups reported either negative gains or essentially "no change" over time. This pattern of findings was observed for all

delinquency/drug use measures, both males and females, and in the initial and replication analyses. Further, the relative increase in delinquency reported by the subgroup with weak conventional and strong deviant bonds was quite dramatic. Compared to expected rates (based upon prior delinquency scores), males in this subgroup reported an average of nearly 30 more offenses than expected in 1977 and over 20 more offenses than expected in 1978. Females reported approximately 12 more offenses than expected in each year.

It is of interest to note that the subgroup which was most marginal (i.e., not strongly bonded to either conventional or deviant groups) consistently reported rates of delinquency and drug use which were very similar to those of the high conventional - low deviant bonding subgroup. From a pure control perspective, this marginal subgroup should have reported the highest positive gains in delinquency and drug use and the high conventional - low deviant bonding subgroup should have reported the highest negative gains. Subgroup differences should have been strongest between these two subgroups. The fact that the means for these two subgroups were not significantly different on any of the thirty tests, and both groups uniformly had high negative gains in delinquency and drug use compared to the other subgroups leads us to reject the pure control model. The pattern of findings is clearly inconsistent with a pure control model and consistent with the integrated model.

There is no evidence here that weak conventional bonding leads to delinquency or drug use in the absence of involvement with delinquent peers. On the other hand, bonding to delinquent peers does appear to increase the risks of delinquency and drug use for all youth. Among those involved with delinquent peers, the risk of increased involvement in delinquency and drug use is substantially greater for youth with weak as compared to strong

conventional bonds, but all of these youth have some increased probability of delinquency and drug use, i.e., when the delinquent peers-delinquency relationship was partialled there was a substantial reduction in the correlation under the condition of strong conventional bonding, but it was not reduced to zero. The total set of findings appear consistent with the position that bonding to delinquent peers is a "necessary cause" of delinquency and drug use. There is almost no risk of delinquency if one has no involvement with delinquent peers regardless of his/her level of conventional bonding or strain. If one is involved with delinquent peers, then there is some probability of an involvement in delinquency, and this probability varies with the strength of his/her bonds to conventional groups, norms, and activities. Strong conventional bonds thus decrease the liklihood that one will become involved with delinquent peers; and in the event one is involved with delinquent peers, it appears to insulate him/her from the pro-delinquent influences of the delinquent group. The insulating effect does not appear to be complete but it is substantial.

Proposed Modifications to the Integrated Model

In light of the above findings, several modifications are proposed for the integrated theoretical model. These modifications are indicated in the revised integrated model presented in Figure 8.1. First, there is no evidence to support the causal relationship between strain and bonding to delinquent peers and this causal path is eliminated from the model. As noted in our earlier review, the evidence for this indirect effect from prior research was weak at best (Meade and Marsden, 1981; Elliott and Voss, 1974). This change essentially relegates strain to an antecedent cause of weak conventional bonding with no direct causal influence on any of the other variables in the model.

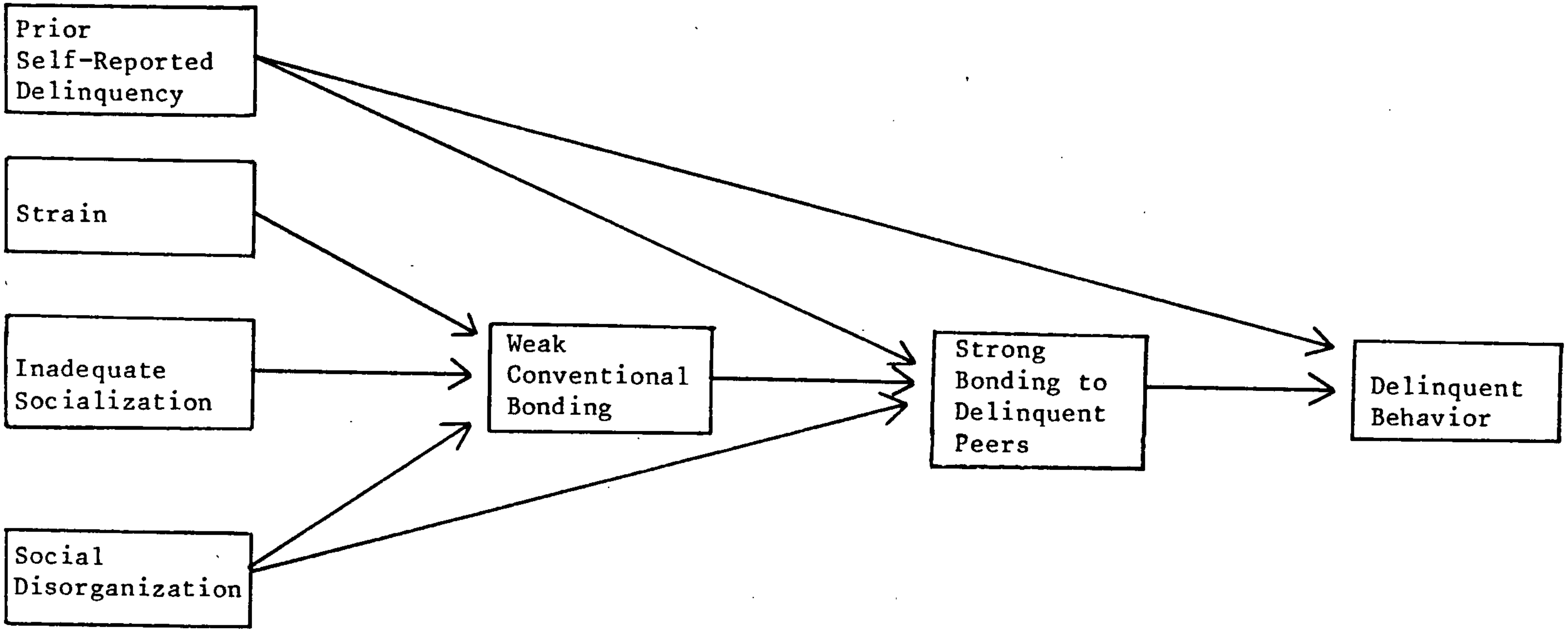


Figure 8.1
Revised Integrated Model

Second, two new paths are proposed to increase the explained variance in bonding to delinquent peers. We noted earlier in our review of studies addressing the two causal orderings of delinquent peers and delinquency, that the evidence supports a reciprocal causal relationship between these variables. This reciprocal relationship can be incorporated into the integrated model by including a causal path from prior delinquency to involvement with delinquent peers (see Figure 8.1). We expect that prior delinquency will contribute significantly to the explained variance in bonding to delinquent peers.

We have also included a causal path from social disorganization to delinquent bonding. We believe there is empirical justification for the position that the adolescent peer group is often the only stable social organization in areas characterized as socially disorganized, and that the adolescent groups in these areas frequently have a delinquent behavior orientation (Thrasher, 1927; Shaw and McKay, 1942; Kornhauser, 1978; Short and Strodtbeck, 1965; Yablonsky, 1962, Kobrin, 1951). In part, the effect of social disorganization should be mediated by weak conventional bonding since the conventional social organizations in these areas are (by definition) poorly integrated, unstable, and ineffective. But at an individual level, some persons living in these areas may not be characterized as having weak conventional bonds, and their reasons for joining delinquent peer groups may be unrelated to their conventional bonding and more a function of the limited availability of peer groups with a conventional orientation. In any event, we will consider this possible causal linkage in the next test of the integrated model.

These two modifications should greatly increase the explained variance in delinquent bonding. However, none of the proposed modifications will effect the model's explanatory power for delinquency or drug use since bonding to delinquent peers and prior delinquency/drug use remain as the only two direct causes of delinquency and drug use in the revised model. At a methodological level, we would expect some increased explanatory power for the model with improved measures of the predictor and criterion variables. However, at the theoretical level, any modification of the model which would impact upon the overall level of explained variance in delinquency and drug use would have to draw upon theoretical ideas outside of traditional strain, social control and social learning theories.

NOTES

1. Jessor and Jessor (1977) report an almost identical level of explained variance for their General Deviance measure using 14 predictor variables (49-56 percent). However, in their field test analysis using sex predictor variables which were the best predictors from their conceptual sets of predictors, the level of explained variance was lower (45-46 percent). Their level of explained variance for marijuana use was also very similar to that reported here when using all fourteen predictors but substantially lower for the field test (42-46 percent). We consider the field test to represent the test most similar to that presented here, but this study does represent an exception to this generalization.

2. SRD1 was excluded as a predictor in the analysis discussed here. Only the theoretical predictor variables were included. The model tested was thus a slightly different model than that tested in chapter six, but allows for a comparison of the relative influence of theoretical predictors when all are clearly antecedent to the criterion measure.

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APPENDIX A

Item Content and Psychometric Properties of Scales

Table A.1

STANDARD YOUTH SCALES

	WAVE 1				WAVE 2				WAVE 3				WAVE 4				WAVE 5			
Scale Name	$\bar{X}$	SD	A	HR	$\bar{X}$	SD	A	HR	$\bar{X}$	SD	A	HR	$\bar{X}$	SD	A	HR	$\bar{X}$	SD	A	HR
ASPIRATIONS/CURRENT SUCCESS																				
Family Aspirations	22.49	3.18	.70	.32	22.37	3.36	.74	.37	22.15	3.47	.76	.40	21.74	3.76	.79	.44	21.35	3.92	.80	.46
Family Current Success	18.72	3.96	.72	.34	18.82	4.12	.77	.40	18.79	4.22	.79	.43	18.99	4.21	.79	.43	18.97	4.11	.78	.42
Peer Aspirations	13.83	3.76	.63	.31	13.71	3.62	.65	.32	14.07	3.59	.65	.32	14.01	3.66	.72	.39	13.86	3.69	.73	.40
Peer Current Success	14.05	3.36	.69	.36	14.18	3.15	.67	.34	14.49	3.12	.66	.33	14.49	3.26	.74	.41	14.70	3.22	.73	.41
Academic Aspirations	20.26	3.97	.70	.32	20.14	4.11	.75	.37	19.63	4.31	.78	.41	19.26	4.47	.80	.45	19.08	4.47	.80	.44
Academic Current Succcess	17.37	3.70	.69	.31	17.42	3.82	.75	.38	17.24	3.84	.76	.39	17.34	3.79	.77	.40	17.43	3.77	.78	.42
SOCIAL ISOLATION																				
Family	10.02	2.99	.72	.34	9.78	2.92	.74	.38	9.77	3.09	.79	.44	9.48	3.05	.82	.50	9.48	2.87	.80	.47
Peer	10.74	2.74	.64	.27	10.32	2.69	.69	.32	9.85	2.61	.74	.37	9.80	2.60	.75	.39	9.72	2.47	.76	.40
School	11.15	2.95	.64	.27	10.69	2.79	.67	.29	10.47	2.64	.66	.28	10.61	2.63	.68	.31	10.53	2.44	.66	.29
NORMLESSNESS																				
Family	8.88	2.59	.64	.31	8.68	2.51	.66	.33	8.68	2.52	.69	.37	8.46	2.53	.74	.42	8.50	2.47	.73	.40
Peer	8.80	2.41	.60	.28	8.50	2.32	.62	.30	8.41	2.23	.63	.31	8.29	2.27	.69	.37	8.19	2.27	.73	.41
School	11.19	2.85	.60	.23	11.05	2.91	.66	.28	10.98	2.93	.68	.30	10.49	2.82	.72	.34	10.39	2.79	.75	.38
LABELING - GENERAL																				
Family	26.11	5.91	.81	.27	25.07	5.90	.84	.31	24.20	5.83	.86	.34	23.95	5.89	.87	.36	23.46	5.73	.88	.39
Peer	23.37	5.11	.80	.28	22.85	4.96	.81	.29	22.35	5.10	.85	.34	22.06	5.13	.85	.36	21.83	5.02	.87	.38
Teachers	25.54	5.61	.84	.32	25.09	5.56	.86	.35	24.78	5.72	.89	.41	———	———	——	——	———	———	——	——
LABELING - SPECIFIC BY CONTEXT																				
Family																				
Conforming	16.25	1.89	.63	.31	16.32	1.81	.63	.31	16.51	1.77	.68	.35	16.50	1.78	.67	.35	16.56	1.75	.70	.37
Bad	8.50	2.75	.77	.46	8.20	2.71	.81	.53	8.01	2.66	.83	.56	7.88	2.64	.84	.57	7.76	2.53	.86	.61
Sick	9.87	2.82	.67	.34	9.19	2.70	.70	.38	8.70	2.64	.73	.41	8.57	2.62	.76	.4	8.25	2.51	.77	.46

Table A.1, continued

STANDARD YOUTH SCALES

Scale Name	WAVE 1				WAVE 2				WAVE 3				WAVE 4				WAVE 5			
	$\bar{X}$	SD	A	HR	$\bar{X}$	SD	A	HR	$\bar{X}$	SD	A	HR	$\bar{X}$	SD	A	HR	$\bar{X}$	SD	A	HR
Peer																				
Conforming	11.97	1.47	.55	.30	12.03	1.36	.54	.29	12.19	1.40	.68	.42	12.27	1.37	.62	.37	12.27	1.34	.64	.38
Bad	8.41	2.68	.82	.54	8.35	2.69	.85	.59	8.31	2.74	.86	.62	8.17	2.73	.86	.62	8.07	2.59	.88	.65
Sick	8.93	2.50	.70	.38	8.54	2.34	.71	.39	8.24	2.27	.74	.43	8.16	2.26	.76	.45	8.02	2.19	.77	.48
Teacher																				
Conforming	15.76	1.81	.66	.33	15.79	1.76	.67	.34	15.86	1.81	.73	.40								
Bad	8.32	2.65	.85	.59	8.23	2.57	.86	.61	8.27	2.63	.88	.65								
Sick	8.97	2.51	.71	.39	8.64	2.42	.75	.43	8.38	2.30	.77	.46								
PERCEIVED DISAPPROVAL																				
Parents - Delinq. Behavior	41.27	3.42	.84	.37	41.02	3.40	.85	.39	40.69	3.44	.84	.38	40.67	3.58	.86	.42	40.35	3.52	.85	.41
Parents - Pro - Social	9.17	2.40	.67	.29	9.29	2.38	.70	.32	9.26	2.23	.71	.33	-----	----	---	---	-----	----	---	---
Peers - Delinq. Behavior	35.92	5.62	.90	.51	35.37	5.37	.89	.49	34.80	5.36	.89	.49	35.02	5.44	.90	.50	34.93	5.31	.90	.50
Peers - Pro - Social	10.95	2.55	.66	.29	11.03	2.41	.69	.31	10.91	2.35	.73	.37	-----	----	---	---	-----	----	---	---
Attitudes Toward Deviance in Youth	31.32	4.08	.84	.39	30.67	4.34	.85	.42	29.73	4.42	.84	.40	29.46	4.40	.84	.40	29.11	4.50	.85	.42
Exposure to Delinq. Peers	16.70	5.86	.82	.36	17.14	5.98	.83	.38	17.71	5.99	.83	.37	17.78	5.91	.83	.37	17.60	5.57	.81	.34

APPENDIX B

Path coefficients, standard errors, residual paths and multiple correlation ratio for full and reduced models. Separate tabulations for total sample, males, and females for self-reported delinquency, index offenses, minor offenses, marijuana use and illicit drug use, across two replications.

Path Analyses - Full Model - Replication 1 - Self-Reported Delinquency

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                PATH ANALYSIS
     Total Sample:  Replication 1
      Self-Reported Delinquency

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2896  (+/-  .030 )
   P( 4, 3) =  -.0435  (+/-  .029 )
   P( 5, 2) =  -.2500  (+/-  .030 )
   P( 5, 3) =   .0421  (+/-  .029 )
   P( 6, 2) =  -.2175  (+/-  .029 )
   P( 6, 3) =  -.1492  (+/-  .029 )
   P( 7, 2) =  -.1331  (+/-  .029 )
   P( 7, 3) =  -.1042  (+/-  .029 )
   P( 8, 2) =   .0208  (+/-  .030 )
   P( 8, 3) =   .0509  (+/-  .029 )
   P( 8, 4) =  -.0947  (+/-  .036 )
   P( 8, 5) =  -.1461  (+/-  .029 )
   P( 8, 6) =  -.2247  (+/-  .036 )
   P( 8, 7) =  -.1874  (+/-  .029 )
   P( 9, 2) =   .0585  (+/-  .030 )
   P( 9, 3) =  -.0116  (+/-  .029 )
   P( 9, 4) =  -.1840  (+/-  .036 )
   P( 9, 5) =  -.1710  (+/-  .029 )
   P( 9, 6) =  -.1764  (+/-  .036 )
   P( 9, 7) =  -.1414  (+/-  .029 )
   P(10, 1) =   .3706  (+/-  .030 )
   P(10, 2) =  -.0225  (+/-  .026 )
   P(10, 3) =   .0178  (+/-  .025 )
   P(10, 4) =   .0133  (+/-  .032 )
   P(10, 5) =  -.0176  (+/-  .026 )
   P(10, 6) =   .0487  (+/-  .032 )
   P(10, 7) =   .0052  (+/-  .026 )
   P(10, 8) =   .4832  (+/-  .036 )
   P(10, 9) =   .0268  (+/-  .031 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9522  (.09 )
   P( 5 ,B) =   .9706  (.06 )
   P( 6 ,C) =   .9544  (.09 )
   P( 7 ,D) =   .9814  (.04 )
   P( 8 ,E) =   .8855  (.22 )
   P( 9 ,F) =   .8772  (.23 )
   P(10 ,G) =   .6876  (.53 )
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                PATH ANALYSIS
           Males:  Replication 1
      Self-Reported Delinquency

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.3166  (+/-  .031 )
   P( 4, 3) =  -.0594  (+/-  .029 )
   P( 5, 2) =  -.2304  (+/-  .030 )
   P( 5, 3) =   .0468  (+/-  .030 )
   P( 6, 2) =  -.2498  (+/-  .030 )
   P( 6, 3) =  -.1485  (+/-  .030 )
   P( 7, 2) =  -.1647  (+/-  .030 )
   P( 7, 3) =  -.1334  (+/-  .030 )
   P( 8, 2) =   .0195  (+/-  .031 )
   P( 8, 3) =   .0528  (+/-  .030 )
   P( 8, 4) =  -.1174  (+/-  .035 )
   P( 8, 5) =  -.1216  (+/-  .029 )
   P( 8, 6) =  -.1859  (+/-  .035 )
   P( 8, 7) =  -.1910  (+/-  .029 )
   P( 9, 2) =   .0540  (+/-  .031 )
   P( 9, 3) =  -.0177  (+/-  .030 )
   P( 9, 4) =  -.2248  (+/-  .036 )
   P( 9, 5) =  -.1561  (+/-  .029 )
   P( 9, 6) =  -.1487  (+/-  .035 )
   P( 9, 7) =  -.1250  (+/-  .029 )
   P(10, 1) =   .3640  (+/-  .030 )
   P(10, 2) =  -.0091  (+/-  .027 )
   P(10, 3) =   .0148  (+/-  .025 )
   P(10, 4) =   .0202  (+/-  .031 )
   P(10, 5) =  -.0196  (+/-  .025 )
   P(10, 6) =   .0508  (+/-  .031 )
   P(10, 7) =   .0381  (+/-  .025 )
   P(10, 8) =   .5195  (+/-  .036 )
   P(10, 9) =   .0255  (+/-  .031 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9394  (.12 )
   P( 5 ,B) =   .9760  (.05 )
   P( 6 ,C) =   .9425  (.11 )
   P( 7 ,D) =   .9690  (.06 )
   P( 8 ,E) =   .8975  (.19 )
   P( 9 ,F) =   .8819  (.22 )
   P(10 ,G) =   .6722  (.55 )
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```
                PATH ANALYSIS
          Females:  Replication 1
      Self-Reported Delinquency

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2675  (+/-  .029 )
   P( 4, 3) =  -.0150  (+/-  .028 )
   P( 5, 2) =  -.2705  (+/-  .029 )
   P( 5, 3) =   .0381  (+/-  .028 )
   P( 6, 2) =  -.1927  (+/-  .029 )
   P( 6, 3) =  -.1397  (+/-  .029 )
   P( 7, 2) =  -.1004  (+/-  .028 )
   P( 7, 3) =  -.0627  (+/-  .028 )
   P( 8, 2) =   .0304  (+/-  .029 )
   P( 8, 3) =   .0507  (+/-  .028 )
   P( 8, 4) =  -.0455  (+/-  .037 )
   P( 8, 5) =  -.1994  (+/-  .030 )
   P( 8, 6) =  -.2786  (+/-  .037 )
   P( 8, 7) =  -.1464  (+/-  .029 )
   P( 9, 2) =   .0763  (+/-  .030 )
   P( 9, 3) =  -.0111  (+/-  .028 )
   P( 9, 4) =  -.1130  (+/-  .037 )
   P( 9, 5) =  -.2000  (+/-  .030 )
   P( 9, 6) =  -.2191  (+/-  .037 )
   P( 9, 7) =  -.1198  (+/-  .029 )
   P(10, 1) =   .3062  (+/-  .030 )
   P(10, 2) =  -.0334  (+/-  .027 )
   P(10, 3) =   .0337  (+/-  .026 )
   P(10, 4) =   .0283  (+/-  .034 )
   P(10, 5) =  -.0601  (+/-  .028 )
   P(10, 6) =   .0041  (+/-  .035 )
   P(10, 7) =  -.0360  (+/-  .027 )
   P(10, 8) =   .4257  (+/-  .037 )
   P(10, 9) =   .0404  (+/-  .032 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9625  (.07 )
   P( 5 ,B) =   .9645  (.07 )
   P( 6 ,C) =   .9647  (.07 )
   P( 7 ,D) =   .9915  (.02 )
   P( 8 ,E) =   .8782  (.23 )
   P( 9 ,F) =   .8829  (.22 )
   P(10 ,G) =   .7471  (.44 )
```

Variable List for Full Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - SRD 2

Path Analyses - Full Model - Replication 1 - Index Offenses

```
                PATH ANALYSIS
        Total Sample:  Replication 1
               Index Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =   -.2896  (+/- .030 )
   P( 4, 3) =   -.0435  (+/- .029 )
   P( 5, 2) =   -.2500  (+/- .030 )
   P( 5, 3) =    .0421  (+/- .029 )
   P( 6, 2) =   -.2175  (+/- .029 )
   P( 6, 3) =   -.1492  (+/- .029 )
   P( 7, 2) =   -.1331  (+/- .029 )
   P( 7, 3) =   -.1042  (+/- .029 )
   P( 8, 2) =    .0208  (+/- .030 )
   P( 8, 3) =    .0509  (+/- .029 )
   P( 8, 4) =   -.0947  (+/- .036 )
   P( 8, 5) =   -.1461  (+/- .029 )
   P( 8, 6) =   -.2247  (+/- .036 )
   P( 8, 7) =   -.1874  (+/- .029 )
   P( 9, 2) =    .0585  (+/- .030 )
   P( 9, 3) =   -.0116  (+/- .029 )
   P( 9, 4) =   -.1840  (+/- .036 )
   P( 9, 5) =   -.1710  (+/- .029 )
   P( 9, 6) =   -.1764  (+/- .036 )
   P( 9, 7) =   -.1414  (+/- .029 )
   P(10, 1) =    .3351  (+/- .030 )
   P(10, 2) =   -.0018  (+/- .029 )
   P(10, 3) =   -.0015  (+/- .028 )
   P(10, 4) =    .0215  (+/- .035 )
   P(10, 5) =   -.0024  (+/- .029 )
   P(10, 6) =    .0406  (+/- .036 )
   P(10, 7) =    .0342  (+/- .028 )
   P(10, 8) =    .4260  (+/- .037 )
   P(10, 9) =   -.0352  (+/- .035 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =    .9522  (.09 )
   P( 5 ,B) =    .9706  (.06 )
   P( 6 ,C) =    .9544  (.09 )
   P( 7 ,D) =    .9814  (.04 )
   P( 8 ,E) =    .8855  (.22 )
   P( 9 ,F) =    .8772  (.23 )
   P(10 ,G) =    .8239  (.32 )
```

```
                PATH ANALYSIS
           Males:  Replication 1
               Index Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =   -.3166  (+/- .031 )
   P( 4, 3) =   -.0594  (+/- .029 )
   P( 5, 2) =   -.2304  (+/- .030 )
   P( 5, 3) =    .0468  (+/- .030 )
   P( 6, 2) =   -.2498  (+/- .030 )
   P( 6, 3) =   -.1485  (+/- .030 )
   P( 7, 2) =   -.1647  (+/- .030 )
   P( 7, 3) =   -.1334  (+/- .030 )
   P( 8, 2) =    .0195  (+/- .031 )
   P( 8, 3) =    .0528  (+/- .030 )
   P( 8, 4) =   -.1174  (+/- .035 )
   P( 8, 5) =   -.1216  (+/- .029 )
   P( 8, 6) =   -.1859  (+/- .035 )
   P( 8, 7) =   -.1910  (+/- .029 )
   P( 9, 2) =    .0540  (+/- .031 )
   P( 9, 3) =   -.0177  (+/- .030 )
   P( 9, 4) =   -.2248  (+/- .036 )
   P( 9, 5) =   -.1561  (+/- .029 )
   P( 9, 6) =   -.1487  (+/- .035 )
   P( 9, 7) =   -.1250  (+/- .029 )
   P(10, 1) =    .3258  (+/- .030 )
   P(10, 2) =    .0143  (+/- .029 )
   P(10, 3) =   -.0125  (+/- .028 )
   P(10, 4) =    .0467  (+/- .034 )
   P(10, 5) =   -.0058  (+/- .028 )
   P(10, 6) =    .0487  (+/- .034 )
   P(10, 7) =    .0477  (+/- .028 )
   P(10, 8) =    .4926  (+/- .037 )
   P(10, 9) =   -.0261  (+/- .034 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =    .9394  (.12 )
   P( 5 ,B) =    .9760  (.05 )
   P( 6 ,C) =    .9425  (.11 )
   P( 7 ,D) =    .9690  (.06 )
   P( 8 ,E) =    .8975  (.19 )
   P( 9 ,F) =    .8819  (.22 )
   P(10 ,G) =    .7898  (.38 )
```

```
                PATH ANALYSIS
          Females:  Replication 1
               Index Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =   -.2675  (+/- .029 )
   P( 4, 3) =   -.0150  (+/- .028 )
   P( 5, 2) =   -.2705  (+/- .029 )
   P( 5, 3) =    .0381  (+/- .028 )
   P( 6, 2) =   -.1927  (+/- .029 )
   P( 6, 3) =   -.1397  (+/- .029 )
   P( 7, 2) =   -.1004  (+/- .028 )
   P( 7, 3) =   -.0627  (+/- .028 )
   P( 8, 2) =    .0304  (+/- .029 )
   P( 8, 3) =    .0507  (+/- .028 )
   P( 8, 4) =   -.0455  (+/- .037 )
   P( 8, 5) =   -.1994  (+/- .030 )
   P( 8, 6) =   -.2786  (+/- .037 )
   P( 8, 7) =   -.1464  (+/- .029 )
   P( 9, 2) =    .0763  (+/- .030 )
   P( 9, 3) =   -.0111  (+/- .028 )
   P( 9, 4) =   -.1130  (+/- .037 )
   P( 9, 5) =   -.2000  (+/- .030 )
   P( 9, 6) =   -.2191  (+/- .037 )
   P( 9, 7) =   -.1198  (+/- .029 )
   P(10, 1) =    .2137  (+/- .029 )
   P(10, 2) =   -.0291  (+/- .030 )
   P(10, 3) =    .0441  (+/- .029 )
   P(10, 4) =    .0030  (+/- .037 )
   P(10, 5) =   -.0763  (+/- .031 )
   P(10, 6) =   -.0738  (+/- .039 )
   P(10, 7) =    .0522  (+/- .030 )
   P(10, 8) =    .2334  (+/- .037 )
   P(10, 9) =   -.0957  (+/- .036 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =    .9625  (.07 )
   P( 5 ,B) =    .9645  (.07 )
   P( 6 ,C) =    .9647  (.07 )
   P( 7 ,D) =    .9915  (.02 )
   P( 8 ,E) =    .8782  (.23 )
   P( 9 ,F) =    .8829  (.22 )
   P(10 ,G) =    .9337  (.13 )
```

Variable List for Full Models

1 - Index Offense 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - Index Offense 2

Path Analyses - Full Model - Replication 1 - Minor Offenses

```
           PATH ANALYSIS
  Total Sample:  Replication 1
         Minor Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.2896  (+/- .030 )
    P( 4, 3) =  -.0435  (+/- .029 )
    P( 5, 2) =  -.2500  (+/- .030 )
    P( 5, 3) =   .0421  (+/- .029 )
    P( 6, 2) =  -.2175  (+/- .029 )
    P( 6, 3) =  -.1492  (+/- .029 )
    P( 7, 2) =  -.1331  (+/- .029 )
    P( 7, 3) =  -.1042  (+/- .029 )
    P( 8, 2) =   .0208  (+/- .030 )
    P( 8, 3) =   .0509  (+/- .029 )
    P( 8, 4) =  -.0947  (+/- .036 )
    P( 8, 5) =  -.1461  (+/- .029 )
    P( 8, 6) =  -.2247  (+/- .036 )
    P( 8, 7) =  -.1874  (+/- .029 )
    P( 9, 2) =   .0585  (+/- .030 )
    P( 9, 3) =  -.0116  (+/- .029 )
    P( 9, 4) =  -.1840  (+/- .036 )
    P( 9, 5) =  -.1710  (+/- .029 )
    P( 9, 6) =  -.1764  (+/- .036 )
    P( 9, 7) =  -.1414  (+/- .029 )
    P(10, 1) =   .3340  (+/- .031 )
    P(10, 2) =  -.0220  (+/- .028 )
    P(10, 3) =   .0217  (+/- .027 )
    P(10, 4) =  -.0368  (+/- .034 )
    P(10, 5) =  -.0486  (+/- .028 )
    P(10, 6) =   .0743  (+/- .034 )
    P(10, 7) =  -.0131  (+/- .028 )
    P(10, 8) =   .3638  (+/- .036 )
    P(10, 9) =   .0626  (+/- .034 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9522  (.09 )
    P( 5 ,B) =   .9706  (.06 )
    P( 6 ,C) =   .9544  (.09 )
    P( 7 ,D) =   .9814  (.04 )
    P( 8 ,E) =   .8855  (.22 )
    P( 9 ,F) =   .8772  (.23 )
    P(10 ,G) =   .7758  (.40 )
```

```
           PATH ANALYSIS
      Males:  Replication 1
         Minor Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.3166  (+/- .031 )
    P( 4, 3) =  -.0594  (+/- .029 )
    P( 5, 2) =  -.2304  (+/- .030 )
    P( 5, 3) =   .0468  (+/- .030 )
    P( 6, 2) =  -.2498  (+/- .030 )
    P( 6, 3) =  -.1485  (+/- .030 )
    P( 7, 2) =  -.1647  (+/- .030 )
    P( 7, 3) =  -.1334  (+/- .030 )
    P( 8, 2) =   .0195  (+/- .031 )
    P( 8, 3) =   .0528  (+/- .030 )
    P( 8, 4) =  -.1174  (+/- .035 )
    P( 8, 5) =  -.1216  (+/- .029 )
    P( 8, 6) =  -.1859  (+/- .035 )
    P( 8, 7) =  -.1910  (+/- .029 )
    P( 9, 2) =   .0540  (+/- .031 )
    P( 9, 3) =  -.0177  (+/- .030 )
    P( 9, 4) =  -.2248  (+/- .036 )
    P( 9, 5) =  -.1561  (+/- .029 )
    P( 9, 6) =  -.1487  (+/- .035 )
    P( 9, 7) =  -.1250  (+/- .029 )
    P(10, 1) =   .3324  (+/- .030 )
    P(10, 2) =  -.0066  (+/- .029 )
    P(10, 3) =   .0183  (+/- .028 )
    P(10, 4) =  -.0298  (+/- .033 )
    P(10, 5) =  -.0406  (+/- .027 )
    P(10, 6) =   .0689  (+/- .033 )
    P(10, 7) =   .0177  (+/- .027 )
    P(10, 8) =   .4034  (+/- .036 )
    P(10, 9) =   .0572  (+/- .033 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9394  (.12 )
    P( 5 ,B) =   .9760  (.05 )
    P( 6 ,C) =   .9425  (.11 )
    P( 7 ,D) =   .9690  (.06 )
    P( 8 ,E) =   .8975  (.19 )
    P( 9 ,F) =   .8819  (.22 )
    P(10 ,G) =   .7646  (.42 )
```

```
           PATH ANALYSIS
     Females:  Replication 1
         Minor Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.2675  (+/- .029 )
    P( 4, 3) =  -.0150  (+/- .028 )
    P( 5, 2) =  -.2705  (+/- .029 )
    P( 5, 3) =   .0381  (+/- .028 )
    P( 6, 2) =  -.1927  (+/- .029 )
    P( 6, 3) =  -.1397  (+/- .029 )
    P( 7, 2) =  -.1004  (+/- .028 )
    P( 7, 3) =  -.0627  (+/- .028 )
    P( 8, 2) =   .0304  (+/- .029 )
    P( 8, 3) =   .0507  (+/- .028 )
    P( 8, 4) =  -.0455  (+/- .037 )
    P( 8, 5) =  -.1994  (+/- .030 )
    P( 8, 6) =  -.2786  (+/- .037 )
    P( 8, 7) =  -.1464  (+/- .029 )
    P( 9, 2) =   .0763  (+/- .030 )
    P( 9, 3) =  -.0111  (+/- .028 )
    P( 9, 4) =  -.1130  (+/- .037 )
    P( 9, 5) =  -.2000  (+/- .030 )
    P( 9, 6) =  -.2191  (+/- .037 )
    P( 9, 7) =  -.1198  (+/- .029 )
    P(10, 1) =   .3353  (+/- .031 )
    P(10, 2) =  -.0414  (+/- .028 )
    P(10, 3) =   .0276  (+/- .027 )
    P(10, 4) =  -.0417  (+/- .036 )
    P(10, 5) =  -.0741  (+/- .030 )
    P(10, 6) =   .0676  (+/- .036 )
    P(10, 7) =  -.0511  (+/- .028 )
    P(10, 8) =   .2672  (+/- .037 )
    P(10, 9) =   .0736  (+/- .034 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9625  (.07 )
    P( 5 ,B) =   .9645  (.07 )
    P( 6 ,C) =   .9647  (.07 )
    P( 7 ,D) =   .9915  (.02 )
    P( 8 ,E) =   .8782  (.23 )
    P( 9 ,F) =   .8829  (.22 )
    P(10 ,G) =   .8110  (.34 )
```

Variable List for Full Models

1 - Minor Offense 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - Minor Offense 2

Path Analyses - Full Model - Replication 1 - Marijuana Use

```
        PATH ANALYSIS
  Total Sample:  Replication 1
         Marijuana Use

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.2896  (+/- .030 )
    P( 4, 3) =  -.0435  (+/- .029 )
    P( 5, 2) =  -.2500  (+/- .030 )
    P( 5, 3) =   .0421  (+/- .029 )
    P( 6, 2) =  -.2175  (+/- .029 )
    P( 6, 3) =  -.1492  (+/- .029 )
    P( 7, 2) =  -.1331  (+/- .029 )
    P( 7, 3) =  -.1042  (+/- .029 )
    P( 8, 2) =   .0208  (+/- .030 )
    P( 8, 3) =   .0509  (+/- .029 )
    P( 8, 4) =  -.0947  (+/- .036 )
    P( 8, 5) =  -.1461  (+/- .029 )
    P( 8, 6) =  -.2247  (+/- .036 )
    P( 8, 7) =  -.1874  (+/- .029 )
    P( 9, 2) =   .0585  (+/- .030 )
    P( 9, 3) =  -.0116  (+/- .029 )
    P( 9, 4) =  -.1840  (+/- .036 )
    P( 9, 5) =  -.1710  (+/- .029 )
    P( 9, 6) =  -.1764  (+/- .036 )
    P( 9, 7) =  -.1414  (+/- .029 )
    P(10, 1) =   .4660  (+/- .030 )
    P(10, 2) =  -.0170  (+/- .024 )
    P(10, 3) =   .0082  (+/- .023 )
    P(10, 4) =  -.0093  (+/- .030 )
    P(10, 5) =  -.0828  (+/- .024 )
    P(10, 6) =   .0206  (+/- .030 )
    P(10, 7) =   .0391  (+/- .024 )
    P(10, 8) =   .3362  (+/- .032 )
    P(10, 9) =   .1372  (+/- .030 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9522  (.09 )
    P( 5 ,B) =   .9706  (.06 )
    P( 6 ,C) =   .9544  (.09 )
    P( 7 ,D) =   .9814  (.04 )
    P( 8 ,E) =   .8855  (.22 )
    P( 9 ,F) =   .8772  (.23 )
    P(10 ,G) =   .6243  (.61 )
```

```
        PATH ANALYSIS
     Males:  Replication 1
         Marijuana Use

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.3166  (+/- .031 )
    P( 4, 3) =  -.0594  (+/- .029 )
    P( 5, 2) =  -.2304  (+/- .030 )
    P( 5, 3) =   .0468  (+/- .030 )
    P( 6, 2) =  -.2498  (+/- .030 )
    P( 6, 3) =  -.1485  (+/- .030 )
    P( 7, 2) =  -.1647  (+/- .030 )
    P( 7, 3) =  -.1334  (+/- .030 )
    P( 8, 2) =   .0195  (+/- .031 )
    P( 8, 3) =   .0528  (+/- .030 )
    P( 8, 4) =  -.1174  (+/- .035 )
    P( 8, 5) =  -.1216  (+/- .029 )
    P( 8, 6) =  -.1859  (+/- .035 )
    P( 8, 7) =  -.1910  (+/- .029 )
    P( 9, 2) =   .0540  (+/- .031 )
    P( 9, 3) =  -.0177  (+/- .030 )
    P( 9, 4) =  -.2248  (+/- .036 )
    P( 9, 5) =  -.1561  (+/- .029 )
    P( 9, 6) =  -.1487  (+/- .035 )
    P( 9, 7) =  -.1250  (+/- .029 )
    P(10, 1) =   .4964  (+/- .031 )
    P(10, 2) =  -.0085  (+/- .024 )
    P(10, 3) =  -.0186  (+/- .023 )
    P(10, 4) =   .0145  (+/- .028 )
    P(10, 5) =  -.0883  (+/- .023 )
    P(10, 6) =   .0042  (+/- .028 )
    P(10, 7) =   .0286  (+/- .023 )
    P(10, 8) =   .3097  (+/- .030 )
    P(10, 9) =   .1432  (+/- .029 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9394  (.12 )
    P( 5 ,B) =   .9760  (.05 )
    P( 6 ,C) =   .9425  (.11 )
    P( 7 ,D) =   .9690  (.06 )
    P( 8 ,E) =   .8975  (.19 )
    P( 9 ,F) =   .8819  (.22 )
    P(10 ,G) =   .6009  (.64 )
```

```
        PATH ANALYSIS
     Females:  Replication 1
         Marijuana Use

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.2675  (+/- .029 )
    P( 4, 3) =  -.0150  (+/- .028 )
    P( 5, 2) =  -.2705  (+/- .029 )
    P( 5, 3) =   .0381  (+/- .028 )
    P( 6, 2) =  -.1927  (+/- .029 )
    P( 6, 3) =  -.1397  (+/- .029 )
    P( 7, 2) =  -.1004  (+/- .028 )
    P( 7, 3) =  -.0627  (+/- .028 )
    P( 8, 2) =   .0304  (+/- .029 )
    P( 8, 3) =   .0507  (+/- .028 )
    P( 8, 4) =  -.0455  (+/- .037 )
    P( 8, 5) =  -.1994  (+/- .030 )
    P( 8, 6) =  -.2786  (+/- .037 )
    P( 8, 7) =  -.1464  (+/- .029 )
    P( 9, 2) =   .0763  (+/- .030 )
    P( 9, 3) =  -.0111  (+/- .028 )
    P( 9, 4) =  -.1130  (+/- .037 )
    P( 9, 5) =  -.2000  (+/- .030 )
    P( 9, 6) =  -.2191  (+/- .037 )
    P( 9, 7) =  -.1198  (+/- .029 )
    P(10, 1) =   .4238  (+/- .029 )
    P(10, 2) =  -.0204  (+/- .025 )
    P(10, 3) =   .0369  (+/- .024 )
    P(10, 4) =  -.0470  (+/- .031 )
    P(10, 5) =  -.0687  (+/- .026 )
    P(10, 6) =   .0507  (+/- .032 )
    P(10, 7) =   .0405  (+/- .025 )
    P(10, 8) =   .3797  (+/- .033 )
    P(10, 9) =   .1185  (+/- .030 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9625  (.07 )
    P( 5 ,B) =   .9645  (.07 )
    P( 6 ,C) =   .9647  (.07 )
    P( 7 ,D) =   .9915  (.02 )
    P( 8 ,E) =   .8782  (.23 )
    P( 9 ,F) =   .8829  (.22 )
    P(10 ,G) =   .6595  (.57 )
```

Variable List for Full Models

1 - Marijuana Use 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - Marijuana Use 2

Path Analyses - Full Model - Replication 1 - Hard Drug Use

```
          PATH ANALYSIS
 Total Sample:  Replication 1
       Hard Drug Use

PATH COEFFICIENTS AND STANDARD ERRORS

  P( 4, 2) =  -.2896  (+/- .030 )
  P( 4, 3) =  -.0435  (+/- .029 )
  P( 5, 2) =  -.2500  (+/- .030 )
  P( 5, 3) =   .0421  (+/- .029 )
  P( 6, 2) =  -.2175  (+/- .029 )
  P( 6, 3) =  -.1492  (+/- .029 )
  P( 7, 2) =  -.1331  (+/- .029 )
  P( 7, 3) =  -.1042  (+/- .029 )
  P( 8, 2) =   .0208  (+/- .030 )
  P( 8, 3) =   .0509  (+/- .029 )
  P( 8, 4) =  -.0947  (+/- .036 )
  P( 8, 5) =  -.1461  (+/- .029 )
  P( 8, 6) =  -.2247  (+/- .036 )
  P( 8, 7) =  -.1874  (+/- .029 )
  P( 9, 2) =   .0585  (+/- .030 )
  P( 9, 3) =  -.0116  (+/- .029 )
  P( 9, 4) =  -.1840  (+/- .036 )
  P( 9, 5) =  -.1710  (+/- .029 )
  P( 9, 6) =  -.1764  (+/- .036 )
  P( 9, 7) =  -.1414  (+/- .029 )
  P(10, 1) =   .4358  (+/- .030 )
  P(10, 2) =   .0048  (+/- .029 )
  P(10, 3) =  -.0190  (+/- .028 )
  P(10, 4) =  -.0068  (+/- .035 )
  P(10, 5) =  -.0458  (+/- .029 )
  P(10, 6) =   .0292  (+/- .035 )
  P(10, 7) =   .0000  (+/- .028 )
  P(10, 8) =   .2517  (+/- .035 )
  P(10, 9) =   .0509  (+/- .035 )

RESIDUAL PATHS AND R-SQUARED

  P( 4 ,A) =   .9522  (.09 )
  P( 5 ,B) =   .9706  (.06 )
  P( 6 ,C) =   .9544  (.09 )
  P( 7 ,D) =   .9814  (.04 )
  P( 8 ,E) =   .8855  (.22 )
  P( 9 ,F) =   .8772  (.23 )
  P(10 ,G) =   .8123  (.34 )
```

```
          PATH ANALYSIS
     Males:  Replication 1
       Hard Drug Use

PATH COEFFICIENTS AND STANDARD ERRORS

  P( 4, 2) =  -.3166  (+/- .031 )
  P( 4, 3) =  -.0594  (+/- .029 )
  P( 5, 2) =  -.2304  (+/- .030 )
  P( 5, 3) =   .0468  (+/- .030 )
  P( 6, 2) =  -.2498  (+/- .030 )
  P( 6, 3) =  -.1485  (+/- .030 )
  P( 7, 2) =  -.1647  (+/- .030 )
  P( 7, 3) =  -.1334  (+/- .030 )
  P( 8, 2) =   .0195  (+/- .031 )
  P( 8, 3) =   .0528  (+/- .030 )
  P( 8, 4) =  -.1174  (+/- .035 )
  P( 8, 5) =  -.1216  (+/- .029 )
  P( 8, 6) =  -.1859  (+/- .035 )
  P( 8, 7) =  -.1910  (+/- .029 )
  P( 9, 2) =   .0540  (+/- .031 )
  P( 9, 3) =  -.0177  (+/- .030 )
  P( 9, 4) =  -.2248  (+/- .036 )
  P( 9, 5) =  -.1561  (+/- .029 )
  P( 9, 6) =  -.1487  (+/- .035 )
  P( 9, 7) =  -.1250  (+/- .029 )
  P(10, 1) =   .5576  (+/- .031 )
  P(10, 2) =   .0145  (+/- .027 )
  P(10, 3) =  -.0170  (+/- .026 )
  P(10, 4) =   .0206  (+/- .032 )
  P(10, 5) =  -.0535  (+/- .026 )
  P(10, 6) =   .0273  (+/- .031 )
  P(10, 7) =  -.0197  (+/- .026 )
  P(10, 8) =   .2952  (+/- .033 )
  P(10, 9) =   .0259  (+/- .032 )

RESIDUAL PATHS AND R-SQUARED

  P( 4 ,A) =   .9394  (.12 )
  P( 5 ,B) =   .9760  (.05 )
  P( 6 ,C) =   .9425  (.11 )
  P( 7 ,D) =   .9690  (.06 )
  P( 8 ,E) =   .8975  (.19 )
  P( 9 ,F) =   .8819  (.22 )
  P(10 ,G) =   .7022  (.51 )
```

```
          PATH ANALYSIS
    Females:  Replication 1
       Hard Drug Use

PATH COEFFICIENTS AND STANDARD ERRORS

  P( 4, 2) =  -.2675  (+/- .029 )
  P( 4, 3) =  -.0150  (+/- .028 )
  P( 5, 2) =  -.2705  (+/- .029 )
  P( 5, 3) =   .0381  (+/- .028 )
  P( 6, 2) =  -.1927  (+/- .029 )
  P( 6, 3) =  -.1397  (+/- .029 )
  P( 7, 2) =  -.1004  (+/- .028 )
  P( 7, 3) =  -.0627  (+/- .028 )
  P( 8, 2) =   .0304  (+/- .029 )
  P( 8, 3) =   .0507  (+/- .028 )
  P( 8, 4) =  -.0455  (+/- .037 )
  P( 8, 5) =  -.1994  (+/- .030 )
  P( 8, 6) =  -.2786  (+/- .037 )
  P( 8, 7) =  -.1464  (+/- .029 )
  P( 9, 2) =   .0763  (+/- .030 )
  P( 9, 3) =  -.0111  (+/- .028 )
  P( 9, 4) =  -.1130  (+/- .037 )
  P( 9, 5) =  -.2000  (+/- .030 )
  P( 9, 6) =  -.2191  (+/- .037 )
  P( 9, 7) =  -.1198  (+/- .029 )
  P(10, 1) =   .2320  (+/- .029 )
  P(10, 2) =   .0223  (+/- .030 )
  P(10, 3) =  -.0239  (+/- .029 )
  P(10, 4) =  -.0326  (+/- .037 )
  P(10, 5) =  -.0394  (+/- .031 )
  P(10, 6) =   .0282  (+/- .038 )
  P(10, 7) =   .0225  (+/- .030 )
  P(10, 8) =   .1907  (+/- .036 )
  P(10, 9) =   .0826  (+/- .036 )

RESIDUAL PATHS AND R-SQUARED

  P( 4 ,A) =   .9625  (.07 )
  P( 5 ,B) =   .9645  (.07 )
  P( 6 ,C) =   .9647  (.07 )
  P( 7 ,D) =   .9915  (.02 )
  P( 8 ,E) =   .8782  (.23 )
  P( 9 ,F) =   .8829  (.22 )
  P(10 ,G) =   .9199  (.15 )
```

Variable List for Full Models

1 - Hard Drug Use 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - Hard Drug Use 2

Path Analyses - Full Model - Replication 2 - Self-Reported Delinquency

```
          PATH ANALYSIS
 Total Sample:  Replication 2
  Self-Reported Delinquency

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.3174  (+/- .031 )
   P( 4, 3) =  -.1070  (+/- .030 )
   P( 5, 2) =  -.2362  (+/- .031 )
   P( 5, 3) =   .0367  (+/- .030 )
   P( 6, 2) =  -.1937  (+/- .030 )
   P( 6, 3) =  -.2039  (+/- .030 )
   P( 7, 2) =  -.1279  (+/- .030 )
   P( 7, 3) =  -.1776  (+/- .030 )
   P( 8, 2) =   .0399  (+/- .031 )
   P( 8, 3) =   .0231  (+/- .030 )
   P( 8, 4) =  -.1795  (+/- .037 )
   P( 8, 5) =  -.1781  (+/- .029 )
   P( 8, 6) =  -.1690  (+/- .036 )
   P( 8, 7) =  -.1780  (+/- .029 )
   P( 9, 2) =   .0493  (+/- .031 )
   P( 9, 3) =  -.0208  (+/- .030 )
   P( 9, 4) =  -.1805  (+/- .036 )
   P( 9, 5) =  -.2344  (+/- .029 )
   P( 9, 6) =  -.1896  (+/- .036 )
   P( 9, 7) =  -.1617  (+/- .029 )
   P(10, 1) =   .5493  (+/- .033 )
   P(10, 2) =   .0085  (+/- .026 )
   P(10, 3) =  -.0166  (+/- .025 )
   P(10, 4) =   .0350  (+/- .031 )
   P(10, 5) =  -.0193  (+/- .024 )
   P(10, 6) =  -.0286  (+/- .030 )
   P(10, 7) =  -.0242  (+/- .024 )
   P(10, 8) =   .2791  (+/- .032 )
   P(10, 9) =   .0489  (+/- .029 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9282  (.14 )
   P( 5 ,B) =   .9745  (.05 )
   P( 6 ,C) =   .9436  (.11 )
   P( 7 ,D) =   .9667  (.07 )
   P( 8 ,E) =   .8691  (.24 )
   P( 9 ,F) =   .8503  (.28 )
   P(10 ,G) =   .6418  (.59 )
```

```
          PATH ANALYSIS
     Males:  Replication 2
  Self-Reported Delinquency

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.3297  (+/- .031 )
   P( 4, 3) =  -.0843  (+/- .029 )
   P( 5, 2) =  -.2331  (+/- .030 )
   P( 5, 3) =   .0654  (+/- .029 )
   P( 6, 2) =  -.2070  (+/- .030 )
   P( 6, 3) =  -.1826  (+/- .030 )
   P( 7, 2) =  -.1467  (+/- .030 )
   P( 7, 3) =  -.1422  (+/- .030 )
   P( 8, 2) =   .0463  (+/- .031 )
   P( 8, 3) =   .0100  (+/- .029 )
   P( 8, 4) =  -.1976  (+/- .036 )
   P( 8, 5) =  -.1812  (+/- .028 )
   P( 8, 6) =  -.1790  (+/- .035 )
   P( 8, 7) =  -.1820  (+/- .028 )
   P( 9, 2) =   .0560  (+/- .030 )
   P( 9, 3) =  -.0401  (+/- .029 )
   P( 9, 4) =  -.1992  (+/- .036 )
   P( 9, 5) =  -.2436  (+/- .029 )
   P( 9, 6) =  -.1539  (+/- .035 )
   P( 9, 7) =  -.1876  (+/- .028 )
   P(10, 1) =   .5468  (+/- .033 )
   P(10, 2) =   .0292  (+/- .026 )
   P(10, 3) =  -.0202  (+/- .025 )
   P(10, 4) =   .0168  (+/- .031 )
   P(10, 5) =  -.0313  (+/- .025 )
   P(10, 6) =   .0013  (+/- .030 )
   P(10, 7) =  -.0355  (+/- .024 )
   P(10, 8) =   .2903  (+/- .033 )
   P(10, 9) =   .0134  (+/- .030 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9297  (.14 )
   P( 5 ,B) =   .9758  (.05 )
   P( 6 ,C) =   .9470  (.10 )
   P( 7 ,D) =   .9713  (.06 )
   P( 8 ,E) =   .8609  (.26 )
   P( 9 ,F) =   .8503  (.28 )
   P(10 ,G) =   .6488  (.58 )
```

```
          PATH ANALYSIS
    Females:  Replication 2
  Self-Reported Delinquency

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.3051  (+/- .031 )
   P( 4, 3) =  -.1155  (+/- .030 )
   P( 5, 2) =  -.2366  (+/- .031 )
   P( 5, 3) =   .0125  (+/- .030 )
   P( 6, 2) =  -.1833  (+/- .031 )
   P( 6, 3) =  -.2030  (+/- .031 )
   P( 7, 2) =  -.1110  (+/- .030 )
   P( 7, 3) =  -.1925  (+/- .031 )
   P( 8, 2) =   .0387  (+/- .031 )
   P( 8, 3) =   .0452  (+/- .031 )
   P( 8, 4) =  -.1760  (+/- .037 )
   P( 8, 5) =  -.1869  (+/- .029 )
   P( 8, 6) =  -.1199  (+/- .036 )
   P( 8, 7) =  -.1478  (+/- .029 )
   P( 9, 2) =   .0476  (+/- .031 )
   P( 9, 3) =   .0068  (+/- .030 )
   P( 9, 4) =  -.1712  (+/- .037 )
   P( 9, 5) =  -.2377  (+/- .029 )
   P( 9, 6) =  -.1992  (+/- .036 )
   P( 9, 7) =  -.0875  (+/- .029 )
   P(10, 1) =   .4642  (+/- .032 )
   P(10, 2) =  -.0216  (+/- .027 )
   P(10, 3) =   .0016  (+/- .027 )
   P(10, 4) =   .0635  (+/- .032 )
   P(10, 5) =  -.0086  (+/- .026 )
   P(10, 6) =  -.0736  (+/- .032 )
   P(10, 7) =   .0134  (+/- .025 )
   P(10, 8) =   .3185  (+/- .032 )
   P(10, 9) =   .0957  (+/- .029 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9298  (.14 )
   P( 5 ,B) =   .9728  (.05 )
   P( 6 ,C) =   .9457  (.11 )
   P( 7 ,D) =   .9659  (.07 )
   P( 8 ,E) =   .8902  (.21 )
   P( 9 ,F) =   .8652  (.25 )
   P(10 ,G) =   .6795  (.54 )
```

Variable List for Full Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - SRD 2

Path Analyses - Full Model - Replication 2 - Index Offenses

```
                PATH ANALYSIS
      Total Sample:  Replication 2
              Index Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.3174  (+/- .031 )
    P( 4, 3) =  -.1070  (+/- .030 )
    P( 5, 2) =  -.2362  (+/- .031 )
    P( 5, 3) =   .0367  (+/- .030 )
    P( 6, 2) =  -.1937  (+/- .030 )
    P( 6, 3) =  -.2039  (+/- .030 )
    P( 7, 2) =  -.1279  (+/- .030 )
    P( 7, 3) =  -.1776  (+/- .030 )
    P( 8, 2) =   .0399  (+/- .031 )
    P( 8, 3) =   .0231  (+/- .030 )
    P( 8, 4) =  -.1795  (+/- .037 )
    P( 8, 5) =  -.1781  (+/- .029 )
    P( 8, 6) =  -.1690  (+/- .036 )
    P( 8, 7) =  -.1780  (+/- .029 )
    P( 9, 2) =   .0493  (+/- .031 )
    P( 9, 3) =  -.0208  (+/- .030 )
    P( 9, 4) =  -.1805  (+/- .036 )
    P( 9, 5) =  -.2344  (+/- .029 )
    P( 9, 6) =  -.1896  (+/- .036 )
    P( 9, 7) =  -.1617  (+/- .029 )
    P(10, 1) =   .4684  (+/- .032 )
    P(10, 2) =   .0181  (+/- .030 )
    P(10, 3) =  -.0061  (+/- .029 )
    P(10, 4) =   .0125  (+/- .035 )
    P(10, 5) =   .0064  (+/- .028 )
    P(10, 6) =  -.0307  (+/- .035 )
    P(10, 7) =  -.0166  (+/- .028 )
    P(10, 8) =   .2403  (+/- .035 )
    P(10, 9) =  -.0343  (+/- .034 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9282  (.14 )
    P( 5 ,B) =   .9745  (.05 )
    P( 6 ,C) =   .9436  (.11 )
    P( 7 ,D) =   .9667  (.07 )
    P( 8 ,E) =   .8691  (.24 )
    P( 9 ,F) =   .8503  (.28 )
    P(10 ,G) =   .8009  (.36 )
```

```
                PATH ANALYSIS
          Males:  Replication 2
              Index Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.3297  (+/- .031 )
    P( 4, 3) =  -.0843  (+/- .029 )
    P( 5, 2) =  -.2331  (+/- .030 )
    P( 5, 3) =   .0654  (+/- .029 )
    P( 6, 2) =  -.2070  (+/- .030 )
    P( 6, 3) =  -.1826  (+/- .030 )
    P( 7, 2) =  -.1467  (+/- .030 )
    P( 7, 3) =  -.1422  (+/- .030 )
    P( 8, 2) =   .0463  (+/- .031 )
    P( 8, 3) =   .0100  (+/- .029 )
    P( 8, 4) =  -.1976  (+/- .036 )
    P( 8, 5) =  -.1812  (+/- .028 )
    P( 8, 6) =  -.1790  (+/- .035 )
    P( 8, 7) =  -.1820  (+/- .028 )
    P( 9, 2) =   .0560  (+/- .030 )
    P( 9, 3) =  -.0401  (+/- .029 )
    P( 9, 4) =  -.1992  (+/- .036 )
    P( 9, 5) =  -.2436  (+/- .029 )
    P( 9, 6) =  -.1539  (+/- .035 )
    P( 9, 7) =  -.1876  (+/- .028 )
    P(10, 1) =   .4470  (+/- .032 )
    P(10, 2) =   .0302  (+/- .030 )
    P(10, 3) =  -.0056  (+/- .028 )
    P(10, 4) =  -.0022  (+/- .035 )
    P(10, 5) =   .0050  (+/- .028 )
    P(10, 6) =  -.0212  (+/- .034 )
    P(10, 7) =  -.0129  (+/- .028 )
    P(10, 8) =   .2825  (+/- .037 )
    P(10, 9) =  -.0809  (+/- .035 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9297  (.14 )
    P( 5 ,B) =   .9758  (.05 )
    P( 6 ,C) =   .9470  (.10 )
    P( 7 ,D) =   .9713  (.06 )
    P( 8 ,E) =   .8609  (.26 )
    P( 9 ,F) =   .8503  (.28 )
    P(10 ,G) =   .7961  (.37 )
```

```
                PATH ANALYSIS
         Females:  Replication 2
              Index Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.3051  (+/- .031 )
    P( 4, 3) =  -.1155  (+/- .030 )
    P( 5, 2) =  -.2366  (+/- .031 )
    P( 5, 3) =   .0125  (+/- .030 )
    P( 6, 2) =  -.1833  (+/- .031 )
    P( 6, 3) =  -.2030  (+/- .031 )
    P( 7, 2) =  -.1110  (+/- .030 )
    P( 7, 3) =  -.1925  (+/- .031 )
    P( 8, 2) =   .0387  (+/- .031 )
    P( 8, 3) =   .0452  (+/- .031 )
    P( 8, 4) =  -.1760  (+/- .037 )
    P( 8, 5) =  -.1869  (+/- .029 )
    P( 8, 6) =  -.1199  (+/- .036 )
    P( 8, 7) =  -.1478  (+/- .029 )
    P( 9, 2) =   .0476  (+/- .031 )
    P( 9, 3) =   .0068  (+/- .030 )
    P( 9, 4) =  -.1712  (+/- .037 )
    P( 9, 5) =  -.2377  (+/- .029 )
    P( 9, 6) =  -.1992  (+/- .036 )
    P( 9, 7) =  -.0875  (+/- .029 )
    P(10, 1) =   .2862  (+/- .029 )
    P(10, 2) =  -.0104  (+/- .031 )
    P(10, 3) =   .0162  (+/- .031 )
    P(10, 4) =   .0036  (+/- .038 )
    P(10, 5) =  -.0090  (+/- .030 )
    P(10, 6) =  -.0044  (+/- .037 )
    P(10, 7) =  -.0083  (+/- .029 )
    P(10, 8) =   .2681  (+/- .034 )
    P(10, 9) =   .0581  (+/- .034 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9298  (.14 )
    P( 5 ,B) =   .9728  (.05 )
    P( 6 ,C) =   .9457  (.11 )
    P( 7 ,D) =   .9659  (.07 )
    P( 8 ,E) =   .8902  (.21 )
    P( 9 ,F) =   .8652  (.25 )
    P(10 ,G) =   .8871  (.21 )
```

Variable List for Full Models

1 - Index Offense 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - Index Offense 2

Path Analyses - Full Model - Replication 2 - Minor Offenses

```
            PATH ANALYSIS
    Total Sample:  Replication 2
           Minor Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =   -.3174  (+/- .031 )
    P( 4, 3) =   -.1070  (+/- .030 )
    P( 5, 2) =   -.2362  (+/- .031 )
    P( 5, 3) =    .0367  (+/- .030 )
    P( 6, 2) =   -.1937  (+/- .030 )
    P( 6, 3) =   -.2039  (+/- .030 )
    P( 7, 2) =   -.1279  (+/- .030 )
    P( 7, 3) =   -.1776  (+/- .030 )
    P( 8, 2) =    .0399  (+/- .031 )
    P( 8, 3) =    .0231  (+/- .030 )
    P( 8, 4) =   -.1795  (+/- .037 )
    P( 8, 5) =   -.1781  (+/- .029 )
    P( 8, 6) =   -.1690  (+/- .036 )
    P( 8, 7) =   -.1780  (+/- .029 )
    P( 9, 2) =    .0493  (+/- .031 )
    P( 9, 3) =   -.0208  (+/- .030 )
    P( 9, 4) =   -.1805  (+/- .036 )
    P( 9, 5) =   -.2344  (+/- .029 )
    P( 9, 6) =   -.1896  (+/- .036 )
    P( 9, 7) =   -.1617  (+/- .029 )
    P(10, 1) =    .4519  (+/- .032 )
    P(10, 2) =   -.0256  (+/- .029 )
    P(10, 3) =    .0029  (+/- .028 )
    P(10, 4) =   -.0049  (+/- .034 )
    P(10, 5) =   -.0060  (+/- .027 )
    P(10, 6) =    .0308  (+/- .034 )
    P(10, 7) =   -.0303  (+/- .027 )
    P(10, 8) =    .2649  (+/- .035 )
    P(10, 9) =    .0897  (+/- .033 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =    .9282  (.14 )
    P( 5 ,B) =    .9745  (.05 )
    P( 6 ,C) =    .9436  (.11 )
    P( 7 ,D) =    .9667  (.07 )
    P( 8 ,E) =    .8691  (.24 )
    P( 9 ,F) =    .8503  (.28 )
    P(10 ,G) =    .7445  (.45 )
```

```
            PATH ANALYSIS
       Males:  Replication 2
           Minor Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =   -.3297  (+/- .031 )
    P( 4, 3) =   -.0843  (+/- .029 )
    P( 5, 2) =   -.2331  (+/- .030 )
    P( 5, 3) =    .0654  (+/- .029 )
    P( 6, 2) =   -.2070  (+/- .030 )
    P( 6, 3) =   -.1826  (+/- .030 )
    P( 7, 2) =   -.1467  (+/- .030 )
    P( 7, 3) =   -.1422  (+/- .030 )
    P( 8, 2) =    .0463  (+/- .031 )
    P( 8, 3) =    .0100  (+/- .029 )
    P( 8, 4) =   -.1976  (+/- .036 )
    P( 8, 5) =   -.1812  (+/- .028 )
    P( 8, 6) =   -.1790  (+/- .035 )
    P( 8, 7) =   -.1820  (+/- .028 )
    P( 9, 2) =    .0560  (+/- .030 )
    P( 9, 3) =   -.0401  (+/- .029 )
    P( 9, 4) =   -.1992  (+/- .036 )
    P( 9, 5) =   -.2436  (+/- .029 )
    P( 9, 6) =   -.1539  (+/- .035 )
    P( 9, 7) =   -.1876  (+/- .028 )
    P(10, 1) =    .4502  (+/- .032 )
    P(10, 2) =   -.0017  (+/- .028 )
    P(10, 3) =   -.0239  (+/- .027 )
    P(10, 4) =   -.0121  (+/- .033 )
    P(10, 5) =   -.0125  (+/- .027 )
    P(10, 6) =    .0495  (+/- .033 )
    P(10, 7) =   -.0535  (+/- .027 )
    P(10, 8) =    .3062  (+/- .036 )
    P(10, 9) =    .0441  (+/- .033 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =    .9297  (.14 )
    P( 5 ,B) =    .9758  (.05 )
    P( 6 ,C) =    .9470  (.10 )
    P( 7 ,D) =    .9713  (.06 )
    P( 8 ,E) =    .8609  (.26 )
    P( 9 ,F) =    .8503  (.28 )
    P(10 ,G) =    .7371  (.46 )
```

```
            PATH ANALYSIS
      Females:  Replication 2
           Minor Offenses

PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =   -.3051  (+/- .031 )
    P( 4, 3) =   -.1155  (+/- .030 )
    P( 5, 2) =   -.2366  (+/- .031 )
    P( 5, 3) =    .0125  (+/- .030 )
    P( 6, 2) =   -.1833  (+/- .031 )
    P( 6, 3) =   -.2030  (+/- .031 )
    P( 7, 2) =   -.1110  (+/- .030 )
    P( 7, 3) =   -.1925  (+/- .031 )
    P( 8, 2) =    .0387  (+/- .031 )
    P( 8, 3) =    .0452  (+/- .031 )
    P( 8, 4) =   -.1760  (+/- .037 )
    P( 8, 5) =   -.1869  (+/- .029 )
    P( 8, 6) =   -.1199  (+/- .036 )
    P( 8, 7) =   -.1478  (+/- .029 )
    P( 9, 2) =    .0476  (+/- .031 )
    P( 9, 3) =    .0068  (+/- .030 )
    P( 9, 4) =   -.1712  (+/- .037 )
    P( 9, 5) =   -.2377  (+/- .029 )
    P( 9, 6) =   -.1992  (+/- .036 )
    P( 9, 7) =   -.0875  (+/- .029 )
    P(10, 1) =    .4616  (+/- .033 )
    P(10, 2) =   -.0618  (+/- .029 )
    P(10, 3) =    .0465  (+/- .029 )
    P(10, 4) =    .0124  (+/- .035 )
    P(10, 5) =   -.0008  (+/- .028 )
    P(10, 6) =    .0042  (+/- .034 )
    P(10, 7) =    .0112  (+/- .027 )
    P(10, 8) =    .2050  (+/- .033 )
    P(10, 9) =    .1335  (+/- .032 )

RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =    .9298  (.14 )
    P( 5 ,B) =    .9728  (.05 )
    P( 6 ,C) =    .9457  (.11 )
    P( 7 ,D) =    .9659  (.07 )
    P( 8 ,E) =    .8902  (.21 )
    P( 9 ,F) =    .8652  (.25 )
    P(10 ,G) =    .7667  (.41 )
```

Variable List for Full Models

1 - Minor Offense 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - Minor Offense 2

Path Analyses - Full Model - Replication 2 - Marijuana Use

```
          PATH ANALYSIS
  Total Sample:  Replication 2
        Marijuana Use

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =   -.3174  (+/- .031 )
   P( 4, 3) =   -.1070  (+/- .030 )
   P( 5, 2) =   -.2362  (+/- .031 )
   P( 5, 3) =    .0367  (+/- .030 )
   P( 6, 2) =   -.1937  (+/- .030 )
   P( 6, 3) =   -.2039  (+/- .030 )
   P( 7, 2) =   -.1279  (+/- .030 )
   P( 7, 3) =   -.1776  (+/- .030 )
   P( 8, 2) =    .0399  (+/- .031 )
   P( 8, 3) =    .0231  (+/- .030 )
   P( 8, 4) =   -.1795  (+/- .037 )
   P( 8, 5) =   -.1781  (+/- .029 )
   P( 8, 6) =   -.1690  (+/- .036 )
   P( 8, 7) =   -.1780  (+/- .029 )
   P( 9, 2) =    .0493  (+/- .031 )
   P( 9, 3) =   -.0208  (+/- .030 )
   P( 9, 4) =   -.1805  (+/- .036 )
   P( 9, 5) =   -.2344  (+/- .029 )
   P( 9, 6) =   -.1896  (+/- .036 )
   P( 9, 7) =   -.1617  (+/- .029 )
   P(10, 1) =    .5389  (+/- .032 )
   P(10, 2) =    .0072  (+/- .026 )
   P(10, 3) =   -.0051  (+/- .025 )
   P(10, 4) =    .0001  (+/- .030 )
   P(10, 5) =   -.0342  (+/- .024 )
   P(10, 6) =    .0039  (+/- .030 )
   P(10, 7) =   -.0085  (+/- .024 )
   P(10, 8) =    .2311  (+/- .031 )
   P(10, 9) =    .1304  (+/- .030 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =    .9282  (.14 )
   P( 5 ,B) =    .9745  (.05 )
   P( 6 ,C) =    .9436  (.11 )
   P( 7 ,D) =    .9667  (.07 )
   P( 8 ,E) =    .8691  (.24 )
   P( 9 ,F) =    .8503  (.28 )
   P(10 ,G) =    .6325  (.60 )
```

```
          PATH ANALYSIS
     Males:  Replication 2
        Marijuana Use

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =   -.3297  (+/- .031 )
   P( 4, 3) =   -.0843  (+/- .029 )
   P( 5, 2) =   -.2331  (+/- .030 )
   P( 5, 3) =    .0654  (+/- .029 )
   P( 6, 2) =   -.2070  (+/- .030 )
   P( 6, 3) =   -.1826  (+/- .030 )
   P( 7, 2) =   -.1467  (+/- .030 )
   P( 7, 3) =   -.1422  (+/- .030 )
   P( 8, 2) =    .0463  (+/- .031 )
   P( 8, 3) =    .0100  (+/- .029 )
   P( 8, 4) =   -.1976  (+/- .036 )
   P( 8, 5) =   -.1812  (+/- .028 )
   P( 8, 6) =   -.1790  (+/- .035 )
   P( 8, 7) =   -.1820  (+/- .028 )
   P( 9, 2) =    .0560  (+/- .030 )
   P( 9, 3) =   -.0401  (+/- .029 )
   P( 9, 4) =   -.1992  (+/- .036 )
   P( 9, 5) =   -.2436  (+/- .029 )
   P( 9, 6) =   -.1539  (+/- .035 )
   P( 9, 7) =   -.1876  (+/- .028 )
   P(10, 1) =    .5770  (+/- .032 )
   P(10, 2) =    .0045  (+/- .025 )
   P(10, 3) =    .0047  (+/- .024 )
   P(10, 4) =    .0054  (+/- .029 )
   P(10, 5) =   -.0564  (+/- .023 )
   P(10, 6) =    .0543  (+/- .028 )
   P(10, 7) =   -.0004  (+/- .023 )
   P(10, 8) =    .2673  (+/- .031 )
   P(10, 9) =    .0875  (+/- .029 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =    .9297  (.14 )
   P( 5 ,B) =    .9758  (.05 )
   P( 6 ,C) =    .9470  (.10 )
   P( 7 ,D) =    .9713  (.06 )
   P( 8 ,E) =    .8609  (.26 )
   P( 9 ,F) =    .8503  (.28 )
   P(10 ,G) =    .6055  (.63 )
```

```
          PATH ANALYSIS
    Females:  Replication 2
        Marijuana Use

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =   -.3051  (+/- .031 )
   P( 4, 3) =   -.1155  (+/- .030 )
   P( 5, 2) =   -.2366  (+/- .031 )
   P( 5, 3) =    .0125  (+/- .030 )
   P( 6, 2) =   -.1833  (+/- .031 )
   P( 6, 3) =   -.2030  (+/- .031 )
   P( 7, 2) =   -.1110  (+/- .030 )
   P( 7, 3) =   -.1925  (+/- .031 )
   P( 8, 2) =    .0387  (+/- .031 )
   P( 8, 3) =    .0452  (+/- .031 )
   P( 8, 4) =   -.1760  (+/- .037 )
   P( 8, 5) =   -.1869  (+/- .029 )
   P( 8, 6) =   -.1199  (+/- .036 )
   P( 8, 7) =   -.1478  (+/- .029 )
   P( 9, 2) =    .0476  (+/- .031 )
   P( 9, 3) =    .0068  (+/- .030 )
   P( 9, 4) =   -.1712  (+/- .037 )
   P( 9, 5) =   -.2377  (+/- .029 )
   P( 9, 6) =   -.1992  (+/- .036 )
   P( 9, 7) =   -.0875  (+/- .029 )
   P(10, 1) =    .4846  (+/- .032 )
   P(10, 2) =    .0152  (+/- .027 )
   P(10, 3) =   -.0188  (+/- .026 )
   P(10, 4) =   -.0025  (+/- .032 )
   P(10, 5) =   -.0053  (+/- .026 )
   P(10, 6) =   -.0625  (+/- .032 )
   P(10, 7) =   -.0188  (+/- .025 )
   P(10, 8) =    .1940  (+/- .030 )
   P(10, 9) =    .1742  (+/- .030 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =    .9298  (.14 )
   P( 5 ,B) =    .9728  (.05 )
   P( 6 ,C) =    .9457  (.11 )
   P( 7 ,D) =    .9659  (.07 )
   P( 8 ,E) =    .8902  (.21 )
   P( 9 ,F) =    .8652  (.25 )
   P(10 ,G) =    .6759  (.54 )
```

Variable List for Full Models

1 - Marijuana Use 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - Marijuana Use 2

Path Analyses - Full Model - Replication 2 - Hard Drug Use

```
        PATH ANALYSIS
 Total Sample:  Replication 2
        Hard Drug Use

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =   -.3174  (+/- .031 )
   P( 4, 3) =   -.1070  (+/- .030 )
   P( 5, 2) =   -.2362  (+/- .031 )
   P( 5, 3) =    .0367  (+/- .030 )
   P( 6, 2) =   -.1937  (+/- .030 )
   P( 6, 3) =   -.2039  (+/- .030 )
   P( 7, 2) =   -.1279  (+/- .030 )
   P( 7, 3) =   -.1776  (+/- .030 )
   P( 8, 2) =    .0399  (+/- .031 )
   P( 8, 3) =    .0231  (+/- .030 )
   P( 8, 4) =   -.1795  (+/- .037 )
   P( 8, 5) =   -.1781  (+/- .029 )
   P( 8, 6) =   -.1690  (+/- .036 )
   P( 8, 7) =   -.1780  (+/- .029 )
   P( 9, 2) =    .0493  (+/- .031 )
   P( 9, 3) =   -.0208  (+/- .030 )
   P( 9, 4) =   -.1805  (+/- .036 )
   P( 9, 5) =   -.2344  (+/- .029 )
   P( 9, 6) =   -.1896  (+/- .036 )
   P( 9, 7) =   -.1617  (+/- .029 )
   P(10, 1) =    .4130  (+/- .031 )
   P(10, 2) =   -.0184  (+/- .031 )
   P(10, 3) =    .0116  (+/- .030 )
   P(10, 4) =   -.0453  (+/- .036 )
   P(10, 5) =   -.0305  (+/- .029 )
   P(10, 6) =    .0571  (+/- .036 )
   P(10, 7) =   -.0442  (+/- .029 )
   P(10, 8) =    .1523  (+/- .035 )
   P(10, 9) =    .1032  (+/- .035 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =    .9282  (.14 )
   P( 5 ,B) =    .9745  (.05 )
   P( 6 ,C) =    .9436  (.11 )
   P( 7 ,D) =    .9667  (.07 )
   P( 8 ,E) =    .8691  (.24 )
   P( 9 ,F) =    .8503  (.28 )
   P(10 ,G) =    .8372  (.30 )
```

```
        PATH ANALYSIS
   Males:  Replication 2
        Hard Drug Use

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =   -.3297  (+/- .031 )
   P( 4, 3) =   -.0843  (+/- .029 )
   P( 5, 2) =   -.2331  (+/- .030 )
   P( 5, 3) =    .0654  (+/- .029 )
   P( 6, 2) =   -.2070  (+/- .030 )
   P( 6, 3) =   -.1826  (+/- .030 )
   P( 7, 2) =   -.1467  (+/- .030 )
   P( 7, 3) =   -.1422  (+/- .030 )
   P( 8, 2) =    .0463  (+/- .031 )
   P( 8, 3) =    .0100  (+/- .029 )
   P( 8, 4) =   -.1976  (+/- .036 )
   P( 8, 5) =   -.1812  (+/- .028 )
   P( 8, 6) =   -.1790  (+/- .035 )
   P( 8, 7) =   -.1820  (+/- .028 )
   P( 9, 2) =    .0560  (+/- .030 )
   P( 9, 3) =   -.0401  (+/- .029 )
   P( 9, 4) =   -.1992  (+/- .036 )
   P( 9, 5) =   -.2436  (+/- .029 )
   P( 9, 6) =   -.1539  (+/- .035 )
   P( 9, 7) =   -.1876  (+/- .028 )
   P(10, 1) =    .4763  (+/- .032 )
   P(10, 2) =   -.0386  (+/- .030 )
   P(10, 3) =    .0150  (+/- .028 )
   P(10, 4) =   -.0754  (+/- .035 )
   P(10, 5) =   -.0722  (+/- .028 )
   P(10, 6) =    .0876  (+/- .034 )
   P(10, 7) =   -.0171  (+/- .028 )
   P(10, 8) =    .1200  (+/- .035 )
   P(10, 9) =    .1027  (+/- .035 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =    .9297  (.14 )
   P( 5 ,B) =    .9758  (.05 )
   P( 6 ,C) =    .9470  (.10 )
   P( 7 ,D) =    .9713  (.06 )
   P( 8 ,E) =    .8609  (.26 )
   P( 9 ,F) =    .8503  (.28 )
   P(10 ,G) =    .8005  (.36 )
```

```
        PATH ANALYSIS
   Females:  Replication 2
        Hard Drug Use

PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =   -.3051  (+/- .031 )
   P( 4, 3) =   -.1155  (+/- .030 )
   P( 5, 2) =   -.2366  (+/- .031 )
   P( 5, 3) =    .0125  (+/- .030 )
   P( 6, 2) =   -.1833  (+/- .031 )
   P( 6, 3) =   -.2030  (+/- .031 )
   P( 7, 2) =   -.1110  (+/- .030 )
   P( 7, 3) =   -.1925  (+/- .031 )
   P( 8, 2) =    .0387  (+/- .031 )
   P( 8, 3) =    .0452  (+/- .031 )
   P( 8, 4) =   -.1760  (+/- .037 )
   P( 8, 5) =   -.1869  (+/- .029 )
   P( 8, 6) =   -.1199  (+/- .036 )
   P( 8, 7) =   -.1478  (+/- .029 )
   P( 9, 2) =    .0476  (+/- .031 )
   P( 9, 3) =    .0068  (+/- .030 )
   P( 9, 4) =   -.1712  (+/- .037 )
   P( 9, 5) =   -.2377  (+/- .029 )
   P( 9, 6) =   -.1992  (+/- .036 )
   P( 9, 7) =   -.0875  (+/- .029 )
   P(10, 1) =    .2753  (+/- .029 )
   P(10, 2) =    .0190  (+/- .032 )
   P(10, 3) =    .0099  (+/- .031 )
   P(10, 4) =    .0011  (+/- .038 )
   P(10, 5) =    .0313  (+/- .030 )
   P(10, 6) =    .0140  (+/- .037 )
   P(10, 7) =   -.0550  (+/- .030 )
   P(10, 8) =    .1948  (+/- .034 )
   P(10, 9) =    .1095  (+/- .034 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =    .9298  (.14 )
   P( 5 ,B) =    .9728  (.05 )
   P( 6 ,C) =    .9457  (.11 )
   P( 7 ,D) =    .9659  (.07 )
   P( 8 ,E) =    .8902  (.21 )
   P( 9 ,F) =    .8652  (.25 )
   P(10 ,G) =    .9008  (.19 )
```

Variable List for Full Models

1 - Hard Drug Use 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Normlessness 2
5 - Family Involvement 2
6 - School Normlessness 1
7 - School Involvement 2
8 - Involvement with Delinquent Peers 2
9 - Attitudes to Deviance 1
10 - Hard Drug Use 2

Path Analyses - Reduced Model - Replication 1 - Self-Reported Delinquency

```
        PATH ANALYSIS
  Total Sample:  Replication 1
   Self-Reported Delinquency
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2373  (+/- .028 )
   P( 5, 2) =  -.2175  (+/- .029 )
   P( 5, 3) =  -.1492  (+/- .029 )
   P( 6, 2) =  -.1331  (+/- .029 )
   P( 6, 3) =  -.1042  (+/- .029 )
   P( 7, 4) =  -.1580  (+/- .029 )
   P( 7, 5) =  -.2985  (+/- .029 )
   P( 7, 6) =  -.1945  (+/- .029 )
   P( 8, 1) =   .3612  (+/- .029 )
   P( 8, 7) =   .4840  (+/- .031 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9714  (.06 )
   P( 5 ,B) =   .9544  (.09 )
   P( 6 ,C) =   .9814  (.04 )
   P( 7 ,D) =   .8905  (.21 )
   P( 8 ,E) =   .6902  (.52 )
```

```
        PATH ANALYSIS
    Males:  Replication 1
   Self-Reported Delinquency
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2133  (+/- .035 )
   P( 5, 2) =  -.2498  (+/- .038 )
   P( 5, 3) =  - 1485  (+/- .037 )
   P( 6, 2) =  -.1647  (+/- .038 )
   P( 6, 3) =  -.1334  (+/- .037 )
   P( 7, 4) =  -.1350  (+/- .036 )
   P( 7, 5) =  -.2716  (+/- .037 )
   P( 7, 6) =  -.2038  (+/- .036 )
   P( 8, 1) =   .3483  (+/- .036 )
   P( 8, 7) =   .5132  (+/- .039 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9770  (.05 )
   P( 5 ,B) =   .9425  (.11 )
   P( 6 ,C) =   .9690  (.06 )
   P( 7 ,D) =   .9046  (.18 )
   P( 8 ,E) =   .6758  (.54 )
```

```
        PATH ANALYSIS
    Females:  Replication 1
   Self-Reported Delinquency
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2615  (+/- .038 )
   P( 5, 2) =  -.1927  (+/- .038 )
   P( 5, 3) =  -.1397  (+/- .038 )
   P( 6, 2) =  -.1004  (+/- .038 )
   P( 6, 3) =  -.0627  (+/- .038 )
   P( 7, 4) =  -.2098  (+/- .039 )
   P( 7, 5) =  -.3230  (+/- .039 )
   P( 7, 6) =  -.1488  (+/- .039 )
   P( 8, 1) =   .3083  (+/- .039 )
   P( 8, 7) =   .4655  (+/- .042 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9652  (.07 )
   P( 5 ,B) =   .9647  (.07 )
   P( 6 ,C) =   .9915  (.02 )
   P( 7 ,D) =   .8811  (.22 )
   P( 8 ,E) =   .7527  (.43 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2
5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2

Path Analyses - Reduced Model - Replication 1 - Index Offenses

PATH ANALYSIS

Total Sample: Replication 1
Index Offenses

```
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2373  (+/- .028 )
   P( 5, 2) =  -.2175  (+/- .029 )
   P( 5, 3) =  -.1492  (+/- .029 )
   P( 6, 2) =  -.1331  (+/- .029 )
   P( 6, 3) =  -.1042  (+/- .029 )
   P( 7, 4) =  -.1580  (+/- .029 )
   P( 7, 5) =  -.2985  (+/- .029 )
   P( 7, 6) =  -.1945  (+/- .029 )
   P( 8, 1) =   .3190  (+/- .029 )
   P( 8, 7) =   .3777  (+/- .030 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9714  (.06 )
   P( 5 ,B) =   .9544  (.09 )
   P( 6 ,C) =   .9814  (.04 )
   P( 7 ,D) =   .8905  (.21 )
   P( 8 ,E) =   .8272  (.32 )
```

PATH ANALYSIS

Males: Replication 1
Index Offenses

```
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2133  (+/- .035 )
   P( 5, 2) =  -.2498  (+/- .038 )
   P( 5, 3) =  -.1485  (+/- .037 )
   P( 6, 2) =  -.1647  (+/- .038 )
   P( 6, 3) =  -.1334  (+/- .037 )
   P( 7, 4) =  - 1350  (+/- .036 )
   P( 7, 5) =  -.2716  (+/- .037 )
   P( 7, 6) =  -.2038  (+/- .036 )
   P( 8, 1) =   .2977  (+/- .036 )
   P( 8, 7) =   .4434  (+/- .038 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9770  (.05 )
   P( 5 ,B) =   .9425  (.11 )
   P( 6 ,C) =   .9690  (.06 )
   P( 7 ,D) =   .9046  (.18 )
   P( 8 ,E) =   .7958  (.37 )
```

PATH ANALYSIS

Females: Replication 1
Index Offenses

```
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2615  (+/- .038 )
   P( 5, 2) =  -.1927  (+/- .038 )
   P( 5, 3) =  -.1397  (+/- .038 )
   P( 6, 2) =  -.1004  (+/- .038 )
   P( 6, 3) =  -.0627  (+/- .038 )
   P( 7, 4) =  - 2098  (+/- .039 )
   P( 7, 5) =  -.3230  (+/- .039 )
   P( 7, 6) =  -.1488  (+/- .039 )
   P( 8, 1) =   .2270  (+/- .038 )
   P( 8, 7) =   .2101  (+/- .038 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9652  (.07 )
   P( 5 ,B) =   .9647  (.07 )
   P( 6 ,C) =   .9915  (.02 )
   P( 7 ,D) =   .8811  (.22 )
   P( 8 ,E) =   .9418  (.11 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2
5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2

Path Analyses - Reduced Model - Replication 1 - Minor Offenses

```
            PATH ANALYSIS
  Total Sample:  Replication 1
          Minor Offenses
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2373  (+/- .028 )
   P( 5, 2) =  -.2175  (+/- .029 )
   P( 5, 3) =  -.1492  (+/- .029 )
   P( 6, 2) =  -.1331  (+/- .029 )
   P( 6, 3) =  -.1042  (+/- .029 )
   P( 7, 4) =  -.1580  (+/- .029 )
   P( 7, 5) =  -.2985  (+/- .029 )
   P( 7, 6) =  -.1945  (+/- .029 )
   P( 8, 1) =   .3385  (+/- .030 )
   P( 8, 7) =   .4013  (+/- .031 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9714  (.06 )
   P( 5 ,B) =   .9544  (.09 )
   P( 6 ,C) =   .9814  (.04 )
   P( 7 ,D) =   .8905  (.21 )
   P( 8 ,E) =   .7811  (.39 )
```

```
            PATH ANALYSIS
      Males:  Replication 1
          Minor Offenses
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2133  (+/- .035 )
   P( 5, 2) =  -.2498  (+/- .038 )
   P( 5, 3) =  -.1485  (+/- .037 )
   P( 6, 2) =  - 1647  (+/- .038 )
   P( 6, 3) =  - 1334  (+/- .037 )
   P( 7, 4) =  -.1350  (+/- .036 )
   P( 7, 5) =  -.2716  (+/- .037 )
   P( 7, 6) =  -.2038  (+/- .036 )
   P( 8, 1) =   .3341  (+/- .037 )
   P( 8, 7) =   .4298  (+/- .039 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9770  (.05 )
   P( 5 ,B) =   .9425  (.11 )
   P( 6 ,C) =   .9690  (.06 )
   P( 7 ,D) =   .9046  (.18 )
   P( 8 ,E) =   .7687  (.41 )
```

```
            PATH ANALYSIS
     Females:  Replication 1
          Minor Offenses
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2615  (+/- .038 )
   P( 5, 2) =  -.1927  (+/- .038 )
   P( 5, 3) =  -.1397  (+/- .038 )
   P( 6, 2) =  -.1004  (+/- .038 )
   P( 6, 3) =  -.0627  (+/- .038 )
   P( 7, 4) =  -.2098  (+/- .039 )
   P( 7, 5) =  -.3230  (+/- .039 )
   P( 7, 6) =  -.1488  (+/- .039 )
   P( 8, 1) =   .3454  (+/- .042 )
   P( 8, 7) =   .3260  (+/- .041 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9652  (.07 )
   P( 5 ,B) =   .9647  (.07 )
   P( 6 ,C) =   .9915  (.02 )
   P( 7 ,D) =   .8811  (.22 )
   P( 8 ,E) =   .8210  (.33 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2
5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2

Path Analyses - Reduced Model - Replication 1 - Marijuana Use

```
PATH ANALYSIS
```

Total Sample: Replication 1
Marijuana Use

```
PATH COEFFICIENTS AND STANDARD ERRORS

  P( 4, 2) =  -.2373  (+/- .028 )
  P( 5, 2) =  -.2175  (+/- .029 )
  P( 5, 3) =  -.1492  (+/- .029 )
  P( 6, 2) =  -.1331  (+/- .029 )
  P( 6, 3) =  -.1042  (+/- .029 )
  P( 7, 4) =  -.1580  (+/- .029 )
  P( 7, 5) =  -.2985  (+/- .029 )
  P( 7, 6) =  -.1945  (+/- .029 )
  P( 8, 1) =   .4944  (+/- .030 )
  P( 8, 7) =   .4133  (+/- .028 )

RESIDUAL PATHS AND R-SQUARED

  P( 4 ,A) =   .9714  (.06 )
  P( 5 ,B) =   .9544  (.09 )
  P( 6 ,C) =   .9814  (.04 )
  P( 7 ,D) =   .8905  (.21 )
  P( 8 ,E) =   .6392  (.59 )
```

```
PATH ANALYSIS
```

Males: Replication 1
Marijuana Use

```
PATH COEFFICIENTS AND STANDARD ERRORS

  P( 4, 2) =  -.2133  (+/- .035 )
  P( 5, 2) =  -.2498  (+/- .038 )
  P( 5, 3) =  - 1485  (+/- .037 )
  P( 6, 2) =  -.1647  (+/- .038 )
  P( 6, 3) =  -.1334  (+/- .037 )
  P( 7, 4) =  -.1350  (+/- .036 )
  P( 7, 5) =  -.2716  (+/- .037 )
  P( 7, 6) =  -.2038  (+/- .036 )
  P( 8, 1) =   .5352  (+/- .039 )
  P( 8, 7) =   .3815  (+/- .035 )

RESIDUAL PATHS AND R-SQUARED

  P( 4 ,A) =   .9770  (.05 )
  P( 5 ,B) =   .9425  (.11 )
  P( 6 ,C) =   .9690  (.06 )
  P( 7 ,D) =   .9046  (.18 )
  P( 8 ,E) =   .6182  (.62 )
```

```
PATH ANALYSIS
```

Females: Replication 1
Marijuana Use

```
PATH COEFFICIENTS AND STANDARD ERRORS

  P( 4, 2) =  -.2615  (+/- .038 )
  P( 5, 2) =  -.1927  (+/- .038 )
  P( 5, 3) =  -.1397  (+/- .038 )
  P( 6  2) =  -.1004  (+/- .038 )
  P( 6, 3) =  -.0627  (+/- .038 )
  P( 7, 4) =  -.2098  (+/- .039 )
  P( 7, 5) =  -.3230  (+/- .039 )
  P( 7, 6) =  -.1488  (+/- .039 )
  P( 8, 1) =   .4386  (+/- .039 )
  P( 8, 7) =   .4519  (+/- .039 )

RESIDUAL PATHS AND R-SQUARED

  P( 4 ,A) =   .9652  (.07 )
  P( 5 ,B) =   .9647  (.07 )
  P( 6 ,C) =   .9915  (.02 )
  P( 7 ,D) =   .8811  (.22 )
  P( 8 ,E) =   .6718  (.55 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2
5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2

Path Analyses - Reduced Model - Replication 1 - Hard Drug Use

PATH ANALYSIS

Total Sample: Replication 1
Hard Drug Use

```
PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.2373  (+/- .028 )
    P( 5, 2) =  -.2175  (+/- .029 )
    P( 5, 3) =  -.1492  (+/- .029 )
    P( 6, 2) =  -.1331  (+/- .029 )
    P( 6, 3) =  -.1042  (+/- .029 )
    P( 7, 4) =  -.1580  (+/- .029 )
    P( 7, 5) =  -.2985  (+/- .029 )
    P( 7, 6) =  -.1945  (+/- .029 )
    P( 8, 1) =   .4422  (+/- .030 )
    P( 8, 7) =   .2836  (+/- .028 )


RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9714  (.06 )
    P( 5 ,B) =   .9544  (.09 )
    P( 6 ,C) =   .9814  (.04 )
    P( 7 ,D) =   .8905  (.21 )
    P( 8 ,E) =   .8152  (.34 )
```

PATH ANALYSIS

Males: Replication 1
Hard Drug Use

```
PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.2133  (+/- .035 )
    P( 5, 2) =  -.2498  (+/- .038 )
    P( 5, 3) =  -.1485  (+/- .037 )
    P( 6, 2) =  -.1647  (+/- .038 )
    P( 6, 3) =  -.1334  (+/- .037 )
    P( 7, 4) =  -.1350  (+/- .036 )
    P( 7, 5) =  -.2716  (+/- .037 )
    P( 7, 6) =  -.2038  (+/- .036 )
    P( 8, 1) =   .5624  (+/- .039 )
    P( 8, 7) =   .3128  (+/- .034 )


RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9770  (.05 )
    P( 5 ,B) =   .9425  (.11 )
    P( 6 ,C) =   .9690  (.06 )
    P( 7 ,D) =   .9046  (.18 )
    P( 8 ,E) =   .7059  (.50 )
```

PATH ANALYSIS

Females: Replication 1
Hard Drug Use

```
PATH COEFFICIENTS AND STANDARD ERRORS

    P( 4, 2) =  -.2615  (+/- .038 )
    P( 5, 2) =  -.1927  (+/- .038 )
    P( 5, 3) =  -.1397  (+/- .038 )
    P( 6, 2) =  -.1004  (+/- .038 )
    P( 6, 3) =  - 0627  (+/- .038 )
    P( 7, 4) =  -.2098  (+/- .039 )
    P( 7, 5) =  -.3230  (+/- .039 )
    P( 7, 6) =  -.1488  (+/- .039 )
    P( 8, 1) =   .2433  (+/- .039 )
    P( 8, 7) =   .2443  (+/- .039 )


RESIDUAL PATHS AND R-SQUARED

    P( 4 ,A) =   .9652  (.07 )
    P( 5 ,B) =   .9647  (.07 )
    P( 6 ,C) =   .9915  (.02 )
    P( 7 ,D) =   .8811  (.22 )
    P( 8 ,E) =   .9248  (.14 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2
5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2

Path Analyses - Reduced Model - Replication 2 - Self-Reported Delinquency

```
          PATH ANALYSIS
   Total Sample:  Replication 2
    Self-Reported Delinquency
PATH COEFFICIENTS AND STANDARD ERRORS

  P( 4, 2) =  -.2219  (+/- .028 )
  P( 5, 2) =  -.1937  (+/- .030 )
  P( 5, 3) =  -.2039  (+/- .030 )
  P( 6, 2) =  -.1279  (+/- .030 )
  P( 6, 3) =  -.1776  (+/- .030 )
  P( 7, 4) =  -.2071  (+/- .028 )
  P( 7, 5) =  -.2953  (+/- .029 )
  P( 7, 6) =  -.1850  (+/- .029 )
  P( 8, 1) =   .5564  (+/- .032 )
  P( 8, 7) =   .3134  (+/- .028 )

RESIDUAL PATHS AND R-SQUARED

  P( 4 ,A) =   .9751  (.05 )
  P( 5 ,B) =   .9436  (.11 )
  P( 6 ,C) =   .9667  (.07 )
  P( 7 ,D) =   .8827  (.22 )
  P( 8 ,E) =   .6448  (.58 )
```

```
          PATH ANALYSIS
      Males:  Replication 2
    Self-Reported Delinquency
PATH COEFFICIENTS AND STANDARD ERRORS

  P( 4, 2) =  -.2099  (+/- .035 )
  P( 5, 2) =  -.2070  (+/- .038 )
  P( 5, 3) =  -.1826  (+/- .037 )
  P( 6, 2) =  -.1467  (+/- .037 )
  P( 6, 3) =  -.1422  (+/- .037 )
  P( 7, 4) =  -.2154  (+/- .035 )
  P( 7, 5) =  -.3111  (+/- .036 )
  P( 7  6) =  -.1885  (+/- .035 )
  P( 8, 1) =   .5491  (+/- .041 )
  P( 8, 7) =   .3135  (+/- .036 )

RESIDUAL PATHS AND R-SQUARED

  P( 4 ,A) =   .9777  (.04 )
  P( 5 ,B) =   .9470  (.10 )
  P( 6 ,C) =   .9713  (.06 )
  P( 7 ,D) =   .8775  (.23 )
  P( 8 ,E) =   .6517  (.58 )
```

```
          PATH ANALYSIS
    Females:  Replication 2
    Self-Reported Delinquency
PATH COEFFICIENTS AND STANDARD ERRORS

  P( 4, 2) =  -.2314  (+/- .038 )
  P( 5, 2) =  -.1833  (+/- .041 )
  P( 5, 3) =  -.2030  (+/- .041 )
  P( 6, 2) =  -.1110  (+/- .041 )
  P( 6, 3) =  -.1925  (+/- .041 )
  P( 7, 4) =  -.2140  (+/- .039 )
  P( 7, 5) =  -.2511  (+/- .038 )
  P( 7, 6) =  -.1593  (+/- .039 )
  P( 8, 1) =   .4738  (+/- .042 )
  P( 8, 7) =   .3586  (+/- .040 )

RESIDUAL PATHS AND R-SQUARED

  P( 4 ,A) =   .9728  (.05 )
  P( 5 ,B) =   .9457  (.11 )
  P( 6 ,C) =   .9659  (.07 )
  P( 7 ,D) =   .9040  (.18 )
  P( 8 ,E) =   .6873  (.53 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2
5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2

Path Analyses - Reduced Model - Replication 2 - Index Offenses

```
          PATH ANALYSIS
   Total Sample:  Replication 2
         Index Offenses
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2219  (+/- .028 )
   P( 5, 2) =  -.1937  (+/- .030 )
   P( 5, 3) =  -.2039  (+/- .030 )
   P( 6, 2) =  -.1279  (+/- .030 )
   P( 6, 3) =  -.1776  (+/- .030 )
   P( 7, 4) =  -.2071  (+/- .028 )
   P( 7, 5) =  -.2953  (+/- .029 )
   P( 7, 6) =  -.1850  (+/- .029 )
   P( 8, 1) =   .4704  (+/- .032 )
   P( 8, 7) =   .2320  (+/- .029 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9751  (.05 )
   P( 5 ,B) =   .9436  (.11 )
   P( 6 ,C) =   .9667  (.07 )
   P( 7 ,D) =   .8827  (.22 )
   P( 8 ,E) =   .8019  (.36 )
```

```
          PATH ANALYSIS
      Males:  Replication 2
         Index Offenses
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2099  (+/- .035 )
   P( 5, 2) =  -.2070  (+/- .038 )
   P( 5, 3) =  -.1826  (+/- .037 )
   P( 6, 2) =  -.1467  (+/- .037 )
   P( 6, 3) =  -.1422  (+/- .037 )
   P( 7, 4) =  -.2154  (+/- .035 )
   P( 7, 5) =  -.3111  (+/- .036 )
   P( 7, 6) =  -.1885  (+/- .035 )
   P( 8, 1) =   .4506  (+/- .040 )
   P( 8, 7) =   .2482  (+/- .037 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9777  (.04 )
   P( 5 ,B) =   .9470  (.10 )
   P( 6 ,C) =   .9713  (.06 )
   P( 7 ,D) =   .8775  (.23 )
   P( 8 ,E) =   .7991  (.36 )
```

```
          PATH ANALYSIS
    Females:  Replication 2
         Index Offenses
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2314  (+/- .038 )
   P( 5, 2) =  -.1833  (+/- .041 )
   P( 5, 3) =  -.2030  (+/- .041 )
   P( 6, 2) =  -.1110  (+/- .041 )
   P( 6, 3) =  -.1925  (+/- .041 )
   P( 7, 4) =  -.2140  (+/- .039 )
   P( 7, 5) =  -.2511  (+/- .038 )
   P( 7, 6) =  -.1593  (+/- .039 )
   P( 8, 1) =   .2885  (+/- .039 )
   P( 8, 7) =   .3031  (+/- .039 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9728  (.05 )
   P( 5 ,B) =   .9457  (.11 )
   P( 6 ,C) =   .9659  (.07 )
   P( 7 ,D) =   .9040  (.18 )
   P( 8 ,E) =   .8889  (.21 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2
5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2

Path Analyses - Reduced Model - Replication 2 - Minor Offenses

PATH ANALYSIS

Total Sample: Replication 2
Minor Offenses

```
PATH COEFFICIENTS AND STANDARD ERRORS

 P( 4, 2) =  -.2219  (+/- .028 )
 P( 5, 2) =  -.1937  (+/- .030 )
 P( 5, 3) =  -.2039  (+/- .030 )
 P( 6, 2) =  -.1279  (+/- .030 )
 P( 6, 3) =  -.1776  (+/- .030 )
 P( 7, 4) =  -.2071  (+/- .028 )
 P( 7, 5) =  -.2953  (+/- .029 )
 P( 7, 6) =  -.1850  (+/- .029 )
 P( 8, 1) =   .4533  (+/- .032 )
 P( 8, 7) =   .3128  (+/- .030 )

RESIDUAL PATHS AND R-SQUARED

 P( 4 ,A) =   .9751  (.05 )
 P( 5 ,B) =   .9436  (.11 )
 P( 6 ,C) =   .9667  (.07 )
 P( 7 ,D) =   .8827  (.22 )
 P( 8 ,E) =   .7490  (.44 )
```

PATH ANALYSIS

Males: Replication 2
Minor Offenses

```
PATH COEFFICIENTS AND STANDARD ERRORS

 P( 4, 2) =  -.2099  (+/- .035 )
 P( 5, 2) =  -.2070  (+/- .038 )
 P( 5, 3) =  -.1826  (+/- .037 )
 P( 6, 2) =  -.1467  (+/- .037 )
 P( 6, 3) =  -.1422  (+/- .037 )
 P( 7, 4) =  -.2154  (+/- .035 )
 P( 7, 5) =  -.3111  (+/- .036 )
 P( 7, 6) =  -.1885  (+/- .035 )
 P( 8, 1) =   .4443  (+/- .040 )
 P( 8, 7) =   .3373  (+/- .038 )

RESIDUAL PATHS AND R-SQUARED

 P( 4 ,A) =   .9777  (.04 )
 P( 5 ,B) =   .9470  (.10 )
 P( 6 ,C) =   .9713  (.06 )
 P( 7 ,D) =   .8775  (.23 )
 P( 8 ,E) =   .7414  (.45 )
```

PATH ANALYSIS

Females: Replication 2
Minor Offenses

```
PATH COEFFICIENTS AND STANDARD ERRORS

 P( 4, 2) =  -.2314  (+/- .038 )
 P( 5, 2) =  -.1833  (+/- .041 )
 P( 5, 3) =  -.2030  (+/- .041 )
 P( 6, 2) =  -.1110  (+/- .041 )
 P( 6, 3) =  -.1925  (+/- .041 )
 P( 7, 4) =  -.2140  (+/- .039 )
 P( 7, 5) =  -.2511  (+/- .038 )
 P( 7, 6) =  -.1593  (+/- .039 )
 P( 8, 1) =   .4643  (+/- .043 )
 P( 8, 7) =   .2589  (+/- .040 )

RESIDUAL PATHS AND R-SQUARED

 P( 4 ,A) =   .9728  (.05 )
 P( 5 ,B) =   .9457  (.11 )
 P( 6 ,C) =   .9659  (.07 )
 P( 7 ,D) =   .9040  (.18 )
 P( 8 ,E) =   .7764  (.40 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2
5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2

Path Analyses - Reduced Model - Replication 2 - Marijuana Use

```
            PATH ANALYSIS
      Total Sample:  Replication 2
            Marijuana Use
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2219  (+/- .028 )
   P( 5, 2) =  -.1937  (+/- .030 )
   P( 5, 3) =  -.2039  (+/- .030 )
   P( 6, 2) =  -.1279  (+/- .030 )
   P( 6, 3) =  -.1776  (+/- .030 )
   P( 7, 4) =  -.2071  (+/- .028 )
   P( 7, 5) =  -.2953  (+/- .029 )
   P( 7, 6) =  -.1850  (+/- .029 )
   P( 8, 1) =   .5722  (+/- .032 )
   P( 8, 7) =   .3036  (+/- .028 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9751  (.05 )
   P( 5 ,B) =   .9436  (.11 )
   P( 6 ,C) =   .9667  (.07 )
   P( 7 ,D) =   .8827  ( 22 )
   P( 8 ,E) =   .6430  (.59 )
```

```
            PATH ANALYSIS
        Males:  Replication 2
            Marijuana Use
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2099  (+/- .035 )
   P( 5, 2) =  -.2070  (+/- .038 )
   P( 5, 3) =  -.1826  (+/- .037 )
   P( 6, 2) =  -.1467  (+/- .037 )
   P( 6, 3) =  -.1422  (+/- .037 )
   P( 7, 4) =  -.2154  (+/- .035 )
   P( 7, 5) =  -.3111  (+/- .036 )
   P( 7, 6) =  -.1885  (+/- .035 )
   P( 8, 1) =   .5962  (+/- .040 )
   P( 8, 7) =   .3083  (+/- .034 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9777  (.04 )
   P( 5 ,B) =   .9470  (.10 )
   P( 6 ,C) =   .9713  (.06 )
   P( 7 ,D) =   .8775  (.23 )
   P( 8 ,E) =   .6141  (.62 )
```

```
            PATH ANALYSIS
       Females:  Replication 2
            Marijuana Use
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2314  (+/- .038 )
   P( 5, 2) =  -.1833  (+/- .041 )
   P( 5, 3) =  -.2030  (+/- .041 )
   P( 6, 2) =  -.1110  (+/- .041 )
   P( 6, 3) =  -.1925  (+/- .041 )
   P( 7, 4) =  -.2140  (+/- .039 )
   P( 7, 5) =  -.2511  (+/- .038 )
   P( 7, 6) =  -.1593  (+/- .039 )
   P( 8, 1) =   .5301  (+/- .043 )
   P( 8, 7) =   .2880  (+/- .038 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9728  (.05 )
   P( 5 ,B) =   .9457  (.11 )
   P( 6 ,C) =   .9659  (.07 )
   P( 7 ,D) =   .9040  (.18 )
   P( 8 ,E) =   .6987  (.51 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2

5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2

Path Analyses - Reduced Model - Replication 2 - Hard Drug Use

```
          PATH ANALYSIS
  Total Sample:  Replication 2
          Hard Drug Use
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2219  (+/- .028 )
   P( 5, 2) =  -.1937  (+/- .030 )
   P( 5, 3) =  -.2039  (+/- .030 )
   P( 6, 2) =  -.1279  (+/- .030 )
   P( 6, 3) =  -.1776  (+/- .030 )
   P( 7, 4) =  -.2071  (+/- .028 )
   P( 7, 5) =  -.2953  (+/- .029 )
   P( 7, 6) =  -.1850  (+/- .029 )
   P( 8, 1) =   .4232  (+/- .031 )
   P( 8, 7) =   .2256  (+/- .028 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9751  (.05 )
   P( 5 ,B) =   .9436  (.11 )
   P( 6 ,C) =   .9667  (.07 )
   P( 7 ,D) =   .8827  (.22 )
   P( 8 ,E) =   .8450  (.29 )
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          PATH ANALYSIS
     Males:  Replication 2
          Hard Drug Use
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2099  (+/- .035 )
   P( 5, 2) =  -.2070  (+/- .038 )
   P( 5, 3) =  -.1826  (+/- .037 )
   P( 6, 2) =  -.1467  (+/- .037 )
   P( 6, 3) =  -.1422  (+/- .037 )
   P( 7, 4) =  -.2154  (+/- .035 )
   P( 7, 5) =  -.3111  (+/- .036 )
   P( 7, 6) =  -.1885  (+/- .035 )
   P( 8, 1) =   .4866  (+/- .040 )
   P( 8, 7) =   .1954  (+/- .036 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9777  (.04 )
   P( 5 ,B) =   .9470  (.10 )
   P( 6 ,C) =   .9713  (.06 )
   P( 7 ,D) =   .8775  (.23 )
   P( 8 ,E) =   .8127  (.34 )
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          PATH ANALYSIS
    Females:  Replication 2
          Hard Drug Use
PATH COEFFICIENTS AND STANDARD ERRORS

   P( 4, 2) =  -.2314  (+/- .038 )
   P( 5, 2) =  -.1833  (+/- .041 )
   P( 5, 3) =  -.2030  (+/- .041 )
   P( 6, 2) =  -.1110  (+/- .041 )
   P( 6, 3) =  -.1925  (+/- .041 )
   P( 7, 4) =  -.2140  (+/- .039 )
   P( 7, 5) =  -.2511  (+/- .038 )
   P( 7, 6) =  -.1593  (+/- .039 )
   P( 8, 1) =   .2810  (+/- .039 )
   P( 8, 7) =   .2565  (+/- .038 )

RESIDUAL PATHS AND R-SQUARED

   P( 4 ,A) =   .9728  (.05 )
   P( 5 ,B) =   .9457  (.11 )
   P( 6 ,C) =   .9659  (.07 )
   P( 7 ,D) =   .9040  (.18 )
   P( 8 ,E) =   .9077  (.18 )
```

Variable List for Reduced Models

1 - SRD 1
2 - Family Strain 1
3 - School Strain 1
4 - Family Involvement 2
5 - School Normlessness 1
6 - School Involvement 2
7 - Involvement with Delinquent Peers 2
8 - SRD 2