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Determinants of Delinquency: A Longitudinal Analysis of Social Control and Differential Association Theories

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by

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Dedicated to

Jack and Alyce

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ABSTRACT

by

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Differential Association Theories

This investigation examines the causes of delinquent behavior. Drawing on longitudinal data from a national probability sample, this dissertation attempts to test empirically social control, differential association, and self-concept theories of delinquency. This entalis four steps. First, social control theory and differential association theories are examined and contrasted on important theoretical issues. Second, hypotheses derived from the two theories are translated into a structural equation model. Third, measurement error in important explanatory constructs is modeled, assessed, and statistically controlled using confirmatory factor analysis. Fourth, unobservable latent variables corrected for attenuation due to unreliability are

used in a causal model of social control and delinquent behavior. The parameters of this model are estimated efficiently by maximum likelihood procedures, and subjected to rigorous empirical testing.

Following this procedure, this dissertation produces three principal findings. First, data from the Youth in Transition Project contain indicators of social control theory that have reasonable measurement properties. Although the indicators contain large amounts of measurement error, unreliability is adequately controlled by confirmatory factor analysis. Second, social control theory is not empirically supported. Two of the three hypotheses derived from social control theory were disconfirmed. Third, differential association theory receives only modest support. Furthermore, negative evidence is found for differential identification and self-concept theories of delinquency.

Finally, it is noted that both theories fail to specify the nature and length of the causal lag

between explanatory concepts -- strong bonds to society or an excess of delinquent definitions -- and delinquent behavior. This makes empirical testing using longitudinal data difficult. It is suggested that this problem of specifying a causal lag can be overcome by developing a situational explanation of the delinquent act.

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CHAPTER 1

CURRENT CONTROVERSIES IN THE SOCIOLOGICAL EXPLANATION OF DELINQUENT BEHAVIOR

Crime is everywhere. In America today, lawbreaking has permeated nearly every facet of society. It ranges from the violent acts of street criminals and the economically undermining acts of white collar criminals to the mischievous acts of juvenile delinquents. The major contributor to the crime problem is this last group -- America's youth (Miller, 1975). Over a decade has passed since President Johnson's Commission on Law Enforcement and Administration of Justice (1967:169-70) concluded that (1) "enormous numbers of young people appear to be involved in delinquent acts;" (2) "youth is responsible for for a substantial and disproportionate part of the national crime problem;" and (3) "America's best hope for reducing crime is to reduce juvenile delinquency and youth crime" (see Jensen and Rojek, 1980:3). Sixteen years later, these conclusions hold with equal force. What is needed is more research, guided by sophisticated theories and methodological advances, into the causes of delinquent and criminal behavior.

Ever since Edwin Sutherland (1939) effectively instigated the revolt against biological positivism, economic determinism, and multiple factor approaches favored by social pathologists, criminology has been dominated by sociologists (Cressey, 1979). The most dominant theory of criminal and delinquent behavior during the last four decades has been Sutherland's (1939, 1947; Sutherland and Cressey, 1978) theory of differential association. Two important theoretical advances influenced Sutherland's development of differential association: Shaw and McKay's (1931; 1969) concept of social disorganization and Sellin's (1938) and Wirth's (1931) notions of culture conflict (Sutherland, [1942] 1973).

The most ambitious early empirical research endeavor in juvenile delinquency was a series of studies by Clifford Shaw and Henry McKay (1931; 1969). Searching for a structural explanation of high delinquency rates in the inner city of Chicago and other major cities in the United States, they collected exhaustive ecological data, mapping crime rates by geographical areas of the city. They concluded that the cause of high rates of delinquency was social disorganization: Deteriorated areas of the city produced social disorganization which in turn

caused a loss of institutional social control over children. Disorganization gives rise to delinquent gangs, traditions, and cultures, which transmit delinquent behavior from one generation of children to the next.

At about the same time, Sellin (1938) developed his theory of culture conflict as a general explanation of crime. According to Sellin, when members of one cultural group or area migrate to another area, their conduct norms may conflict with the legal norms of the second group (area). High rates of law violation will persist until the immigrants complete the process of acculturation to the new norms.

Sutherland extended Sellin's concept of culture conflict to include normative conflict of all groups, not just immigrants. He also changed Shaw and McKay's "social disorganization" to "differential social oganization," which entails organization in favor of crime as well as organization against it. More significantly, he specified the social psychological process by which culture conflict and differential social organization produce individual acts of crime. This process, called "differential association," stipulates that criminal behavior, like all behavior, is acquired through

principles of learning (Sutherland, 1947).

Subsequent developments in criminological theory focused specifically on juvenile delinquency. Influenced by Merton's (1938; 1957) theory of social structure and anomie, as well as Sutherland's differential association, Cohen (1955) attempted to account for the genesis of malicious, impulsive, and negativistic delinquent subcultures among male working-class adolescents. Cloward and Ohlin (1960) explicitly integrated Merton's anomie theory with Sutherland's differential association to explain the origin, development, and persistence of certain delinquent subcultures. This line of theorizing attempted to account for restricted forms of delinquency -- subcultural or gang delinquency -- instead of trying to formulate an abstract generalization to account for all acts in violation of the law.[1] It was not until twenty years after Sutherland revised his differential association theory that a major generalization about all delinquency appeared. This was Travis Hirschi's (1969) formulation, operationalization, and empirical confirmation of his social control theory.

Hirschi (1969, 1977; Hirschi and Gottfredson, 1980) boldly claimed that Sutherland's approach was misguided

and his theory incorrect. Attacking differential association on logical grounds, he argued that the theory was "virtually nonfalsifiable" and tended to produce only "trivial empirical predictions" (Hirschi, 1969:15; Hirschi and Gottfredson, 1980). More significantly, he also presented his social control theory and provided empirical evidence that purportedly refuted differential association while favoring his control theory.

Hirschi was not the first proponent of a social control theory of individual behavior; indeed many versions had been proposed previously (Reiss, 1951; Nye, 1958; Toby, 1957; Reckless, 1961; Briar and Piliavin, 1965). His version, however, was the most systematic and the first to generate and receive support from a large-scale empirical study. Hirschi's original analysis -- in which he explicitly outlined a strategy for operationalizing the concepts of his theory -- has stimulated a large body of empirical research on control theory. The majority of this research has supported Hirschi's control perspective, leading Gibbons (1979:121) to surmise that "there are several signs that Hirschi's theory is to be one of the more enduring contributions to criminology."

Recent theoretical developments in the study of delinquency have focused on integrating social control theory with differential association and other theories (Elliot et al., 1979; Conger, 1976; Glaser, 1978; Johnson, 1979). Such efforts have glossed over conflicting presuppositions -- such as differences in conceptions of social order, motivation, and human nature -- that distinguish these divergent theoretical perspectives in crucial ways. Put another way, the attempts at integration have been premature; they have yielded explanatory systems based on contradictory underlying assumptions (cf. Hirschi, 1969; Kornhauser, 1978).

It seems clear, then, that a more fruitful empirical and theoretical approach will recognize the contradictory assumptions separating theories of delinquency, outline a scheme for empirically distinguishing among them, and subject them to empirical test. Rather than combining explanations injudiciously, theoretical developments should follow empirical findings, which means rejecting the assumptions of an empirically untenable theory. In this light, this research attempts to examine empirically the relative efficacy of social control and differential association, using data on juvenile delinquency.

Previous quantitative research on control theory has been limited in three principal ways. First, recent studies have shown merely that variables representing concepts of control theory collectively explain substantial variation in delinquent behavior (Krohn and Massey, 1980; Krohn et al., 1982; Wiatrowski et al., 1981; Linden, 1978; Rankin, 1976). Explained variance, however, is only one criterion with which to judge a regression model. In fact, when modeling causal processes is the objective, explained variance, which summarizes the effects of more invariant structural parameters, is not a crucial measure of a theory's efficacy (Duncan, 1975). A substantially stronger test of the theory would use overidentifying restrictions in a structural equation model to test competing hypotheses derived from control theory and rival theories such as differential association (cf. Hirschi, 1969; Jensen, 1972; Hepburn, 1977; Matsueda, 1982).

Second, previous research has been based on samples drawn from restricted populations. Hirschi's (1969) data, for example, reanalyzed by Jensen (1972), and Matsueda (1982), sampled in-school youth in Western Contra Costa County, California. Only Wiatrowski, et al.

(1981) used a national probability sample.

Third, with few exceptions (Krohn et al., 1982; Paternoster et al., 1983), prior studies of control theory, relying on cross-sectional data, have simply assumed the causal ordering of important variables. This assumption has been particularly questionable for the measure of delinquency. Typically, a retrospective measure of delinquent behavior is used; consequently, variables measured in the present are used to predict delinquent acts committed in the past.

Fourth, previous research has not explicitly or adequately considered the presence of measurement error in important variables. An empirical examination of social control theory requires attitudinal data collected by a survey -- data invariably plagued with large amounts of measurement error. Failure to control directly for unreliability due to errors in variables can bias parameter estimates, and consequently, distort substantive conclusions.

This study attempts, in three ways, to overcome these limitations in testing social control theory. First, longitudinal data from the Youth in Transition

Project will be analyzed. These data were drawn from a national probability sample in five waves, beginning in 1966 and concluding in 1974. The sampling frame allows estimation of parameters for the 1966 tenth-grade cohort of males in the United States. The longitudinal design provides a way of disentangling the question of causal order between delinquent behavior and concepts representing social control theory, differential association theory, and other theories as well.

Second, the measurement properties of indicators of social control theory will be investigated by explicitly modeling the measurement process. Measurement error, then, will be assessed and statistically-controlled.

Third, competing hypotheses derived from social control theory and differential association will be rigorously tested. A theoretical model describing these relationships will be translated into a system of structural equations. The parameters of this model will be estimated simultaneously by efficient methods, and subjected to hypothesis testing.

In the chapters that follow, a social psychological model of the social processes generating delinquent

behavior is developed and empirically tested. Chapter 2 presents social control and differential association theories, and contrasts them on critical theoretical issues. Based on this discussion, a theoretical model containing relationships implied by the two theoretical perspectives is presented. Chapter 3 describes the data source and analytic strategies. In Chapter 4, measurement models of social control theory are specified, estimated, and tested. Chapter 5 estimates substantive models of delinquent behavior and tests control theory versus differential association. Finally, Chapter 6 summarizes the major findings and draws theoretical and empirical conclusions.

NOTES

1. We will not address the research tradition of "subcultural," "strain," or "anomie" theory. Our research is focused on testing sociological explanations of delinquent behavior in general, rather than dealing with the explanation of the origins of delinquent subcultures or gangs. To adequately test the theses of Cohen or Cloward and Ohlin, one would need a sampling frame using delinquent subcultures or gangs as a primary sampling unit. Furthermore, recent attempts to use Merton's goals-means disjuncture to account for all delinquent behavior have not been successful (Short et al., 1965; Hirschi, 1969; Liska, 1971; Quicker, 1974; Elliot and Voss, 1974; Johnson, 1979). We also will not address the recent research tradition of microeconomic theories of crime. Our interest is in the relative efficacy of major sociological theories -- specifically, social control and differential association theories of delinquency -- and economic approaches have little to add to this debate.

CHAPTER 2

THEORETICAL OVERVIEW: SOCIAL CONTROL THEORY VERSUS DIFFERENTIAL ASSOCIATION THEORY

A causal explanation of crime and delinquency can be stated from two perspectives.[1] First, from the standpoint of the group or society, a causal explanation attempts to account for group or societal rates of delinquent behavior. Second, from the perspective of the individual, a causal explanation seeks to explain the genesis of an individual act or acts of delinquent behavior. The former is a sociological explanation and uses the group or society as the unit of analysis; the latter is a social-psychological explanation and uses the individual as the unit of analysis. The two kinds of explanations should be consistent (Cressey, 1960; Sutherland and Cressey, 1978:79). Indeed, because accurate aggregate crime rates are but summary statements about individual acts, the two are different realizations of the same process. Therefore, researchers should not focus <u>exclusively</u> on one or the other, since each implies one another. In other words, hypotheses drawn for a study of individual behavior are necessarily informed by group- and societal-processes and vice-versa.

A third unit of analysis important for an explanation of delinquent behavior is the unit of time. The behavior of an individual is an ongoing process; specific forms of behavior, such as delinquency, are analytical abstractions from this process. Thus, although the stream of behavior takes a variety of directions (Dewey, 1896:357), behavior is not composed of discrete units (Shibutani, 1961:24). A group's life history, like a person's behavioral repertoire, is an ongoing process. Therefore, social psychological and sociological explanations of delinquency, which use as explanatory concepts, group or individual attributes acquired through experience, imply causal sequences occurring through time.

This chapter introduces the social control and differential association theories of delinquent behavior. The objective is to draw out empirically-testable propositions from each theoretical perspective. Specifically, first the theories are summarized; second, the two theories are contrasted at the group level, the individual level, and the temporal level; and third, a social psychological model is proposed capable of testing, at the level of the individual, competing hypotheses derived from each of the disparate theories.

Social Control and Differential Association Theories of Delinquency

Control theories of deviant and delinquent behavior focus on explaining why persons conform, rather than why they deviate (Hirschi, 1969; 1977). Behavior in violation of the law is explained by default: Control theorists characteristically ignore the causal forces that may impel one to violate the law. They do so by either assuming that human beings have animalistic impulses to violate the law, by denying the existence of deviant motives, or by simply assuming that motives for deviance are too many, varied, and transient to capture, are constant across persons, or are simply uninteresting. In short, deviance is taken for granted; conformity is problematic (Hirschi, 1969:10).

Based on the assumption of a single, unified and conventional moral order, social control theories maintain that persons conform to legal codes because they are intimately tied to that moral order. Accordingly, when a person's bond to society is broken or weakened, the person is said to be free to violate the law. To avoid a tautological explanation in which delinquency is indistinguishable from attenuated bonds, it is also said that

the person is not required to do so.

According to Hirschi (1969), the bond to society is a strong cord consisting of four interwoven strands: attachment commitment, involvement, and belief. Because the strands of the cord resemble each other, they are positively intercorrelated; but because they affect delinquency independently, they are analytically separable (Hirschi, 1969:27-30). The social bond is not an immutable shackle permanently tying persons down, but is a constantly changing, ongoing process in which members are socialized into conventional ways of thinking, believing, and behaving. Each strand then is a tributary, contributing independently to the ongoing stream of socialization. Thus, the likelihood of a person engaging in delinquency should covary through time with the strength of his social bond. Accordingly, delinquency rates should be high among anomic and disorganized groups fraught with weak social controls.

Within the developmental sequence of a person's childhood, the first line of defense against illicit behavior is attachment to other persons. Initially, persons become attached to their parents (perhaps the most significant strand of the bond); this later spreads to

attachment to peers, teachers, and other persons. The more intimate, warm, and intense a person's relationships with others, the more attached the person is to society, and consequently, the less likely the person is to violate society's rules. More precisely, in situations calling for delinquent behavior, a person who is closely attached to his parents, peers, or teachers considers the hypothetical reaction of these persons to his delinquent act. Because, according to Hirschi, all persons -- including delinquents -- disdain delinquent behavior, it follows that the anticipated reactions to delinquency will always be negative, and consequently, attached persons will refrain from temptaton. Accordingly, the less-attached will have fewer or less-intense negative reactions to consider, and thus, will to that extent be free to engage in delinquency, if they want to.

Reiss (1951) and Nye (1958) long ago argued that attachment to others (personal controls for Reiss and internal controls for Nye) reduces delinquency by instilling in the adolescent conventional norms and a conscience. Hirschi rejected this view because internalized norms are difficult to distinguish empirically from delinquent behavior, and an instilled conscience cannot

account for current delinquents who later cease committing delinquent acts. Instead, Hirschi placed the moral element, the normative aspect, and the conscience directly in the bond itself.

The second strand of the moral bond, commitment to conventional lines of action, represents the rational component of conformity, in which persons obey rules out of fear of negative consequences. Thus, given the way society is organized, the interests, activities, and aspirations of most persons would be jeopardized if they violated the law. To avoid losing their investments of time and energy in developing an educational or occupational career, they will refrain from delinquent behavior. This element derives from Becker's (1960) conception of "side bets," Toby's (1965) "stakes in conformity," and Briar and Piliavin's (1965) "commitment to conformity." For adolescents, the initial stage of commitment is to educational success; the second is to a high-status occupation.

Involvement in conventional activities, the third element of the bond, restrains persons from committing delinquency by occupying their time. Persons engrossed in conventional activities are tied to daily work

schedules, appointments, and deadlines, and therefore simply lack the time to consider delinquent behavior, let alone engage in it.

Hirschi argues that while there is a single, common, and consensual moral order, there is also variation in the extent to which persons believe in that order. The less the belief, the more free a person is to engage in delinquency. But, because delinquency is purportedly not positively motivated, even definitions favorable to law violation do not require delinquency. For Hirschi, the sequence of socialization runs from attachment to parents, to respect for persons in positions of authority, then to respect for the moral legitimacy of conventional rules.

In contrast to social control theory, differential association theory asserts that modern industrial societies, unlike nonliterate, agrarian societies, no longer organize around a single moral order. Instead, an expanding division of labor, leading to more specialized tasks, has caused societies to segment into many groups with distinct communication networks, interests, attitudes, values, and activities. This gives rise to conflict about the legitimacy of legal codes -- a condition

of normative conflict, in which definitions of legal codes that favor law violation exist alongside definitions unfavorable to law violation.

Sutherland gave the name "differential associaton" to the process by which persons experience these conflicting definitions about appropriate behavior. Specifically, delinquent behavior is learned through a process of communication (interaction) in intimate groups. The significant content of this learning process is the specific direction of motives, drives, rationalizations, and attitudes -- whether toward defining the law as rules to be observed or broken. "A person becomes delinquent because of an excess of definitions favorable to violation of law over definitions unfavorable to violation of law" (Sutherland and Cressey, 1978:81).

Before calculating a ratio of the two kinds of definitions, each is weighted by frequency, duration, priority, and intensity. Thus, behavior patterns presented with greater frequency, presented for a longer time, presented earlier in life, and presented in more intense relationships or from a more prestigious source (person) will have more weight in the process (differential association) producing delinquent or nondelinquent

behavior. Furthermore, the ratio of definitions toward law violation does not refer to criminality as a unidimensional phenomenon. Rather, restricted offenses, such as theft or assault, are determined by specific ratios of definitions favorable and unfavorable to those offenses.

The theory of differential association, which explains individual delinquent acts, has a corollary which accounts for the distribution of crime rates. Because, as indicated above, true crime rates are summary statements about the frequency of individual criminal acts, they are determined by the proportions of persons receiving an excess of delinquent definitions through the differential association process. In other words, crime rates of a group or society are determined by the extent to which the group or society is organized in favor of crime, as against the extent to which it is organized against crime. Sutherland gave the name "differential social organization " to this process whereby certain structural conditions in society give rise to various rates of crime.

Levels of Explanation and Units of Analysis

Societal and Group Level

In his explication of social control theory, Hirschi focused exclusively on explaining individual delinquent acts, while ignoring the explanation of aggregate rates of delinquency. Thus, he did not investigate variation in the strength of the bond to society across social groups, maintaining that the explanation of individual acts should be considered first:

> Stated more generally, the factors affecting the strength of the bond to a conventional system are assumed to be numerous ad variable; they do not receive systematic attention here because the task of showing that the bond to the conventional order is strongly related to the commission of delinquent acts is considered logically prior [Hirschi, 1969:113].

Because an explanation of delinquent acts should be consistent with an explanation of aggregate rates of delinquency, and because delinquency rates simply summarize individual delinquent acts of a group or society, the question from a control perspective is: Why do members of certain groups have weaker (stronger) bonds than members of other groups? Hirschi's theory implies that societies or social groups having weak conventional institutions will have higher rates of delinquency. Thus, social groups whose members have inadequate family relationships, attend poor schools, do poorly in school, and consequently are more likely to disdain conventional

rules are more likely to have weaker social bonds (Hirschi, 1977).

This conception of social control is consistent with certain elements of Shaw and McKay's (1931; 1969) theory of social disorganization (Hirschi, 1977; Kornhauser; 1978). Stripped of the role of cultural transmission and the importance of delinquent gangs, social disorganization theory becomes a social structural theory of conventional social control.

Shaw and McKay located the concrete conditions giving rise to social disorganization (normlessness and weak controls), the abstract concept explaining group rates of delinquency. Stated briefly, they argued that deteriorated areas of the city spawned socially disorganized neighborhoods and communities. As the city expanded outward, industry invaded residential areas, causing progressively deteriorated living conditions. Rents of old buildings dropped, the population fled as soon as it could, and only low income minorities and immigrants were subsequently attracted. Consequently, the heterogeneous and changing population provided no basis for common interests, community organization, and strong institutions linked to each other. For example, there were no

links among the school, family, and church such as parent-teacher associations, political organizations, and church groups.

In short, social disorganization was seen as a breakdown in social controls from conventional institutions. In economically depressed areas, neighborhoods, and groups, individuals are -- to use Hirschi's terms -- cut off from conventional attachments, commitments, involvements, and beliefs. Unrestrained because the moral order is disintegrated, large numbers of persons are free to engage in delinquency, should they desire to.

At the societal level of explanation, Hirschi's social control perspective also is compatible with a simplified version of Durkheim's ([1893] 1960) theory of anomie (Hirschi, 1977). Thus, according to Durkheim, primitive societies are characterized by a strong set of common beliefs and sentiments, forming a collective conscience, which binds all members to the moral order. Such societies should have low rates of deviance. Modern industrial societies, however, become highly differentiated, and when this differentiation outstrips moral regulation, a condition of normlessness or anomie ensues. In such societies, the common moral order breaks down.

Processes characteristic of what Shaw and McKay called social disorganization abound: Institutions become unlinked, community organization upon which common beliefs and sentiments are based break down, and persons become disaffiliated from conventional groups. Consequently, from a control perspective, a weak moral order implies weak social bonds of members, freeing large numbers of persons to engage in deviance. Therefore, anomic societies should have high rates of deviance.

From an empirical standpoint, both social disorganization theory and anomie theory specify the important characteristics of groups and societies that should affect delinquency if social control theory is correct. Thus, socioeconomic status, rents, population mobility, community organizations, broken or demoralized homes, integrated church, school, and family institutions should all be causes of strong or weak social bonds, and therefore should be important correlates of rates of delinquent behavior.

But from the perspective of differential association theory, the mere weakening of conventional controls (social organization against delinquency) is insufficient to account for aggregate rates of delinquency. Indeed,

Shaw and McKay's (1931) complete theory of social disorganization included the process of cultural transmission, whereby inadequate controls in disorganized areas cause juveniles to form play groups and delinquent gangs. In turn, the gang transmits delinquent cultures and traditions to contemporaneous companions, as well as to younger boys, thereby transmitting the subculture from one generation to the next. This process of cultural transmission explains why delinquency rates remain high in neighborhoods experiencing a complete turnover in ethnic-nativity composition.

An original advocate of social disorganization theory, Sutherland later became dissatisfied with it, principally because the term referred to the organization of delinquent groups, which is disorganization only from an ethical standpoint. In the absence of such a stance, one group's disorganization is another group's organization. Therefore, he replaced the concept with the more neutral and accurate term, "differential group organization," which refers to two competing forms of organization. (Sutherland [1944] 1973:21). Differential group organization is an abstract principal explaining group crime rates: Strong organization favorable to crime and

weak organization against it produces high rates; weak organization favorable to crime and strong organization against it produces low rates. The ratio, of course, varies from one concrete condition to another. From the standpoint of differential group organization, then, Hirschi's four strands of the bond to society reflect an individual's experience or participation in this group organization. In other words, the strands are, for an individual, concrete realizations of social organization for and against certain delinquent acts.

Because crime rates and delinquency rates are here said to be determined by the counteracting forces of organization in favor of delinquency against organization against delinquency, Sutherland with one stroke arrived at an abstract explanation of crime rates that was consistent with differential association theory. The explanation accounted for both the process of social disorganization and the process of cultural transmission. Furthermore, it applied to all concrete conditions producing crime and delinquency, including juvenile delinquency, organized crime, and white-collar crime. According to Sutherland, the group rates of specific forms of law violation are determined by differential social organization

toward these specific offenses. Although the specific forms of organization typically overlap, they are nevertheless analytically distinct. For example, Cloward and Ohlin (1960) found that some neighborhoods are organized in favor of certain offenses such as theft, drug use, or assault, while maintaining an organization against other delinquent offenses.

Perhaps the most significant element of differential social organization is the distribution of communication networks within and between groups. The content (ideas favorable and unfavorable to delinquency), quality (personal and intimate), and quantity of the communication are all significant for determining law violation. Thus, those aspects of social organization affecting the group structure of communication networks should affect the group's crime rate.

Differential social organization purportedly explains societal rates as well as group rates of crime. Sutherland and Cressey (1978:99-114) offer a detailed analysis of the genesis of normative conflict within modern societies. Stated briefly, in nonliterate peasant societies, there is consensus, uniformity, and harmony toward values in general, and about the legal code in

particular. Because there is little normative conflict, the rates of law violation are exceedingly low. Such societies are overwhelmingly organized against crime. In most modern industrial societies, however, there has been a breakdown of anticriminal organization. The development of social differentiation, the concomitant rise of an ideology of individualism at the expense of social welfare, and the spreading to all classes of the ambition for capital accumulation, contributed to this breakdown (Sutherland and Cressey, 1978:102-104).

Such conditions of a differentiated social organization, are accompanied by behavior patterns that make it all right to disregard the previous conventional order, and thus to violate the law. Now, there are "multiple moralities" (Sutherland and Cressey, 1978:105) or "several collective consciences," (Durkheim [1896] 1960) which may conflict, resulting in an anomic society. In other words, there exists normative conflict or differential social organization about legal codes, and the degree of such conflict determines the society's crime rate.

From this perspective, social disorganization as an abstract principle explaining aggregate delinquency rates

is inadequate because it fails to consider organization in favor of delinquency. Under restricted circumstances or concrete conditions, however, social disorganization is adequate as a special case of differential group organization. For example, for a given society, the organization in favor of theft may be distributed evenly across social groups. The distribution of group theft rates, then, would be entirely determined by the distribution of organization against theft. Consequently, for this concrete condition, differential group organization is equivalent to social disorganization as viewed from a control perspective.

In sum, according to social control theory, delinquency rates are determind by social disorganization, a condition characterized by weak bonds between the conventional social order and societal or group members. Positive delinquent or criminal organization is assumed to be nonexistent, impotent, or constant across groups and societies. Rates of delinquent and criminal offenses are treated as unidimensional, explained by weak controls. Thus, because it is a negative explanation, explaining rates of delinquency by the absence of a phenomenon (namely, a strong monolithic moral order), it cannot

account for variation across different offenses. In contrast, differential social organization, a positive explanation, accounts for rates of specific offenses by organization for and against the offense. Furthermore, differential social organization can account for the existence of positive criminal organizations, such as the Mafia and professional theft rings, whereas control theory cannot.

Neither social control theory nor differential association specifies emergent properties in either abstract or concrete groups that influence delinquency rates independently of influencing the characteristics of individuals. The practical implication is that for an individual-level analysis, once the pertinent individual characteristics -- attenuated bonds to society or an excess of learned definitions favorable to law violation -- are considered (controlled) there should be no contextual effects from geographic or social groups. It follows that an elaborate sampling design stratified by pertinent groups is not necessary for an adequate test of one theory against the other.[2] Instead it is sufficient to sample individuals. Important characteristics of a person's society, group, or neighborhood should be

specified as background factors affecting the strength of the person's bonds to society or the ratio of the person's learned definitions for and against delinquency.

Individual Level

Every delinquent or criminal act occurs at the intersection of an individual with certain characteristics, tendencies, and predispositions, and a situation. Through a process of socialization, the individual characteristics are acquired through the biographical life-history of the person. So far as criminality is concerned, every situation contains physical objects, which, depending on these characteristics of the individual, either facilitate or impede the criminal act. The problem for a social psychological theory of individual delinquent acts is to account for the outcome of the person-situation interaction (Sutherland and Cressey, 1978:80). In other words, the relevant question is: Why do some persons define certain situations as appropriate for delinquent behavior while others do not? Both social control theory and differential association explain this outcome by referring to the prior history of the individual. Therefore, two significant dimensions on which the theories should be compared are (1) variation in

individual characteristics among persons, and (2) variation in a given person's characteristics across time.

Variation in Individual Characteristics Among Persons.

According to social control theory, the four elements of the bond to society -- attachment, commitment, involvement, and belief -- each has independent additive effects on delinquent behavior. It follows that these proximal elements should each remain unmediated by each other and collectively should mediate the effects of distal background variables on delinquency (Hirschi, 1969:65-66).

A critical distinction between control theory and differential association theory involves their respective treatments of belief, or definitions of the law. What differential association theory conceptualizes as learned definitions of the legal code is conceptualized by control theory as belief, an element of the bond to society. Because belief is part of the bond, it cannot mediate the effects on delinquency of other elements of the bond.

Hirschi (1969:23-26) struggled to incorporate definitions of the legal code into the control perspective while still maintaining two critical assumptions: first,

that society contains a single common system of morality; and second, that delinquent behavior, unlike nondelinquent behavior, is not positively motivated. To reconcile the assumption of a single moral order with the obvious fact that persons' attitudes toward the law differ across segments of society, Hirschi stipulated variation in the extent to which persons believe in the moral order. Furthermore, unlike conventional social psychological theory, which views definitions of situations as motives (cf. Mead, 1934; Mills, 1949; Cressey, [1953] 1973), Hirschi's (1969:25) theory maintains that belief works negatively: Definitions of situations are not invoked to "facilitate the attainment of illicit ends," but instead merely restrain one from violating the law. Thus, Cressey's ([1953] 1973) "verbalizations" and Sykes and Matza's (1957) "techniques of neutralization," both originally operationalizations of Sutherland's definitions of the legal code, are reconceptualized by Hirschi as measures of the extent to which persons believe in the single moral order. Persons with little belief in the moral validity of social rules are free to violate them. Social control theory thus directs researchers to examine individual characteristics, including their beliefs, to determine which persons are weakly bound to the moral

order, and thus are free to deviate.

But social control theory cannot predict which rule or even which category of rules a person will violate. As noted earlier, this impotence arises because the theory treats delinquency as a residual category -- that which might occur if the bond to society is weak. Because control theory posits morality as a monolithic phenomenon, it logically follows that delinquent (amoral) behavior is conceptualized as an equally monolithic phenomenon. Thus, for social control theorists, the task is not to explain the occurence of specific forms of delinquency -- this cannot be done -- but to account for the likelihood of committing <u>some</u> act of delinquency.

Differential association accounts for variation in persons' specific offenses by referring to the specific content of each individual's behavioral repertoire. A particular offense such as theft or vandalism is determined by a ratio of definitions favorable and unfavorable to that offense. The theory assumes a society characterized by multiple moralities. Moreover, a received ratio of mandates and prohibitions toward specific forms of law violation is said to reflect a person's participation in various groups differentially organized with respect to

crime. As discussed, motives in the form of rationalizations and verbalizations for and against crime constitute definitions of the law, and the process of applying these linguistic constructs to a concrete situation is the process of motivation (Cressey, 1954). It follows that a crucial step in testing the efficacy of differential association theory is determining, for a given historical period and social group, the content of a person's definitions of delinquent behaviors. The specific content of these definitions should vary more among members of subcultural groups, where communication is distant, impersonal, and cold, than among persons living in subcultural groups and geographic areas where communication is relatively intimate, personal, and warm. Unfortunately, no research study has attacked this issue of inducing persons' behavioral repertoires. Cressey ([1953] 1973) discovered several verbalizations embezzelers apply to their unlawful behavior and Sykes and Matza (1957) located several techniques of neutralization used by delinquents. Neither study, however, examined group or geographic variations in definitions of legal codes.

Empirically, differential association theory hypothesizes that a person's learned ratio of definitions

of the legal code intervene between delinquency and that person's background characteristics, family relations, school interactions, work relations and recreational and peer activities. Accordingly, it predicts that attachment, commitment, and involvement -- which reflect various aspects of the social organizational milieu of a person -- should affect delinquency by providing contexts for learning prodelinquent and antidelinquent definitions. This hypothesis provides a way of empirically testing social control theory against differential association theory (Hirschi, 1969; Jensen, 1972; Hepburn, 1977; Kornhauser, 1978; Matsueda, 1982).

Variation in Individual Characteristics Across Time.

As discussed, both social control and differential association theories account for person's delinquent behavior by referring to the person's previous life experiences. Each specifies a dynamic process by which individual characteristics -- weakened bonds or learned definitions -- interact with ongoing (delinquent or nondelinquent) behavior in an unfolding process through time. While both theories posit a lagged effect of weakened bonds or learned definitions on delinquency, neither specifies the precise length of that lag. Nor do they

delineate the effects of delinquent behavior on future bonds or behavior patterns. In other words, the quesion is: Once a person's bonds have been weakened, or a person has learned an excess of behavior pattern favorable to crime, when will the person engage in crime?

The explanatory framework of social control theory -- an "absence of something explanation" (Hirschi, 1969) -- prevents it from specifying a precise time lag. According to control theory, attenuation of a person's bond to society increases the likelihood that the person will commit delinquent behavior at some unknown (and perhaps unknowable) time in the future. Hirschi considered cross-sectional rather than longitudinal data as adequate because his research objective was merely to differentiate delinquents from nondelinquents (Hirschi, 1969:34), and not to specify the precise conditions producing a delinquent act. Therefore, he attempted merely to specify the conditions under which persons are freed to commit delinquent acts. As noted previously, once a person is freed from conventional controls, social control ceases to explain his behavior, whether delinquent or conventional. Thus Hirschi does not add a sequence of variables to predict exactly when a person will or will

not violate the law. Instead, he resorts to adding a stochastic component orthogonal to his other explanatory variables in his prediction of delinquent persons.

Differential association also ignores the problem of determining a time lag. The theory says nothing about a possible lag between learning an excess of delinquent definitions and committing a delinquent act. For Sutherland, an adequate causal explanation "consists of a description of conditions which are always present when a phenomenon occurs and which are never present when the phenomenon does not occur" (Sutherland and Cressey, 1978:77). Thus, the process of learning an excess of definitions favorable to crime should always be present when the person commits a crime and never present when a person refrains from crime. This suggests an instantaneous effect. Sutherland recognized the devastating effect of this implication. In a candid critical examination of his theory, he noted that a person having learned an excess of delinquent behavior patterns may still refrain from delinquency if, in the future, the objective opportunity for delinquency does not arise or if alternate ways of solving a problematic situation do arise. On this basis, he concluded that differential association

theory was a necessary but insufficient explanation of crime (Sutherland [1944] 1973:37).[3] Here he is implying that two related variables, opportunity and alternatives, are pertinent to delinquent behavior but are nevertheless extraneous to the differential association process.

From a theoretical standpoint, what is needed is a developmental explanation specifying the precise mechanisms by which delinquent culture (norms), antidelinquent culture, and neutral culture impinge on an individual (differential association), causing him to enter into certain situations in which crime may be an important alternative. This should be followed by a situational explanation specifying how persons interact with elements (other persons and physical objects) of that situation in ways such that they either engage or do not engage in a delinquent line of action (Cohen, 1966; Short and Strodtbeck, 1965).

From an empirical standpoint, if the two variables (opportunity and alternatives) are systematically distributed across persons such that they are correlated with other variables explaining delinquency, failure to consider them could bias estimates of those other variables.[4] If, however, opportunity and alternatives are

distributed randomly across persons such that they are orthogonal to other explanatory variables, failure to include them would not bias other estimates. In a structural equation model, these effects would be pooled into the structural disturbance. In the theoretical model presented in the next section, and in the analyses to follow, this latter assumption is made.

A Theoretical Model of Social Control and Delinquency

Figure 2.1 depicts the most relevant causal relationships specified by both social control theory and differential association theory. It is assumed that background variables of adolescents, such as age, race, sex, I.Q., socioeconomic status, broken homes, high school dropout, and residential characteristics represent components of social organization and thereby affect the other explanatory variables.

While multiple factor theories of delinquency would imbue direct causal power to all factors, including background conditions, social control theory assumes that the elements of the bond to society intervene between background variables and delinquent behavior. In other words, the background factors are causally related to the

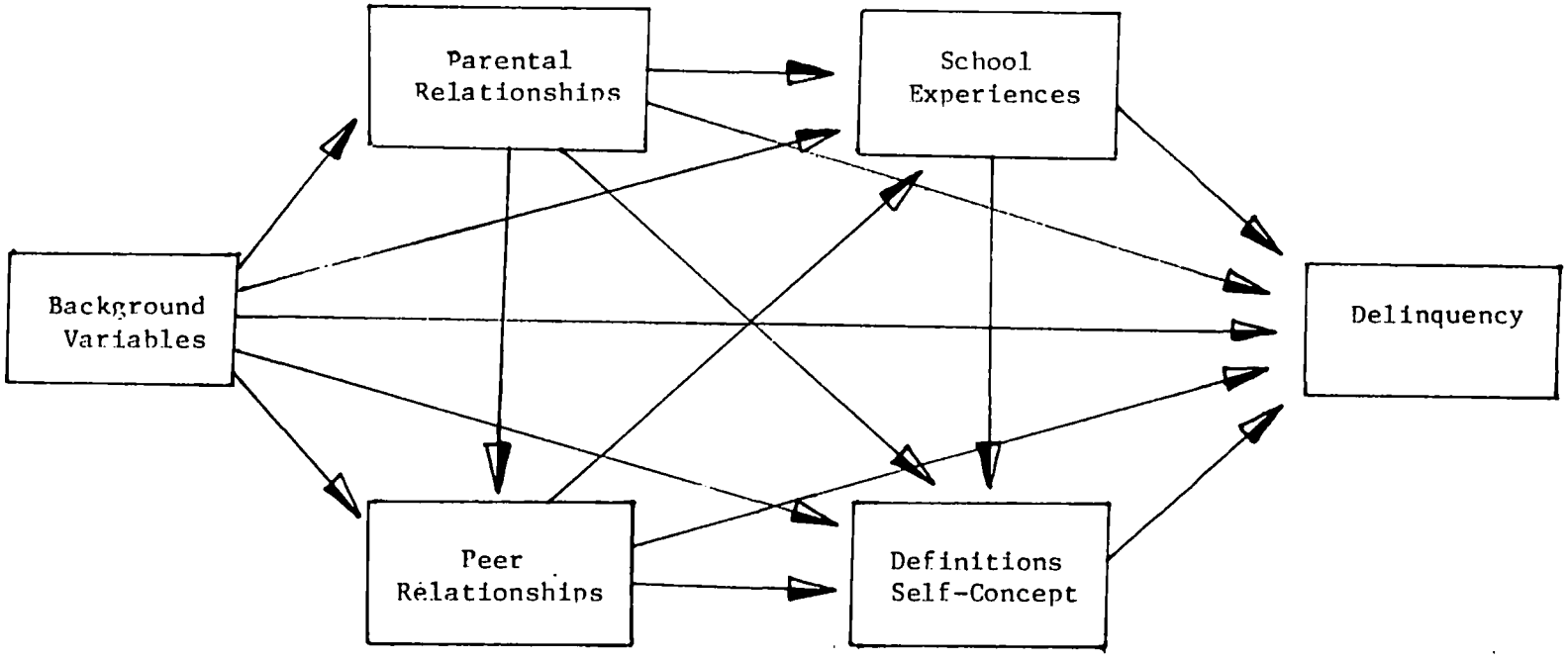

Figure 2.1 A Social-Psychological Model of Social Control and Delinquency

strands of the bond, determining their strength, but only indirectly related to law violation. Furthermore, social control theory assumes that parental relationships (attachment to parents), peer relationships (attachment to peers), and school processes (attachment to the school and commitment to and involvement in conventional school activities), and belief in the moral validity of conventional norms, all represent separate elements of the social bond, and consequently all have independent effects on delinquent behavior.

The causal ordering of various loci of control were gleaned from Hirschi and other empirical specifications (Elliot et al., 1979; Johnson, 1979; Wiatrowski et al., 1981; Paternoster, 1983). Thus, it is assumed that parents represent the first agents of socialization, followed by peers. In turn, each of these has an effect on a person's experiences in school, including his academic performance, commitment, and attitudes. Finally, parental, peer, and school contexts affect the extent to which persons believe in the moral order:

> The chain of causation is thus from attachment to parents, through concern for the approval of persons in positions of authority, to belief that the rules of society are binding on one's conduct. All persons are assumed to be more or less "exposed" to definitions favorable to violation of law; whether

> these definitions are accepted largely depends upon the extent to which they are congruent with the person's attitudes and experiences vis-a-vis conventional society. [Hirschi, 1969:200].

For differential association theory, these contexts provide sources for learning definitions favorable and unfavorable to delinquent behavior, which in turn, determines a person's delinquency. Assuming that, on the average, most parents attempt to present an overabundance of antidelinquent patterns to their children, more intimate, open, and communicative parental relationships should directly reduce the ratio of delinquent to antidelinquent definitions (Sutherland and Cressey, 1978:223). Furthermore, parental relationships may work indirectly to produce delinquent behavior: failure to supervise children and provide antidelinquent patterns may free them to contact prodelinquent patterns outside the home (Sutherland and Cressey, 1978:223). Peer groups are perhaps, for adolescents, the most significant source of patterns learned outside the home. However, the influence of peers, whether toward increasing or decreasing the likelihood of delinquency depends on the content of behavior patterns transmitted -- either predominantly favorable or unfavorable to law violation.

Similarly, according to Sutherland and Cressey (1978:248-251), an adolescent's experiences in school affect delinquency principally by influencing the prestige values of classes of people, by presenting delinquent or antidelinquent definitions (a school subculture), and by providing pleasant or unpleasant experiences that later affect a person's exposure to certain definitions of the law. Thus, for example, a person committed to, or involved in, schoolwork may learn from teachers that breaking conventional rules is inappropriate because it jeopardizes one's standing as a model student. Or a persons uncommitted to school performance may fall in with delinquent companions, who transmit prodelinquent patterns.

In sum, the empirical implications of this discussion is clear: Social control and differential association can be tested against one another by examining certain hypotheses about mediated effects. Social control theory hypothesizes that background variables are mediated by the four elements of the bond to society -- attachment, commitment, involvement, and belief. These elements all have direct effects on delinquent behavior. Differential association theory, like control theory,

hypothesizes that background variables are mediated by family, peer, and school processes, but argues that these processes are, in turn, mediated by the differential association process of learning an excess of definitions favorable and unfavorable to delinquent behavior.

This conceptual model will guide the specification of a structural equation model of control theory, differential association, and delinquency. The specification, estimation, and testing of that model appears in Chapter 5. Before carrying out that analysis, however, confirmatory factor measurement models must be estimated to statistically control for measurement error. That analysis appears in Chapter 4. Both analyses use Joreskog's analysis of covariance structures and data from the Youth in Transition Project. The data and methods will be discussed in the following chapter.

NOTES

1. This study follows Hirschi (1969) and Sutherland and Cressey (1978) in using a legalistic definition of crime and delinquency: criminal behavior is behavior in violation of the criminal law. This definition includes both adult crime and juvenile delinquency; therefore references to delinquency apply to criminality, and vice versa.

2. This is not true of Shaw and McKay's original theory. They explained delinquency rates by referring to conditions of geographic areas without reducing the conditions to characteristics of individuals (see Kornhauser, 1978).

3. The problem arose because Sutherland's description of an adequate causal explanation does not differentiate between static and dynamic units of analysis, and therefore fails to allow for causal temporal sequences. When the unit of analysis is static -- a group or person -- and the timing of delinquent behavior is ignored, the description holds. But when the unit of analysis is dynamic -- a person's life history -- a temporal conception of causality is necessary. Therefore, the description of causation should read: "An adequate causal explanation provides a description of the causal sequence that always precedes the phenomenon and is always absent when the phenomenon does not follow within a specified period of time." The causal sequence can include several different variables ordered in a causal chain. The entire sequence, however, should be a necessary and sufficient condition for the phenomenon.

4. There is some evidence for the correlation. Cohen (1966) and Short and Strodtbeck (1965) give examples in which contact with delinquent cultures not only leads to assimilation of delinquent definitions, but also encourages persons to place themselves in situations in which they or someone else will act to precipitate or incite a delinquent act.

CHAPTER 3

DATA SOURCE AND ANALYTIC STRATEGY

The data to be analyzed were collected by Jerald Bachman and his associates as part of the Youth in Transition Project. The objective of this project was to investigate changes in adolescent boys during high school. Accordingly, the project was concerned with interactions between the immediate social environments adolescents typically confront and the growth and change within individuals. The crucial environments investigated were the home and family, the school, and the work setting.

Within these environments, the study attempted to capture concrete social-environmental conditions such as the presence of adult role models, the potentials for emotional attachments, the structure of peer groups, the requirements of scholastic ability, and the opportunities for achivement. These conditions were assumed to affect various aspects of an adolescent's personality. Therefore, an attempt was made to capture personality dimensions such as self-concept, mental health, values and attitudes, plans and aspirations, and both conventional and delinquent behaviors.

Because the Youth in Transition (YIT) Project attempted to capture the most significant contexts, processes, and personal attributes influencing adolescents, the assembled data are pertinent to testing theories of delinquency which rely on precisely those contexts, processes, and attributes. In particular, Hirschi's social control theory and Sutherland's theory of differential association stress the importance of the family, school, and peer group as important environmental contexts producing delinquency or conformity, as well as individual characteristics such as motives, aspirations, commitments, and attachments. Wiatrowski et al. (1981) have shown that these data can provide a fairly strong test of the social control theory of juvenile delinquency (Wiatrowski et al., 1981).

Research Design of the Youth in Transition Project

Three objectives guided the design of the YIT sampling frame: (1) to obtain a representative sample of schools in the United States; (2) to obtain a representative national sample of male individuals; and (3) to capture change in individuals during the years of adolescence. To accomplish these objectives, a multistage sampling design was used to obtain a probability sample of

2,200 tenth-grade boys in the United States. (See Bachman et al. 1967, for a detailed description of the research design.) Three stages of sampling were used. First, the geographic sampling frame of Michigan's Survey Research Center, which divides the Continental United States into 88 strata of about 2 million people, was used for primary sampling units. Second, a single high school was sampled with probability of selection proportionate to the estimated number of tenth-graders enrolled. Of the 88 schools initially invited, 71 agreed to prticipate; replacement schools were secured for all but one of the remaining schools. Third, about 25 tenth-grade boys were randomly sampled from each school.[1] From a total of 2277 boys sampled, 2213 (over 97 percent) consented to participate.

This sampling procedure yielded, for the first wave, a nearly bias-free representation of tenth-grade boys in the United States, as well as a representative sample of high schools.[2] Data from the first wave were collected in the schools through personal interviews and self-administered questionnaires during October and November of 1966. (To ensure comparable conditions for both school dropouts and non-dropouts, data from all subse-

quent waves were collected at neutral sites in the general neighborhood of the schools.) The second wave of data (March-May 1968) also combined both interviews and questionnaires, but the third wave (April-June 1969), collected only questionnaire responses. Although the analyses will be restricted to the first three waves, two additional waves were collected. A fourth wave collected both interview and questionnaire data 12 months after the third data collection (June-July 1970), when most respondents were a year out of high school. Finally, a fifth wave, collecting questionnaire data only, was administered four years later (1974) in the respondents' homes.

Potential Sources of Bias in the Youth in Transition Data

Table 3.1 summarizes the response rates for each wave. By the time of the fifth wave, eight years after the initial data collection, 71.5 percent of the original sample were still willing to participate. The largest dropoff between waves occurred between time one and time two; this probably reflects some respondents' reluctance to be interviewed at a site less convenient than the school. Bachman and his associates carefully explored two potential sources of bias incurred by the

Table 3.1: Data Collections from Young Men

Data Collection	Time 2	Time 2	Time 3	Time 4	Time 5
Date	Fall 1966) (tenth grade)	Spring 1968 (eleventh grade)	Spring 1969 (twelfth grade)	Spring 1970 (grade 12 + 1 yr.)	Spring 1974 (grade 12 + 5 yrs.)
Location	Schools	Neutral Site	Neutral Sit	Neutral Site	Respondent's Home
Number of Respondents	2,213	1,886	1,779	1,620	1,628
Percentage of Orginal Sample (N=2,277)	97.2	82.8	79.0	71.1	71.5
Percentage of Time 1 Panel (N=2,213)	100	85.2	81.3	73.2	73.5

*Probability sample located in 87 schools.

From: Bachman et al. (1978).

longitudinal design: systemmatic panel attrition (self-selection bias) and response effects resulting from repeated measures (Bachman et al., 1978).

To assess the degree to which panel attrition may bias statistical analyses, Bachman et al. (1978) compared the 1628 respondents of the fifth wave to 585 persons who failed to participate in the fifth wave. To compare the two groups, they used responses to questions from the first wave, which all persons answered. First, a screening of numerous variables located 24 showing nontrivial mean differences between respondents and nonrespondents, and while t-tests (with a design effect) showed 12 statistically significant differences, none were substantively significant.[3] Second, estimating correlation matrices on 24 variables and computing Z-tests on the 276 bivariate correlations across groups revealed 47 statistically significant differences. In each case, the relationship was stronger in the retained sample, suggesting, according to Bachman et al., more measurement error among nonrespondents. This suggestion is supported by the finding that nonrespondents had lower ability, grades, SES, and scholastic motivation, and a higher need for social approval. Nevertheless, comparing the 1628 fifth-

wave respondents with the original 2213 yielded only one correlation differing by more than .05. Most ranged from .02 to .03.[4]

Thus, relatively few differences were found between persons completing all five waves and persons failing to complete all waves. Moreover, focusing only on those variables showing nontrivial differences, comparisons of the original 2213 wave one respondents with the 1628 wave five respondents unearthed virtually no differences (Bachman et al., 1978).[5] These analyses suggest that sample attrition does not affect relationships among variables or seriously bias parameter estimates.[6]

A second source of potential bias in the YIT data is the effect of repeated measurements. To assess the extent of this effect, the research design included a supplementary sample of 10-15 boys selected randomly from 20 schools at time one. Fifty percent (143) of the 248 had not moved by 1970; of these, 80 percent (115) were interviewed for the first time at time four. Bachman et al. (1978) compared these interviews with 340 interviews of fourth-wave boys who had not moved. Any differences could be attributed to effects of repeated measurements. Of the 104 variables compared, statistically significant

mean differences were found for five variables -- exactly the number expected by chance at the .05 level. On the basis of this evidence, Bachman et al. (1974) conclude that responses are not affected by repeated measurement.

In sum, it seems reasonable to assume that neither panel attrition nor contamination from repeated measurements seriously bias estimates based on the retained sample. For the YIT data, there remains one other potential source of bias: measurement error. In survey data of attitudinal indicators such as these, it is common to find substantial amounts of random and nonrandom measurement error (Alwin, 1973).

The problem of measurement error is simply that we cannot directly observe without error the variables contained in our theories. Duncan (1975:113) put it this way:

> From a formal point of view, the topic of error in (measurement of) variables is much the same thing as that of unobserved variables. All observation is fallible, no matter how refined the measuring instrument and no matter how careful the procedure of applying it. In a strict sense, therefore, we never measure exactly the true variables discussed in our theories. In this same strict sense, all (true) variables are "unobserved."

In our case, errors of measurement stem from inaccuracies in our measuring instrument (the questionnaire or

interview), errors in judgement by the respondent, or both. Measurement error is random if in numerous replications, the mean of the distribution of obtained measurements (responses) reflects the true value of the variable.

Failure to consider measurement error can distort estimates of parameters in a structural equation model and ultimately yield misleading conclusions. For example, uncorrected random measurement error in endogenous variables reduces the precision of regression coefficients, biases estimates of those coefficients' standard errors, and biases estimates of the structural disturbance. Moreover, random measurement error in predictor variables can cause biased and inconsistent estimates of regression coefficients themselves. Furthermore, nonrandom measurement error in any variable, when correlated with explanatory variables, also causes biased and inconsistent estimates of structural parameters.

In short, when present, measurement error can be a serious problem in structural equation modeling of attitudinal data. Unfortunately, there is no reason to assume that errors of measurement are not present in the YIT data. Previous empirical research on delinquency

theory typically pays scant attention to this problem; consequently, findings may be distorted, and conclusions unwarranted. Fortunately, there are available statistical techniques for controlling the impact of various forms of unreliability by estimating unobservable latent variables.

Analytic Strategy: Confirmatory Factor Analysis and Structural Equation Modeling

This study will use a two-stage analytic strategy to empirically test a theoretical model of social control and delinquent behavior. First, confirmatory factor analysis is used to statistically control for measurement error in indicators of theoretical constructs. Second, a structural equation model of relationships implied by social control theory and differential association is estimated.

Confirmatory factor analysis provides a way of specifying an *a priori* measurement model linking observable measures to unobservable latent constructs, efficiently estimating its parameters, and subjecting it to statistical testing. The method assumes that the covariation among fallible multiple indicators adequately cap-

tures the covariation among persons' true underlying (unobservable) variables. In contrast to exploratory factor analysis, which attempts to induce a structure underlying a set of observable variables, confirmatory factor analysis allows one to deduce, on the basis of substantive theory, an underlying structural model relating observable variables. The feaures of this model can then be subjected to hypothesis testing. These features include the dimensionality of a set of variables, the pattern of factor loadings, and the relationships among measurement errors.[7]

The parameters of the measurement models will be estimated by Joreskog and Sorbom's (1983) LISREL VI program. Under the assumption that observable variables are jointly distributed approximately multinormal, and the model as a whole is identified, LISREL computes consistent and asymptotically-efficient maximum likelihood estimates.[8] Furthermore, LISREL computes large-sample standard errors for testing hypotheses about point-interval estimates, and a likelihood-ratio test statistic for testing hypotheses about joint estimates. The likelihood ratio test can evaluate the overall fit of a model's ability to reproduce the observable covariance

matrix. Specifically, it tests the null hypothesis that the model's overidentifying restrictions are satisfied in the population, against the alternative that the moments are actually unconstrained. In large samples, this statistic is distributed approximately chi-square, with degrees of freedom equal to the number of moments minus the number of parameters estimated. In addition, specific hypotheses (overidentifying restrictions) can be tested by nesting the hypothesized model within a less-restrictive alternative. The difference in chi-squares provides a likelihood ratio test of the restrictions, with degrees of freedom equal to the difference in degrees of freedom between the two models.

Because the likelihood-ratio test statistic is a function of sample size, the test may, for a given set of departures from overidentifying restrictions, vary for different sample sizes. Consequently, several researchers have proposed various fit indices that are independent of sample size (Bentler and Bonett, 1980; Hoelter, 1983; Joreskog and Sorbom, 1981). When useful, these statistics will be presented.

After estimating our measurement models, the obtained correlation matrix of unobservables will be used

to estimate a structural equation model of relationships implied by the theories.[9] Again, tests of point-interval estimates and the likelihood-ratio test statistic will be used to test specific hypotheses.

NOTES

1. Four slight variations in this procedure occurred. First, because the 88 primary sampling units represented slightly different numbers of people, more boys were selected from oversized strata, and vice versa. Second, adjustments were made to correct errors in initial estimates of school size. Third, for the few schools for which the procedure called for a larger sample than existed, all boys were taken and a sample weight was recorded. Fourth, if the procedure called for an unusually large sample to represent a school, no more than 35 boys were interviewed, and again a weight was recorded. In the measurement analyses that follow, a weighted covariance matrix is analyzed. Comparison with analyses using an unweighted matrix yielded no differences. Consequently, in the substantive analyses, the sampling weights were dropped. Indeed, only six percent of the original sample was affected by the sampling weights.

2. Two caveats should be mentioned. First, schools that came into existence later than the summer of 1964 or that were estimated to have less than 15 tenth grade boys were excluded from the sample, eliminating less than 2.5 percent of the sample. Second, the multistage sampling design builds in nonindependent observations within each strata (school); this is likely to introduce a downward bias in estimated standard errors, and consequently increase the likelihood of Type I error.

3. Specifically, nonrespondents were significantly more likely to be black, to drop out of school, to be from broken homes and urban areas, to have less scholastic ability, fewer plans to go to college, lower average grades, more negative family relations, lower socioeconomic status, less school motivation, more need for social approval, and more punitive parents. After standardizing the difference of means with the standard deviation of the 1628 participants, only race and I.Q. exceeded .10 (10 percent of a standard deviation), while broken homes, SES, average grades, and the Quick Test of Intelligence exceeded .05 (Bachman et al., 1978:259).

4. The original investigators performed two additional tests for attrition bias. First, they compared the wave five respondents with census data for the United States.

They found that geographic region, race, marital status, and labor force participation were proportioned similarly; students and urban dwellers were overrepresented; and military personnel were slightly underrepresented. Second, they estimated a four-variable structural equation model of socioeconomic status, ability, grades, and college plans, finding little difference between path coefficients of the two groups.

5. Several techniques exist to correct for sample selection bias when it is severe (see Berk, 1983). Typically, one attempts to predict, using wave one variables, the likelihood of dropping out using linear-probability, probit, logit, or tobit models. Predicted scores on this variable are then computed, and the predicted variable (hazard rate) is entered into the structural equation model. Because the biases in our data appear minimal, it was not necessary to pursue this strategy.

6. Johnston (1973), in an attempt to obtain precise population estimates of drug use, reweighted the retained sample to better reconstitute the original sample. He found that the sample weights altered results trivially, leading Bachman et al. (1978) to conclude that the introduction of sample weights into the analysis is unnecessary. Thus, panel attrition may not only have trivial effects on relations among variables, it may also have little effect on population estimates of the distribution of characteristics.

7. By testing for correlated measurement errors over time, this strategy provides a test of biases due to repeated measurements within the context of a substantive model. Moreover, including parameters representing error correlations allows us to statistically control for these biases.

8. The LISREL program also assumes that all endogenous variables are measured on interval scales, and that all effects are linear and additive.

9. This strategy has the advantage of (1) correcting for measurement errors in latent variables; (2) providing an overall measure of fit for the entire measurement model; and (3) obtaining consistent estimates of regression coefficients. A more efficient method would estimate the measurement models and the substantive models

simultaneously as a single system. Such a method, however, would greatly exceed our cost limitations. Our strategy will yield slightly less-efficient parameter estimates and estimated standard errors that are biased slightly downward.

CHAPTER 4

A CONFIRMATORY FACTOR ANALYSIS OF MEASUREMENT MODELS OF SOCIAL CONTROL THEORY, DIFFERENTIAL ASSOCIATION, AND DELINQUENT BEHAVIOR

The previous chapter pointed out the problems of estimating a structural equation model's parameters in the presence of measurement error. This may be a particularly serious problem for research in delinquency because the major causal theories -- including social control, differential association, and self-concept theories -- explain delinquent behavior with attitudinal concepts. Whether oriented toward the family, toward the school, toward the law, or toward the self, attitudinal concepts in delinquency -- being nebulous, hazy, and ever-changing phenomena -- pose significant problems of measurement.

Typically, delinquency researchers attempt to capture such concepts using survey data, which are invariably frought with large amounts of measurement error. Therefore, careful consideration of the process of measuring explanatory concepts -- choosing well-behaved and accurate indicators and controlling for measurement error -- can be a crucial step in testing theories of

delinquent behavior accurately. Thus, while it may be impossible to eliminate measurement error altogether, it is possible to reduce its impact. Along these lines, Duncan (1975:114) has observed that

> "A mature science, with respect to the matter of errors in variables, is not one that measures its variables without error, for this is impossible. It is, rather, a science which properly manages its errors, controlling their magnitudes and correctly calculating their implications for substantive conclusions.

Conventionally, empirical studies of social control theory have either summed into unweighted composite indexes indicators chosen on the basis of face validity (Linden and Hackler, 1973; Rankin, 1978; Norland et al., 1979) or exploratory factor analysis (Hirschi, 1969; Hepburn, 1977; Krohn and Massey 1980; Johnson 1979; Wiatrowski et al., 1981; Krohn et al., 1982; Paternoster et al., 1983) and used an internal consistency measure of reliability. A more powerful and systematic approach to assessing and controlling for measurement error uses confirmatory factor analysis, which as already noted, allows one to specify, estimate, and test measurement models derived deductively from substantive theory. This method is especially pertinent when theories are sufficiently well-specified and well-operationalized to permit specifying <u>a priori</u> measurement models. This is the case with

social control theory and differential association, which have been the subject of much empirical scrutiny.

The only other study of control theory and differential association that explicitly considered measurement processes was my own (1983) research, which used structural equation models with unobservables to find previous estimates of structural relationships significantly attenuated by measurement error. This study expands on that research by considering not only belief and attachment to parents and peers with cross-sectional data from a single city, but also every other pertinent concept of social control theory using longitudinal data from a national sample.

This chapter presents a confirmatory factor analysis of theoretical concepts derived from Hirsch's social control theory. Although the primary focus is on control theory, we also discuss competing interpretations of key concepts from the perspectives of differential association and self-concept theories of delinquent behavior. This analysis uses the first two waves, spaced 18 months apart, of the Youth in Transition Data to (1) replicate on the second wave a measurement model constructed on the first wave; and (2) estimate stability and change in

theoretical constructs.

The multiple-indicator measurement models attempt to capture the covariation among observable variables, as well as the covariation among unobservable, latent variables. The models are characterized by the following mathematical equations. For the i-th respondent and the j-th observable indicator of the k-th theoretical construct, the measure Xijk is generated from two sources of variation: a common source of "true" substantive variation, Tik, and an orthogonal source of error variation, eijk.[1] More formally, this is expressed as:

$$Xijk = \lambda ijk\ Tik + eikj\ (i=1,...,N;\ j=1,...,;\ k=1,...,K).$$

The parameter, λijk is the slope of the conditional expectation of a given Tik (or equivalently, the regression coefficient obtained by regresssing Xijk on Tik). In standardized form, this model becomes

$$Xijk = Pijk\ Tijk + Pijk\ eijk,$$

where Pijk is the standardized (path) coefficient (factor loading) otained by regressing Xijk on Tik, and Pijk is the resulting disturbance path coefficient. For the purpose of this study, the metric coefficients add little

information to their standardized counterparts; therefore the presentation will be limited to standardized results.[2]

The parameters of the models provide valuable information for evaluating the validity and reliability of the measures. First, the validity coefficients (standardized factor loadings) measure the correlation of the latent construct (true score) to the observed score. Equivalently, the reliability coefficients (squared validities) indicate the proportion of variance in an indicator explained by the underlying theoretical construct. Second, stability coefficients (intertemporal correlations of true scores) measure the amount of stability and change in the latent factor. If the measures are relatively unreliable, responses may change over time even though the actual substantive contruct remains stable. This methodology allows us to capture this phenomenon, which has been found in previous multiple-indicator studies of attitudinal constructs (c.f. Wheaton et al., 1977; Judd and Milburn, 1980; Bielby and Berk, 1981; Liker and Elder, 1982; Alwin and Tessler, 1983; Bielby and Bielby, forthcoming). Third, stability (change) in the true scores is disentangled from stability (change)

due to various forms of unreliability that remain constant (change) over time.[3] Differences among persons' measurement errors may persist over time for three reasons. First, respondents may simply tend to overreport or underreport their true scores consistently over time. For example, some persons might give socially desirable responses to certain questions at every time period. Second, recall contamination may occur between waves, causing similar errors to be repeated over time. Third, a given indicator may tap an additional unwanted substantive attribute that is not constant for different persons but is relatively constant for a given person over time.

The fourth piece of information from the measurement models, correlations among latent constructs, allows us to assess criterion validity. As a criterion, the 26-item index of delinquent behavior is used. If valid, the constructs should correlate at least moderately with delinquent behavior, and with the other related constructs as well. Fifth, discriminant validity, the ability to distinguish one theoretical construct from others, can be examined. Here, to show validity, correlations among factors should not be too high. Finally, certain sources of invalidity can be located by testing for measurement

error correlations within a time period and unwanted loadings of an indicator to other factors (see Heise and Bohrnstedt, 1971; Costner, 1969).

Specification and Estimation of the Measurement Models

In the following pages, the results of the measurement analysis is presented in five steps. First, each theoretical concept of control theory is critically reviewed, and based on theoretical considerations and prior empirical findings, the strata of each concept's domain of content is delineated. Second, on the basis of this review, variables from the Youth in Transition dataset that appear face-valid in tapping theoretical concepts are selected. As a point of departure, in selecting indicators, the study of Wiatrowski et al. (1981), which operationalized social control theory with these data, is used. Face validity is assessed by evaluating the extent to which the indicators capture the meaning of the content domain's strata (Bohrnstedt, 1969).

Third, when significant, important findings of an exploratory factor analysis are briefly highlighted. This analysis explored the clustering of items within and

between constructs. Fourth, the confirmatory-factor measurement models, which were specified on the basis of the above considerations are presented.[4] Fifth, the parameter estimates of each model are reported and, in the process, various measures of reliability and validity of each indicator are assessed.[5]

Before analyzing the concepts of control theory, however, measurement models of the self-reported indicators of delinquent behavior are analyzed.

Self-Reported Delinquent Behavior

Recent research has found that early self-report methods over-sampled trivial offenses, obtained a biased estimate of the true domain of delinquent behavior, and thereby underestimated the relationship between delinquency and structural variables such as age, class, sex, and race (Hindelang et al., 1979; 1981; Elliot and Ageton, 1980; Braithwaite, 1981). However, after conducting the most rigorous and thorough analyses of the self-report method, Hindelang et al. (1981) concluded that while self-reports are probably not sufficiently sensitive to capture the true incidence and distribution of illegal acts, they are adequate for testing causal

theories on restricted populations (see also Hindelang et al., 1979). Specifically, a broad index of delinquent behaviors for white, in school, generally not serious delinquent populations yields reasonably reliable and valid results (Hindelang, 1981:213). For black males, however, measurement error is a serious problem for self-reported delinquency, and other measures as well.

This study uses a 26-item broad index of self-reported delinquent behavior for a national sample of white males. The specific questions, drawn from Gold's (1966) self-report index, were elicited through self-administered questionnaires. The items included measures of interpersonal aggression, theft and vandalism, delinquent behavior in school, and trouble with parents. They ranged in seriousnesss from "stayed out later than your parents said you should" and "got something by telling a person something bad would happen to him if you did no get what you wanted" to "hurt someone badly enough to need bandages or a doctor" and "used a knife or gun or some other thing (like a club) to get something from a person."

To ensure confidentiality of respondents, the original investigators did not release data on all of the

individual items. For several scales consisting of combinations of the 26 items, Bachman et al. (1978:201) report reliabilities ranging between .50 and .55. Moreover, Wiatrowski et al. (1981) report a reliability of .85 on the 26-item index of delinquency. Unfortunately, the Youth in Transition Project did not include an independent criterion, such as official measures of delinquent behavior with which to validate the index.

Bachman et al. (1978) argue that the relatively low reliabilities were due to the rarity of delinquent acts, which skews the distribution of any one item. The danger of low reliability is that in a structural equation model, one would underestimate the impact of prior delinquency on subsequent variables. A measurement analysis found evidence that this will have little impact on the models of this study.

Eight of the 26 indicators of delinquent behavior were available for analyzing. These items concern delinquent acts related to the family -- "Hit your father," "Hit your mother," "Stayed out later than your parents said you should," "Run away from home," and "Fought with your parents" -- related to the school -- "Suspended or expelled from school" and "Skipped a day of school

without an excuse," -- and related to contacts with the police -- "Got into trouble with the police." These indicators tap a dimension of school and family offenses located by Hindelang et al. (1981).

To investigate the measurement properties of this subset of the 26 indicators of delinquency, a multiple-indicator model containing a single underlying factor was specified. This model, depicted in the path diagram of Figure 4.1, estimates the underlying construct representing school- and family-related offenses at three points in time. A model constraining all measurement errors to be orthogonal yielded a poor fit: the chi-square is 4338.10, with 249 degrees of freedom, and $p<.001$. Joreskog and Sorbom's (1981) goodness-of-fit index adjusted for degrees of freedom (AGFI) is .740, and Hoelter's "Critical N" is 89, both indicating a poor fit. The fit was substantially improved by relaxing certain parameter constraints that appeared overly-restrictive. Specifically, five measurement error correlations within each wave and 24 autocorrelations between measurement errors of each variable at adjacent time periods were added. The resulting model has a chi-square of 629.72, with 210 df ($p<.001$), which is still significant.

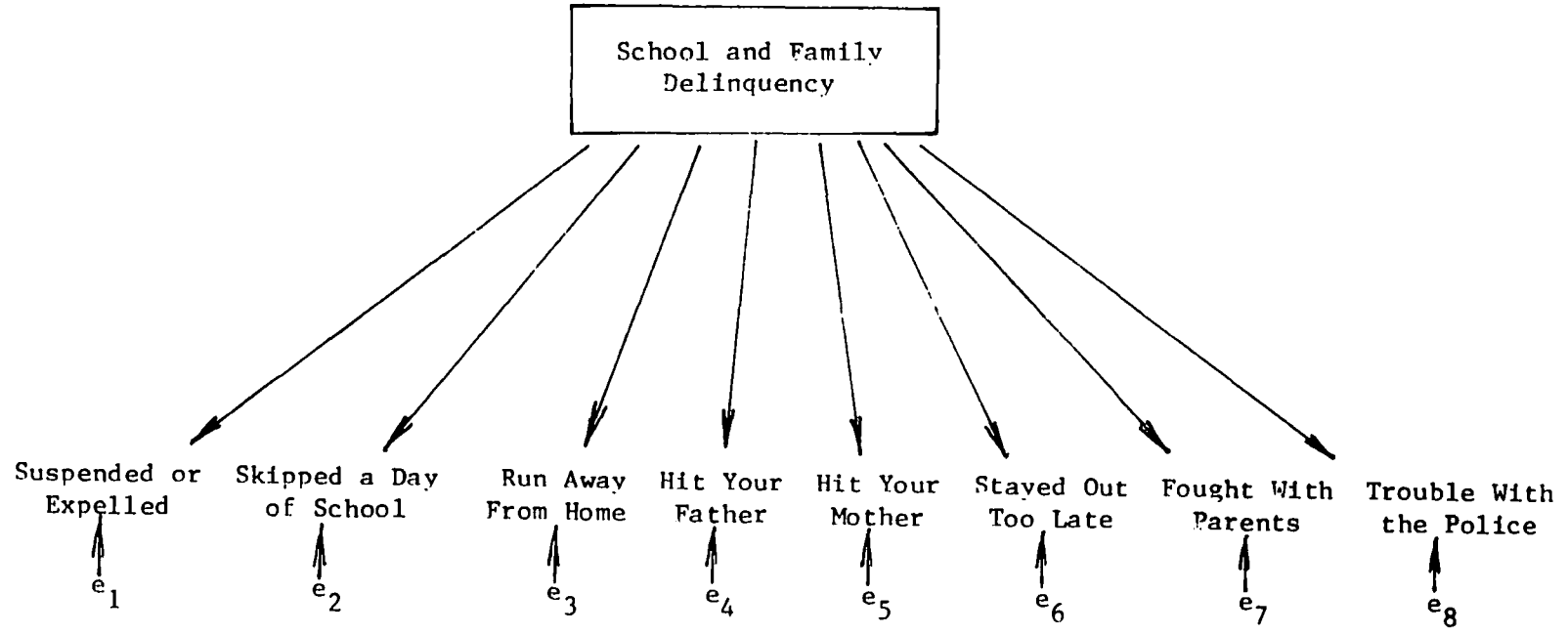

Figure 4.1 A Measurement Model of Self-Reported School- and Family-Related Delinquent Behavior

However, the AGFI is .943 and CN is 534. Both suggest a more reasonable fit to the data than the chi-square test.

Standardized parameter estimates for this model appear in Table 4.1. The five within-wave correlated measurement errors are listed in Table 4.2. Validity coefficients for the eight indicators are fairly low, signaling the presence of large amounts of measurement error, or the presence of more than one dimension. The indicator, "Trouble with the police," has the highest validity coefficient for all three waves. This is not surprising, since getting in trouble with the police is in part a result of committing offenses measured by the other seven indicators. The items, "Skipped a day of school" and "Suspended or expelled," also have relatively high validities. In contrast, "Hit your father" and "Hit your mother" have very low validities: in each wave, the underlying construct explains less than eight percent of the variance in each. In addition, as expected, the measurement errors of these items tap an additional substantive component causing them to correlate substantially.

The validity coefficients decline with each wave (see Table 4.1). This is especially pronounced between

Table 4.1 Parameter Estimates for a Measurement Model of Self-Reported Delinquent Behavior

	Validity Coefficient			Intertemporal Correlations: Variable			Intertemporal Correlations: Error		
Variable Description	Wave 1	Wave 2	Wave 3	Wave 1-2	Wave 2-3	Wave 1-3	Wave 1-2	Wave 2-3	Wave 1-3
1. Suspended or Expelled	.471*	.386*	.352*	.361*	.466*	.289*	.291*	.397*	.213*
2. Skipped a Day of School	.533*	.388*	.333*	.476*	.575*	.375*	.387*	.501*	.278*
3. Run Away From Home	.347*	.329*	.337*	.215*	.219*	.197*	.159*	.142*	.124*
4. Hit Your Father	.283*	.260*	.245*	.142*	.336*	.212*	.123*	.313*	.202*
5. Hit Your Mother	.255*	.240*	.229*	.221*	.267*	.247*	.213*	.255*	.209*
6. Stayed Out Too Late	.411*	.278*	.227*	.426*	.483*	.337*	.362*	.410*	.271*
7. Fought With Parents	.364*	.260*	.235*	.448*	.510*	.376*	.408*	.478*	.345*
8. Trouble With Police	.654*	.500*	.462*	.412*	.418*	.275*	.258*	.247*	.078*

*Coefficient is at least twice its standard error.

Table 4.2: Measurement Error Correlations of Indicators of Self-Reported Delinquency

Variable Description	Wave 1	Wave 2	Wave 3
1. Suspended or Expelled Run Away From Home	.111*	.141*	.128*
2. Skipped a Day of School Stayed Out Too Late	.037	.011*	.047
3. Run Away from Home Hit Your Mother	.055*	.027	.205*
4. Hit Your Father Hit Your Mother	.317*	.411*	.196*
5. Stayed Out Too Late Fought With Parents	.049	.053*	.124*

*Coefficient is at least twice its standard error.

the first and second waves. Furthermore, first-order autocorrelations among measurement errors are greater between the second and third waves than between the first and second waves. Thus, respondents may be losing interest in the study, which causes them to give less-accurate reports and to repeat their response errors. Also, the shorter time lag (12 months versus 18 months) may account for the higher autocorrelations by producing greater recall contamination. Three indicators, "Skipped a day of school," "Stayed out too late," and "Fought with parents" have particularly large autocorrelated response errors.

The first-order autocorrelations among the underlying latent factor are slightly lower than those among the 26-item index of delinquency. This holds for both correlations between the first two waves (.578 vs. .624) as well as correlations between the second and third waves (.612 vs. .675). Pragmatically speaking, however, the two sets of correlations are very similar. This similarity is due to two offsetting effects. First, the autocorrelations of the underlying construct are increased by the correction for attenuation due to unreliability. Second, the autocorrelations among latent factors are

decreased by autocorrelations among measurement errors. For the substantive analyses to come, this is an important point. Some models will use previous delinquency, measured by the 26-item index, as a control variable predicting present delinquency, also measured by the 26-item index. If unreliability seriously attenuates the first-order lagged effect, other estimates of the model will be confounded. This analysis indicates that this will not be a problem.

The low validity coefficients, coupled with the marginally-adequate fit to the data and the presence of several significant measurement error correlations suggest the possiblility of misspecification. In particular, the indicators could reflect more than one underlying dimension. Several attempts, however, to specify additional substantive dimensions failed to improve the conceptual clarity and empirical fit of the model. One model, which simply dropped the "trouble with police" and two "hit your parents" indicators yielded a slightly-improved fit (chi-square=151.59; df=66; $p<.001$; AGFI=.972; CN=777). The measurement properties, however, paralleled those of the eight-indicator model, and are therefore not presented.

In sum, on the basis of this analysis and previous studies of self-reported delinquency, it seems reasonable to assume that measurement error in the 26-item index of delinqency will not seriously distort the parameter estimates of substantive structural equation models. Furthermore, it appears warranted to use the index as a validation variable in the measurement analysis to follow.

Attachment to Parents and Peers

As discussed earlier, perhaps the most important element of Hirschi's (1969) bond to society is attachment to parents, the first line of defense against law violation. Hirschi rejected the notion common to control theorists that parental attachment reduces delinquent behavior by instilling conventional norms in the adolescent (cf. Reiss, 1951; Nye, 1958). He did so for two reasons. First, he felt that such an explanation could not account for variation in delinquent behavior over time. Second, he felt that the assertion was difficult, if not impossible, to falsify (Hirschi, 1969:19).

Hirschi proposed alternatively that the link to conventional morality lies in the attachment itself: being attached to one's parents reflects a moral condition.

The important mechanism is not direct control, measured, for example, solely by the amount of time spent with parents. After all, most delinquent acts take little time and require no special opportunites. Rather, the mechanism of control is the degree to which the parent is psychologically present when the opportunity for delinquency knocks. The attached adolescent considers the possible reactions of his parents to the delinquent act, which reduces the probability of that act; the unattached fails to consider his parents' reactions and is to that extent free to engage in delinquent behavior.

Hirschi outlined three major dimensions of attachment to parents: parental supervision, intimacy of communication, and affectional identification. In this study, indicators from the Youth in Transition dataset were selected to measure these three dimensions. Exploratory factor analyses consistently reproduced these dimensions as expected.

In constrast to Nye's (1958) "direct controls" in which parental supervision and surveillence objectively restricts a child's choice of activities and friends to be nondelinquent, Hirschi's parental supervision works subjectively: the child perceives that his parents know

what he is doing and, accordingly, regulates his behavior by considering their reactions. Hirschi's indicators were "Does your mother (father) know where you are when you are away from home?" and "Does your mother (father) know with whom you are with when you are away from home?" (see also Krohn and Massey, 1980; Krohn, et al., 1982). Three indicators from the Youth in Transition dataset appear to capture supervision: "Do your parents decide how late you stay out?" "Do your parents decide what shows, movies, and parties you can go to?" and "Do your parents decide on what music lessons, camp, or after school activities you can have?" These items measure parental supervision as perceived by the adolescent; however, compared to Hirschi's indicators, they perhaps reflect direct control more, and psychological presence of parents less.

The second dimension of attachment to parents, intimacy of communication, reflects the extent to which an adolescent shares his mental life with his parents. According to Hirschi, the more an adolesent seeks his parents' advice and opinions about his activities and the more he discusses important decisions with them, the more they are a part of his psychological field, and the less

likely he will neglect their wishes by violating the law. Hirschi formed two highly-correlated indexes reflecting communication flowing from child to parent -- "Do you share your thoughts and feelings with your mother (father)?" and "How often have you talked over your future plans with your mother (father)?" -- and from parent to child -- "When you don't know why your mother (father) makes a rule, will she (he) explain the reason?" and "When you come across things you don't understand, does your mother (father) explain why she (he) feels the way she (he) does?" Three items in the YIT dataset combine elements of both indexes, mirroring the content of the first and reproducing the parent-child flow of communication of the second: "How often do your parents (1) listen to your side of the argument; (2) talk over important decisions with you and (3) act fair and reasonable in what they ask of you?"

Hirschi's third dimension of attachment to parents, affectional identification, derives from Nye's (1958) element of indirect control. According to Nye, the more a child affectionately identifies with his parents, the more likely he will accept them, try to please them, and internalize their norms, and consequently, the less

likely he will hurt them by breaking the law. Similarly, Hirschi argues that when a child considers his parents' reactions to delinquency, he will be deterred only if he values his parents' opinions, attitudes, and wishes. From the perspective of Glaser's (1956) differential identification, a person engages in delinquency to the extent that he identifies more with persons who view delinquency as appropriate and less with persons who view it as inappropriate. Since the family is the principal non-delinquent reference group, lack of identification with parents should be a significant determinant of delinquent behavior.

Hirschi's best indicator of emotional attachment was "Would you like to be the kind of person your mother (father) is?" The YIT dataset contains an identical item, "How much do you want to be the kind of person your mother (father) is?" and a face valid second item, "How close do you feel to your mother (father)?" These were both used by Wiatrowski et al. (1981) to measure attachment to parents.

For Hirschi's social control theory, attachment to peers works similarly to attachment to parents: the moral element resides in the bond itself, instead of in

norms; the more a person identifies and communicates with peers, the more attached he is; delinquent behavior results when an unattached person fails to consider the reactions of others. In contrast to other versions of control theory (Reiss, 1951; Nye, 1958; Briar and Piliavin, 1965), Hirschi argues that attachment to peers reduces delinquency regardless of their delinquent status, values, or attitudes. For Hirschi, unattached persons suffer social disabilities that prevent them from developing close relationships with anyone. Uncontrolled by other members of society, they are cut off from conventional morality, and thus free to violate the law.

Hirschi's indicators of attachment to peers paralleled his indicators of affectional identification with parents: "Would you like to be the kind of person your best friends are?" and "Do you respect your best friends' opinions about the important things in life?" Wiatrowski et al. (1981) used two YIT indicators to form an index of attachment to peers: "How important would you say your friends are in your life?" and "How important is it for you to spend time with your friends?" These items, plus a third, "I tell my friends about my problems and troubles," which reflects a dimension of intimacy of communi-

cation, are used here.

The measurement model specifying the relationships among attachment to parents and peers appears in the path diagram of Figure 4.2. For the first wave, the chi-square of 254 with 78 degrees of freedom is significant ($p<.001$), implying that the model as a whole does not adequately reproduce the observed correlation matrix. However, with a large sample (N=1912) and many degrees of freedom, this could be due to substantively trivial departures from the null hypothesis. Despite having the correct model, we may have so much statistical power that we can detect parameters (violations of constraints) too small to be meaningful.[6] Our experience with these data suggests that this is indeed the case. Joreskog and Sorbom's (1981) goodness-of-fit index adjusted for degrees of freedom (AGFI) is .961 and Hoelter's (1982) "Critical N" (CN) is 748. Both suggest a reasonable fit. Our replication of this model on wave two yielded a similar fit (chi-square=210; df=78; N=1637; AGFI=.957; CN=775).

Table 4.3 presents parameter estimates of the measurement model of attachment to parents and peers.

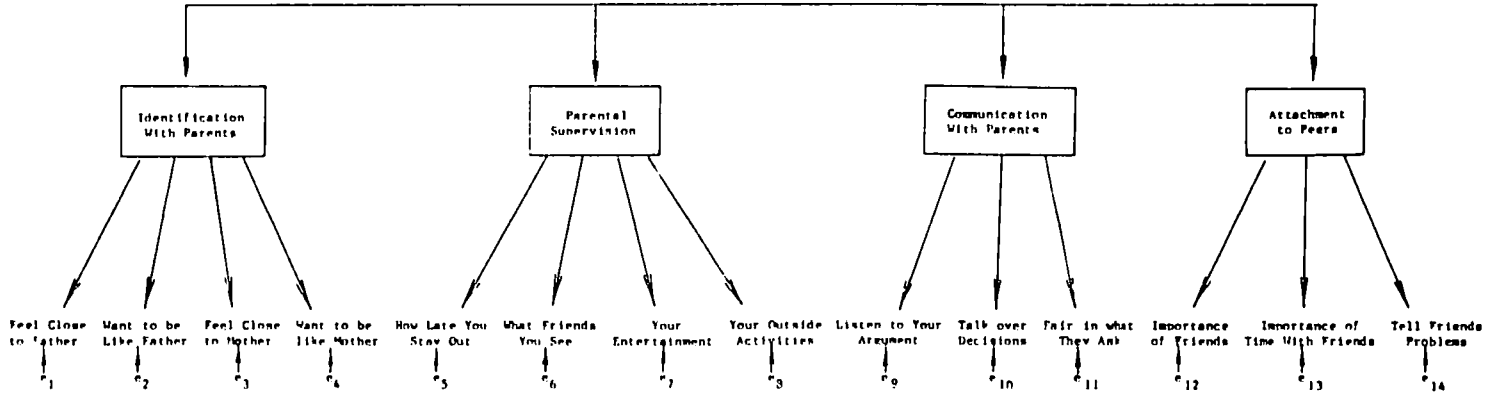

Figure 4.2 A Measurement Model of Attachment to Parents and Peers.

Correlations among latent factors are presented in Table 4.4. For both waves, all indicators of identification with parents have moderate validity coefficients: they range from .47 to .59, implying that the underlying construct accounts for about 25 percent of the variance in each indicator (Table 4.3). After correcting for attenuation due to unreliability, the latent construct correlates .39 with delinquency for the first wave and .33 for the second wave. Thus, using this criterion, the construct appears reasonably valid.

The intertemporal correlations among observables, commonly used as test-retest reliabilities, are all between .5 and .6. These coefficients, however, are relatively uninformative, because as noted above, they confound two sources of covariation: stability in true constructs and stability in random response effects. In fact, for identification with parents, despite some instability in observable responses, the underlying construct remains almost perfectly stable between the two time points. Thus, perhaps the extent to which one identifies with his parents is determined before high school and remains stable thereafter.

Table 4.3: Parameter Estimates for Measurement Model of Attachment to Parents and Peers

Variable Description	Validity Coefficient Wave 1	Validity Coefficient Wave 2	Intertemporal Correlation Variable	Intertemporal Correlation Error	Correlations With Delinquency Index Wave 1	Correlations With Delinquency Index Wave 2
A. Identification with Parents	--	--	.952*	0.0[f]	.389*	.332*
1. Feel Close to Father (1-4 Close-Not Close)	.588*	.589*	.538*	.187*	.232*	.167*
2. Want to be Like Father (1-5 Much-Not at all)	.543*	.518*	.567*	.225*	.199*	.192*
3. Feel Close to Mother (1-4 Close-Not Close)	.541*	.505*	.521*	.219*	.204*	.156*
4. Want to be Like Mother (1-5 Much-Not at all)	.530*	.470*	.519*	.183*	.219*	.193*
B. Parental Supervision	--	--	.452*	0.0[f]	.113*	.159*
5. How Late You Stay Out (1-5 Always-Never)	.206*	.424*	.344*	.293*	.079*	.084*
6. What Friends You See (1-5 Always-Never)	.666*	.673*	.347*	.316*	.007	.047
7. Your Entertainment (1-5 Always-Never)	.832*	.866*	.359*	.091	.107*	.161*
8. Your Outside Activities (1-5 Always-Never)	.716*	.735*	.276*	.098*	.102*	.109*
C. Communication With Parents	--	--	.552*	0.0[f]	.206	.205
9. Listen to Your Argument (1-5 Always-Never)	.718*	.717*	.384*	.209*	.112*	.101*
10. Talk Over Decisions (1-5 Always-Never)	.656*	.705*	.367*	.228*	.151*	.164
11. Fair in What They Say (1-5 Always-Never)	.653*	.669*	.314*	.094*	.163*	.171*
D. Attachment to Peers	--	--	.705*	0.0[f]	-.032	-.054
12. Importance of Friends (1-5 Very-Not at All)	.304*	.308*	.419*	.285*	-.057*	-.025
13. Importance of Time With Friends (1-5 More than Ave-Less than Ave)	.554*	.666*	.314*	.245*	.017	-.010
14. Tell Friends Problems (1-5 Always True-Never True)	.501*	.484*	.324*	.190*	-.036	-.071*

*Coefficient is at least twice its standard error.

Note: Underlined coefficients refer to latent variables; all others refer to observables.

[f]Indicates a fixed coefficient.

Table 4.4: Zero-order Correlations Among Factors for Attachment to Parents and Peers

	Identification with Parents	Parental Supervision	Communication with Parents	Attachment to Peers
Identification with Parents	1.000	.183*	.747*	.221*
Parental Supervision	.218*	1.000	.050	.063
Communication with Parents	.802*	.040	1.000	.162*
Attachment to Peers	.368*	.030	.190*	1.000

*Coefficient is at least twice its standard error.

Note: Correlations for the first wave appear above the diagonal, for the second wave, below the diagonal.

The four intertemporal measurement error correlations are all moderate, around .20, and probably due in part to recall contamination and in part to substantive variation orthogonal to the underlying factor. For example, we found significant error correlations within waves between father items (.30 for wave one; .37 for wave two), mother items (.30 for wave one; .40 for wave two), "closeness" items (.16 for wave one; .15 for wave two), and "be like" items (.07 for waves one and two). Also, the finding that these unique substantive components remain somewhat stable over time is not surprising.

Finally, identification with parents is positively correlated with other dimensions of attachment to parents and peers (Table 4.4). These correlations are large enough to demonstrate criterion validity, and perhaps with the exception of communication with parents, low enough to indicate discriminant validity. Although a formal likelihood-ratio test rejects the hypothesis of a single dimension underlying indicators of identification and communication with parents, they nonetheless appear to tap very similar dimensions.

The three indicators of communication with parents all show fairly high validity coefficients: the

underlying factor accounts for at least 40 percent of the variance in each indicator. The construct is only moderately stable over time, and is only nontrivially correlated with delinquent behavior. The indicators referring to listening and talking both have intertemporal error correlations twice as large as the "fair" indicator, suggesting stable substantive components. Since the items are somewhat similar, we tested the hypothesis that the error components tap the same stable trait. However, the hypothesis of orthogonal measurement errors could not be rejected. Table 4.3 reveals that the construct representing communication with parents is highly correlated with identification with parents, nontrivially correlated with attachment to peers, and orthogonal to parental supervision.

Parental supervision is orthogonal to all other factors with the exception of identification with parents. Thus, while the indicators display discriminant validity, the low correlations raise questions of criterion validity. Moreover, the correlation with delinquent behavior, although statistically significant, is only marginally meaningful. Furthermore, the underlying construct changes substantially over the 18 month interval

between waves. Somewhat surprisingly, the two indicators referring to activities and entertainment have better measurement properties than the two regarding curfews and friends. They not only have higher reliability coefficients, but are also individually more highly correlated with delinquency. The curfew indicator is particularly unreliable -- the underlying construct explains no more than 17 percent of the variation in this measure. Both the curfew and friends items have large error components orthogonal to the supervision construct -- and thus othogonal to delinquency -- that are relatively stable over time. The autocorrelations of these two indicators are three times the size of those of the more accurate indicators. Thus, the errors probably reflect stable substantive components.

As noted above, attachment to peers is correlated moderately with parental identification, nontrivially with parental communication, but not at all with parental supervision. Thus, it shows some degree of criterion and discriminant validity. On the other hand, the variable's correlation with delinquency is trivially negative and statistically indistinguishable from zero. Given the face validity of the three indicators, and the incon-

sistent findings of previous research -- some finding negative correlations (Hirschi, 1969), others positive (Erickson and Empey, 1965; Empey and Lubeck, 1971; Hindelang, 1973; Elliot and Voss, 1974) -- this may reflect an invalid theory rather than invalid indicators. Individually, importance of friends has a large stable error variance producing low reliability coefficients. The other two indicators are moderately reliable, but also have nontrivial autocorrelated errors. Overall, the construct is fairly stable over time.

In sum, the indicators of Nye's (1958) concept, identification with parents (used by Wiatrowski et al., 1981), and Hirschi's communication with parents appear reasonably valid and reliable; on the other hand, parental supervision has low criterion validity, despite high reliability coefficients. As noted above, our indicators are more consistent with Nye's specification of objective supervision than with Hirschi's subjective supervision. Thus, Hirschi's claim that the operative mechanism is the child's perceptions of his parents' psychological presence, if correct, would account for the low correlations. Finally, the measures of attachment to peers may be valid and reliable indicators of a theoretically invalid con-

cept.

Attachment to School and Church

Paralleling the effects of attachment to parents and peers, attachment to teachers, who represent an important conventional authority-figure, restrains a student from delinquency by forcing him to consider their anticipated reactions. Again, this interpretation is consistent with differential identification theory. To capture respondents' attachment to teachers, Hirschi used a single direct indicator, "Do you care what your teachers think of you?" We use two less-subjective indicators (used by Wiatowski, et al., 1981) reflecting teacher-student flow of communication, "Do many of your teachers seem to take an interest in you?" and another reflecting student-teacher flow, "How often do you have a private talk with any of your teachers about school work?"

In contrast to attachment to parents, peers, and teachers, which refers to intimate relationships with concrete individuals, attachment to school refers to one's relationship with an entire institution. Krohn and Massey (1980) criticized this formulation, arguing that unlike attachment to specific persons, attachment to

school lacked empirical reference to concrete persons, and therefore was conceptually ambiguous. Thus, attachment to others reduces delinquency by compelling the child to consider the reactions of parents, peers and teachers. But, to whose reactions does attachment to school refer?

This ambiguity can be resolved by conceptualizing attachment as a process of role-taking within George Herbert Mead's theory of social control. Mead (1924; 1934) argued that society, or a specific group within society, controls the behavior of its members through a serial process of thinking, the principal feature of which is role-taking. In a problematic situation in which the individual contemplates a specific line of behavior (such as delinquent behavior) he takes the role of others and considers the behavior from the standpoint of others. The others are social groups that he participates in -- including specific persons, groups of persons, and institutions which are constellations of social relationships organized in complex ways. When taking the role of an abstract social group, the person considers the complex interrelationships of his role vis-a-vis the organization, including its rules, expectations, and norms.

Therefore, being attached to the school implies participating in the school organization and, in certain problematic situations, taking the role of organized interrelationships within the school. To measure attachment to the school, Hirschi used a single indicator that is simple, direct, and straightforward: "Do you like school?" The YIT dataset contains numerous more complex indicators; we selected eleven items that had face validity, subjected them to exploratory factor analysis, and found them unidimensional. On the basis of a preliminary confirmatory factor analysis, we selected four indicators that had high reliability and collectively appeared to tap the strata of attachment to school. The indicator, "I enjoy school because it allows me to learn to be a good citizen," contains an obvious moral element that might dissuade one from deviant behavior. The items, "I enjoy school because it gives me a chance to do something worthwhile" and "school is satisfying because it gives me a feeling of accomplishment," both tap conventional ideological justifications for educational institutions. Finally, we included the item, "School is boring because I am not learning what I want to learn" to extract a possible response set in the other items, since this question captures similar content, but from a negative

standpoint.

Hirschi (1969) did not investigate the effects of religion on delinquent behavior. However, Hirschi and Stark (1969) and others found little or no relationship between church attendance and delinquency (Rhodes and Reiss, 1970; Nye, 1958; Higgens and Albrecht, 1977), although this appears to vary by type of offense (Burkett and White, 1974; Jensen and Erickson, 1979). From a control perspective, however, the church, which has the principal function of instilling in the individual a system of conventional moral beliefs, should at least in principle represent a preeminent institution of social control. The mechanism of control should be attachment: Persons contemplating an act of deviance are dissuaded by the reaction of the clergy and laity, and by the rules governing both.

The following three items were used to indicate attachment to the church: "How often do you attend religious services?," "Attending religious services is a good thing to do," and "Living religion in one's life is a good thing to do." Church attendance was used as a behavioral indicator to isolate potential measurement artifacts in the other attitudinal items. It is not

conceptualized as an indictor of involvement in or commitment to church activities because the operative component is more the importance of anticipated reactions -- which is increased by increased attendance -- and less the rational investment of time and energy into the activities.

A path diagram of a model of attachment to school, teachers, and church, appears in Figure 4.3. Models of both the first and second waves appear to fit the data acceptably. Wave one has a chi-square of 115 with 31 df ($p<.001$; N=1912) and a CN of 744; wave two has a chi-square of 105 with 31 df ($p<.001$; N=1637) and a CN = 698. Both have fit indexes (AGFI) of .97.

Table 4.5 presents the standardized parameter estimates, Table 4.6 the zero-order correlations among factors. The first three indicators of attachment to school have high validity coefficients for both waves, ranging from .68 to .80. The fourth indicator, which unlike the other three, is worded negatively, has a lower validity coefficient. Given that its error variance is more autocorrelated than the others, the unreliability probably stems from a response set to the negative item.[7] Overall, the attachment to school construct is only

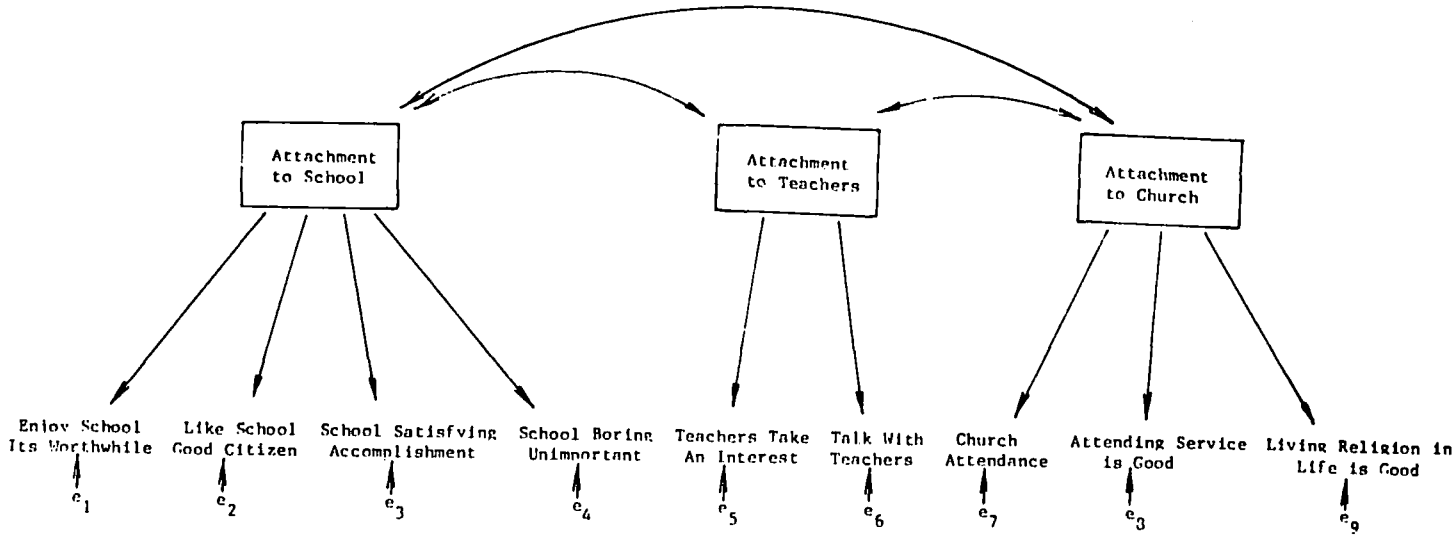

Figure 4.3 A Measurement Model of Attachment to School, Teachers, and Church

Table 4.5: Parameter Estimates for Measurement Model of Attachment to School and Church

Variable Description	Validity Coefficient		Intertemporal Correlation		Correlations With Delinquency Index	
	Wave 1	Wave 2	Variable	Error	Wave 1	Wave 2
A. Attachment to School	--	--	.558	--	.361*	.307*
1. Enjoy School; it's worthwhile (1-4 Very Much-Not at All)	.754*	.761*	.341*	.060	.261*	.227*
2. Like school; learn to be good citizen (1-4 Very Much-Not at All)	.676*	.746*	.319*	.069*	.236*	.239*
3. School satisfying; feel accomplishment (1-4 Very Much-Not at All)	.764*	.804*	.395*	.150*	.262*	.217*
4. School boring; don't learn important (1-4 Very Much-Not at All)	-.506*	-.488*	.305*	.193*	-.263*	-.248*
B. Attachment to Teachers	--	--	.644*	--	.262*	.149*
5. Teachers taken an interest (1-5 All My Teachers-None)	.674*	.678*	.324*	.054	.180*	.089*
6. Talk with teachers about school (1-5 Every Day-Never)	.449*	.464*	.402*	.337*	.110*	.095*
C. Attachment to Church	--	--	.631*	--	.284*	.233*
7. Church attendance (1-4 Weekly or More-Never)	.419*	.417*	.662*	.630*	.208*	.204*
8. Attending services is good (1-6 Very Good-Very Bad)	.764*	.855*	.335*	-.160*	.207*	.178*
9. Living religion in life is good (1-6 Very Good-Very Bad)	.728*	.727*	.374*	.099*	.189*	.179*

*Coefficient is at least twice its standard error.

Note: Underlined coefficients refer to latent variables; all others refer to observables.

Table 4.6: Zero-order Correlations Among Factors of Attachment to School and Church

	Attachment to School	Attachment to Teachers	Attachment to Church
Attachment to School	1.000	.493*	.414*
Attachment to Teachers	.483*	1.000	.302*
Attachment to Church	.368*	.203*	1.000

*Coefficient is at least twice its standard error.

Note: Correlations for the first wave appear above the diagonal, for the second wave below the diagonal.

moderately stable over the 18 month interval. It is also moderately correlated with the delinquency criterion, and substantially correlated with the other two factors. Thus, it shows criterion validity as well as discriminant validity.

Because they both refer to the same institutional arena, attachment to school and attachment to teachers should correlate highly, yet be distinguishable, since the former refers to an abstract and complex generalized other, while the latter ascribes to a concrete authority figure. This is indeed the case: they are correlated .40 (Table 4.6).

The factor representing attachment to teachers is strongly correlated over time (.64) and nontrivially correlated with delinquent behavior (Table 4.5). Consistent with Hirschi's control perspective, the more subjective indicator, "Teachers take an interest," is more reliable than the more objective behavioral measure, "Number of times talked with teachers." This latter measure has a large error component that is much more stable over time, reflecting perhaps a behavioral component orthogonal to both attachment to school, teacher interest, and delinquent behavior.

As expected, attachment to church and attachment to school, which both represent control by a conventional institution, are substantially correlated (.41 and .37). Attachment to church is also moderately correlated with attachment to teachers and with delinquent behavior. By these criteria, then, the indicators of attachment to the church appear reasonably valid. Individually, the two attitudinal indicators are highly reliable, correlating over .70 with the underlying construct (Table 4.5). In contrast, the behavioral indicator, church attendance, has somewhat lower validities. Moreover, it has a large error component that remains very stable over time. In fact, of the correlation between observables over time (.66), 86 percent (.57) is due to the autocorrelated errors. Thus, a large and stable substantive behavioral component orthogonal to attachment to church contributes to church attendance. The other two indicators have smaller autocorrelations; for the "attending services" indicator, it is anomolously negative. Like the other two factors, attachment to church shows moderate stability over the 18 months.

Thus, using measures of reliability, construct validity, and criterion validity, we find our indicators of

attachment to school, teachers, and church to have reasonable measurement properties.

Commitment and Involvement in Conventional Activities

Commitment to conventional lines of activity refers to the rational element of Hirschi's bond to society. According to Hirschi, a person who has invested time, energy and other resources into a conventional line of action is unlikely to break the law for fear of losing that investment. Since delinquent acts are unmotivated and since there are no distinct delinquent subcultures containing unconventional values, attitudes, and learning structures -- indeed since delinquent persons are cut off from all social groups and institutions -- there cannot be commitment to unconventional activities. The process of building commitments entails delayed gratification, goal-oriented behavior, and teleological control of acts. For adolescents, the major arena for investing in the future is the school; later, presumably, it becomes the workplace.

Hirschi located three dimensions of commitment: commitment to education, commitment to a high-status occupation, and claims to adult status. To measure com-

mitment to a high-status job, Hirschi used occupational aspirations and expectations. As indicators of commitment to education, he used educational aspirations and expectations and a dimension of achievement orientation, consisting of "I try hard in school," "How important is getting good grades to you personally?" and "Whatever I do I try hard." The last item has questionable face validity, but was included because a factor analysis indicated it loaded with the others. Our dataset contains indicators of educational expectations, occupational aspirations, and three measures of achievement orientation: "Studying constantly is a good thing to do," "Striving for the top grade-point-average is a good thing to do," and "Studying hard for good grades is a good thing to do." Here we are following Wiatrowski et al.'s (1981) operationalization of commitment.

Hirschi's third dimension of commitment, claims to adult status, departs sharply from his conceptual discussion of commitment to conventional action. This is perhaps the most implausible and poorly-argued claim of causality in Hirschi's work. Finding that drinking, smoking, dating, and riding in a car were more strongly associated with delinquent behavior than commitment to

education, Hirschi rejected Stinchcombe's (1964) "adult status" perspective, which argued that these adult activities and delinquency were both caused by lack of commitment, and were thus spuriously associated. Hirschi also rejected the most plausible explanation of these relationships -- also advocated by Stinchcombe -- that such activities reflect involvement in and attachment to a "teenage culture" as distinct from the dominant adult culture. This explanation, if true, would destroy the foundations of control theory: subcultures containing unconventional groups would exist; and delinquent behavior like all behavior, would be motivated.

Therefore, Hirschi resorted to the following interpretation: by smoking, drinking, dating, and riding in cars, adolescents are symbolically claiming the right to adult status, much to the chagrin of adults who want them to act their age. This claim to act contrary to adult wishes shows contempt for their values and thus frees the adolescent to violate the law. This argument, however, is specious for three reasons.

First, at the very least, this process of expressing contempt for adult expectations, which frees one to engage in delinquent acts, reflects the element of

attachment not commitment. Here persons are not investing in a conventional activity, but instead are becoming detached from conventional persons. Moreover, from a control perspective, the most plausible interpretation of these relationships is that by drinking, smoking, dating, and riding in a car, adolescents are investing time and energy in conventional adult activities -- perhaps in a process of anticipatory socialization. This form of commitment should reduce the likelihood of delinquency. Hirschi rejected this position, however, since his data refutes it: this form of commitment increases the probability of delinquency. A more reasonable interpretation would question the social control perspective.

Second, to say that certain groups of adolescents express defiance for adult expectations, even flaunting their contempt by openly violating those expectations, suggests the existence of a contraculture (as Stinchcombe suggests) consisting of anticonventional attitudes, which cause both premature adult activities as well as delinquent acts (cf. Cohen, 1955). Third, some of these behaviors are probably components of delinquent behavior, the phenomenon being explained (Krohn and Massey, 1980). Thus, riding around in a car is essential for joyriding;

dating may be bound up with premarital sexual intercourse; and adolescent drinking itself is often illegal. Consequently, the explanation is at least partially tautological.

For these reasons, it is prudent to reject Hirschi's "claims to adult status explanation" on conceptual grounds and view these behaviors as components of delinquency. This is a conservative position. A more liberal, and perhaps realistic position (but possibly unfair to Hirschi) would view these behaviors as commitments, and use them to refute his version of control theory.

The final element of the bond to society, involvement in conventional activities, works in a negative sense, preventing a person from contemplating and committing delinquent acts by occupying his time. This hypothesis has been disproved by Hirschi: the conventional activities he investigated were either orthogonal to delinquency (sports, recreation, and hobbies) or associated in the wrong direction (working, dating, riding around in a car) (see also, Schaefer, 1969; Robin, 1969). The problem here, as Hirschi recognized, is that delinquency is not a full-time job, but instead requires little time; consequently, to find a significant effect,

involvement would have to account for nearly all of a person's time. (Even then, one would be left with delinquent behavior by default -- hardly a compelling explanation.) Thus, Hirschi concluded that the content -- specifically commitment -- of the activities was crucial.

Among the indicators Hirschi used, "Time spend on homework," an activity implying commitment to the school, reduces delinquency, as predicted. "Do you ever feel there's nothing to do" has less face validity, but nevertheless is related to delinquency in the expected direction. In contrast, "Time spent talking with friends" and "Time spent riding around in a car" both increase the likelihood of law violation, contrary to a commitment or involvement hypothesis. Here again, Hirschi resorts to the "premature adulthood" account, which is problematic for the reasons stated above, and even less plausible for time spent talking with peers. From a control perspective, time spent talking with friends should be a behavioral indicator of attachment to peers. Recall that delinquents are characterized as cold, unsocialized, isolated beings incapable of developing intimate relationships with peers. Therefore, on the average, persons who spend less time talking with friends are

less attached to others, and more likely to engage in delinquency.

We investigated several indicators of involvement that explicitly tap a commitment component. Our initial specification of two dimensions, one reflecting primarily commitment and the other chiefly tapping involvement, failed to fit the data and was modified on the basis of exploratory factor analysis. The resulting specification appears theoretically reasonable. As indicators of committing effort in schoolwork, we use "How close do you come to doing your best work in school?" and "How hard do you work in school compared to your classmates?" To measure commitments of time to schoolwork, following Wiatrowski et al. (1981), we began with "Average number of hours spent on all homework," "How often do you have discussions with friends about your courses?" and "How often do you do more reading than your courses require?" The homework indicator, however, could not be replicated on the second wave; consequently, we reconceptualized it as a separate construct. Also specified as constructs with single perfectly-measured indicators are grade-point average and "Are you currently working for pay?"[8]

The measurement model of commitment to and

involvement in conventional activities is diagrammed in Figure 4.4. The overall goodness-of-fit tests indicate a good fit for a model with orthogonal measurement errors. For the first wave, with a sample size of 1912, the chi-square is 85 with 50 degrees of freedom (p=.001); AGFI=.98; CN=1513. A similar fit is found for wave two (chi-square=130; df=50; P<.001; AGFI=.97; CN=847). Table 4.7 presents the parameter estimates for measurement models of commitment and involvement; zero-order correlations among factors appear in Table 4.8.

The construct representing achievement orientation is only moderately stable, indicating that many students change this orientation between the tenth and eleventh grades. The construct is moderately correlated with delinquency (.30 for wave one; .23 for wave two), and with the exception of "working for pay," similarly correlated with the other factors representing commitment and involvement. Individually, the indicators of achievement orientation have fairly high validity coefficients (Table 4.7). The item, "Studying constantly is good," used by Wiatrowski et al. (1981), has a slightly lower validity than the others and a higher measurement error

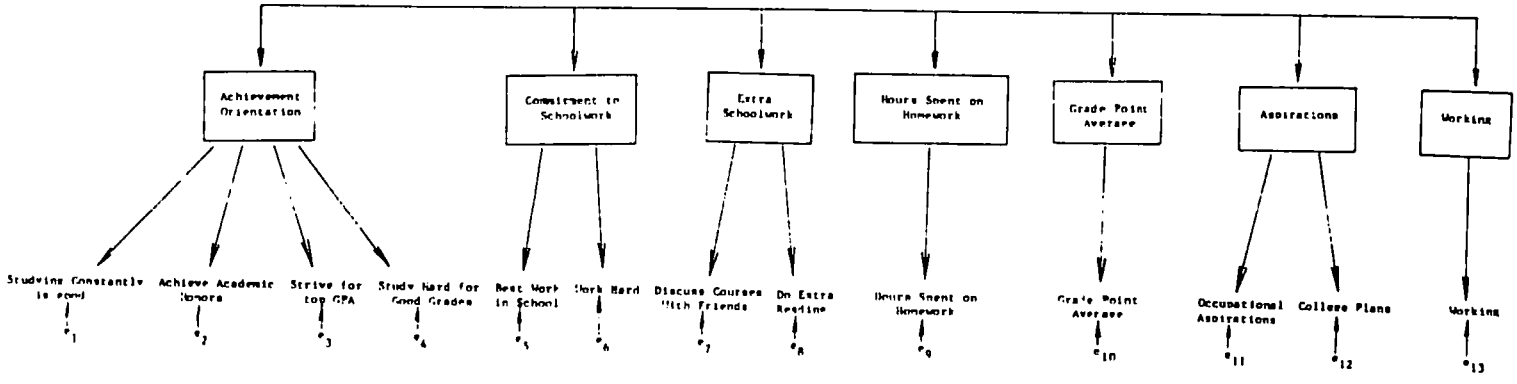

Figure 4.4 A Measurement Model of Commitment and Involvement in Conventional Activities

Table 4.7: Parameter Estimates for Measurement Models of Commitment and Involvement

Variable Description	Validity Coefficient Wave 1	Validity Coefficient Wave 2	Intertemporal Correlation Variable	Intertemporal Correlation Error	Correlations With Delinquency Index Wave 1	Correlations With Delinquency Index Wave 2
A. Achievement Orientation	--	--	.474*	.000[f]	.306*	.226*
1. Studying constantly is good (1-6 Very good-Very bad)	.586*	.557*	.308*	.210*	.210*	.145*
2. Achieve academic honors (1-6 Very good-Very bad)	.762*	.728*	.260*	.005	.219*	.155*
3. Strive for top GPA (1-6 Very good-Very bad)	.743*	.703*	.315*	.131*	.209*	.129*
4. Study hard for good grades (1-6 Very good-Very bad)	.797*	.790*	.299*	.020	.262*	.199*
B. Commitment to Schoolwork	--	--	.684*	.000[f]	.306*	.355*
5. Do best work in school (1-5 Very Close-Not at all close)	.567*	.667*	.402*	.330*	.218*	.254*
6. Work hard compared to others (1-5 Much harder-Much less hard)	.703*	.694*	.401*	.111	.171*	.253*
C. Extra Schoolwork	--	--	.608*	.000[f]	.278*	.275*
7. Discuss courses with friends (1-5 Several times a day-Never)	.515*	.657*	.336*	.199*	.145*	.175*
8. Do extra reading (1-5 Most of the time-Never)	.582*	.542*	.351*	.237*	.159*	.173*
D. Hours Spent on Homework (0-72 Hours)	1.000[f]	1.000[f]	.334*	.000[f]	-.116*	-.182*
E. Grade-Point Average	1.000[f]	1.000[f]	.674*	.000[f]	-.202*	-.221*
F. Aspirations	--	--	.808*	.000[f]	-.143*	-.199*
9. Occupational aspirations (3-96 SEI Points)	.773*	.708*	.626*	-.011	-.092	-.158*
10. College Plans (0-1 No-Yes)	.723*	.719*	.434*	.404*	-.125*	-.158*
G. Working for Pay	1.000[f]	1.000[f]	.218*	.000[f]	.006	-.110*

*Coefficient is at least twice its standard error.

[f]Indicates a fixed coefficient.

Note: Underlined coefficients refer to latent variables; all others refer to observables.

Table 4.8: Zero-order Correlations Among Factors for Commitment and Involvement

	Achievement Orientation	Commitment to Schoolwork	Extra Schoolwork	Hours Spent on Homework	Grade-Point Average	Aspirations	Working for Pay
Achievement Orientation	1.000	.272*	.381*	-.153*	-.289*	-.301*	.014
Commitment to Schoolwork	.275*	1.000	.362*	-.360*	-.488*	.221*	-.024
Extra Schoolwork	.348*	.426*	1.000	-.206*	-.262*	-.334*	.055
Hours Spent on Homework	-.172*	-.381*	-.329*	1.000	.178*	.108*	-.034
Grade-Point Average	-.187*	-.507*	-.286*	.185*	1.000	.469*	.019
Aspirations	-.242*	-.225*	-.228*	.145*	.508*	1.000	.031
Working for Pay	-.056*	-.126*	-.116*	.040	.096*	.182*	1.000

*Coefficient is at least twice its standard error.

Note: Correlations for the first wave appear above the diagonal, for the second wave, below the diagonal.

autocorrelation (.21). Despite being similar in content and measured on identical scales, these indicators do not have error correlations that we could statistically distinguish from zero and replicate on our second wave.[9]

Commitment to schoolwork shows a high degree of criterion and discriminant validity: it is substantially correlated (-.36 to -.51) with extra schoolwork, hours spent on homework, and especially grade-point average, and moderately correlated (-.22 to .36) with achievement orientation, aspirations, and delinquency. The indicator, "Do best work in school," used by Wiatrowski et al. (1981) as an indicator of school attachment (self-concept of academic ability), is slightly less accurate than the more direct item, "Work hard compared to others," and has a nontrivial and significant autocorrelated error. Nevertheless, it displays reasonable measurement properties as an indicator of commitment to school activities, and as we argued earlier, is more consistent with commitment. Therefore, we reject Wiatrowski's specification in favor of our own.

Initially, following Hirschi (1969) and Wiatrowski et al. (1981), we specified a single construct (involvement in schoolwork) underlying "Discuss courses," "Extra

reading," and "Homework." But in the second wave, homework loaded overwhelmingly on commitment to schoolwork. Therefore, we respecified commitment and involvement as a single construct underlying all five indicators. This model, however, did not fare well: reliabilities were low and the overall fit was poor. We then arrived at the present model, with "homework" specified as a separate construct. These results cast doubt on Wiatrowski et al.'s inclusion of "homework," and adds more negative evidence to Hirschi's original conceptualization of involvement -- a position that has already been severely criticized.

Our construct, "extra schoolwork," is fairly stable over time (stability = .61), and moderately correlated with delinquency (.28). As expected, it is substantially correlated with achievement and commitment; but its correlation with GPA (.28) is surprisingly low compared with commitment. The correlation with homework is higher for wave one (-.33 vs. -.20), but with aspirations, higher for wave two (-.33 to -.23) (Table 4.8). The two indicators have similar measurement properties: both have validities of about .60 and both have nontrivially autocorrelated errors.

Aspirations, an important component of Hirschi's element of commitment, has a significant but modest correlation with delinquent behavior (-.14 and -.20) (Table 4.7). Not surprisingly, students do not change their plans and aspirations much between the tenth and eleventh grades (stability = .81). Aspirations are very highly correlated with GPA (.47 and .51) and modestly correlated with everything else (Table 4.8). Somewhat surprisingly, aspirations are correlated minimally with hours spent on homework (.11 and .14). Thus, apparently students with high aspirations are those who perform well, but not necessarily those who try harder. Both indicators are reasonably reliable. Occupational aspirations has a highly stable measurement error (.40), perhaps reflecting a response set or a substantive component orthogonal to all variables in the model.

Of the three single-indicator constructs, "Hours spent on homework" and "Working for pay" change drastically over time, while grade-point average, not surprisingly, stays fairly stable (.67). Homework and GPA have modest but significant correlations with delinquency, and reasonable correlations with the other factors. Working, however, is more or less orthogonal to everything. The

one exception is that by wave two, persons working have significantly lower aspirations (.18). The correlation with delinquency is zero for wave one and slightly positive for wave two. This finding is either due to chance, due to a changing meaning of work, or due to an incorrect commitment hypothesis.

In sum, we find a relatively straightforward specification and well-behaved indicators for our models of achievement orientation, commitment to schoolwork, and aspirations. On the other hand, we could not replicate Wiatrowski et al.'s (1981) specification of involvement in school activities for both waves. Our simple two-indicator construct named "Extra schoolwork" appears to have reasonable properties. Finally, while single-indicator constructs, "Homework" and "GPA" appear to correlate reasonably with other constructs, "Working for pay" as an indicator of commitment does not.

Belief, Self-Concept, and Anomie

As noted earlier, the major explanatory concept in Sutherland's differential association theory is a person's learned ratio of definitions favorable and unfavorable to law violation. Indeed, we showed that the

principles of differential association and differential social organization attempt first to locate those components of social organization that lead to law violation, and second to isolate the precise causal mechanism by which these processes produce delinquent and criminal acts. At the level of the individual, Sutherland's explanation was that persons engage in delinquent behavior because they have learned an excess of definitions favorable to delinquency. Thus, any definitive test of the theory's major proposition using data on individuals requires an adequate method of measuring persons' ratios of delinquent and antidelinquent definitions.

Sutherland ([1944] 1973:36; 1947:7) originally specified the ratio of definitions of law violation in terms of a precise mathematical formula predicting delinquent behavior. Each behavior pattern of a given person would be carefully weighted by its frequency, duration, priority, and intensity, then added with other similarly weighted definitions and entered into the ratio. But because these behavior patterns cannot be directly observed, let alone summed to form a ratio, the ratio cannot be determined in the precise way Sutherland anti-

cipated. Nevertheless, when the ratio of weighted definitions is conceptualized as an unobservable latent construct, it does have operational implications for variables that can be observed. Specifically, observable items measuring definitions of the legal code can be specified as fallible indicators of the underlying theoretical construct. Then, by explicitly modeling the indicators' measurement error structure and correcting for attenuation due to unreliability, the accurate component of each indicator can be disentangled from inaccuracies due to measurement artifacts. Thus, assuming they have face validity, the common variance among indicators should adequately capture persons' ratios of definitions favorable and unfavorable to delinquency (see Matsueda, 1982).[10]

In contrast to differential association theory, social control theory conceptualizes a person's learned definitions of the legal code as belief, another element of the social bond to society. As discussed earlier, Hirschi struggled to incorporate definitions of the legal code into the control perspective while maintaining both that delinquency is unmotivated and that society consists of a single common moral order. His solution was on the

one hand, to concede that persons and groups disagree over the validity of the law, but on the other to call this simply variation in the extent to which persons believe in the single moral order.

Consequently, the two perspectives differ fundamentally in their conceptualization of definitions of the law. For differential association, the two kinds of definitions -- those encouraging law violation and those discouraging it -- reflect a persons' participation in groups conflicting over the appropriateness of legal rules. For social control theory, groups cannot conflict because there is only one group -- conventional society. Some persons simply have less belief in that group's values. Stated in this way, it is not possible at the individual level to distinguish empirically between these two interpretations of the definitions variable. In fact, it is possible to capture both interpretations with a single measurement structure (Matsueda, 1982). Specifically, by conceptualizing Sutherland's "ratio" as a unidimensional construct measuring definitions weighted by frequency, duration, priority, and intensity, it can be measured on a single continuum, ranging from highly antidelinquent to highly prodelinquent. Such a scale

also taps the extent to which persons believe in the moral validity of legal rules.

This strategy for operationalizing the definitions construct by correcting for attenuation due to unreliability requires face-valid indicators. Hirschi used a number of indicators to tap attitudes toward the law, attitudes toward conventional persons, and Sykes and Matza's (1957) techniques of neutralization.[11] The Youth in Transition dataset contains several items referring to elementary or primal moral values such as honesty, trust, and guilt over wrongdoing. These items appear, for two reasons, to have greater face validity for a control perspective. First, the conception of definitions within society implied by differential association theory requires more complex indicators to measure adequately the varied behavior patterns in different segments of society. Social control theory assumes a conventional moral order that is unified, consensual and integrated; values are restricted -- that is, similar across persons and groups. The principle of normative conflict, upon which differential association theory is based, conceives of a more varied, antagonistic, and complex system of values. Consequently, the theory demands

more complex and subtle measures to capture variations in values across different subcultural groups.

Second, as discussed earlier, differential association predicts that specific forms of illegal behavior such as murder or shoplifting are determined by specific forms of ratios of weighted definitions toward those acts. Thus, certain general attitudes and values may bring about several forms of illicit activities, building in correlations among the specific ratios, while other behavior patterns may act solely on specific offenses, working to descriminate among the specific ratios. Therefore, the content of valid measures may vary not only across social groups, geographic locations, and time, but by offense as well. Conversely, control theory treats illegal behavior as a monolithic phenomenon, the likelihood of which is increased by weakened beliefs in the moral order. In sum, our indicators may provide a stronger test of social control theory than of differential association.

We factor-analyzed 13 potential indicators of definitions of the law, finding three dimensions, two of which appeared to reflect honesty and guilt components. Each of eleven indicators had reasonable face validity and loaded

on one of the two factors; we performed a confirmatory factor analysis on these, examining several specifications. We finally obtained a single-factor model with eight indicators that appeared to capture belief in the validity of moral rules, and to fit the data reasonably. The final model uses four indicators, which adequately represent the strata within the construct's domain of content. Two of the items, "Never telling a lie is a good thing to do" and "Never cheating is a good thing to do" reflect two popular fundamental moral virtues. (The latter was used by Wiatrowski et al., 1981.) A more direct indicator of attitudes toward the law, "Are you in favor of strict enforcement of laws," was included for its face validity, despite low reliability. Finally, from a control perspective, the operation of a conscience should indicate that conventional norms have been internalized (Hirschi, 1969:18-19). This is measured directly by the item, "My conscience punishes me when I do wrong."

Although Hirschi did not incorporate self-concept into his theory, other control theorists -- notably Reckless (1967) and his associates -- have argued that a positive self-concept acts as an insulator to delinquency. Within Hirschi's formulation of control theory,

there is reason to believe that a positive self-concept reflects strong bonds to society and should therefore reduce the likelihood of delinquency. Hirschi's (1969:141) control theory depicts delinquents as persons insensitive to others, socially inept, and unable to develop warm relationships with others; such persons are likely to have low self-esteem. In contrast, persons tied closely to the conventional order are characterized as maintaining positive, warm, and intimate ties to parents, peers, and teachers, enjoying and succeeding in school, and believing in society's rules; such persons should have high self-esteem. Thus, although self-concept is rooted in attachments to others, it should take on an autonomous force of its own in affecting delinquent behavior.

The data contain many indicators relevant to the self. We selected those items relevant to a control perspective, grouped them into three conceptual categories and using preliminary exploratory and confirmatory factor analyses, confirmed our hypothesis of three distinct dimensions: self-esteem, lack of attachment, and perceived scholastic ability. Several pertinent indicators of self-esteem drawn from the Rosenberg and Cobb indexes

loaded on a single dimension. From this model, we chose three highly reliable indicators that tap a component of self-esteem consistent with a control perspective: "Do you consider yourself a person of worth?" "Do you take a positive attitude toward yourself?" and "Do you do a good job as a person?"

A second dimension of self-concept, personal anomie, directly captures diminished attachments to all others. This represents a residual category of bonds to others and should be highly correlated with attachment to parents, peers, teachers, and school. Presumably, the more a person <u>feels</u> cut off from others, the more he perceives that no one wants him, and the more he believes no one cares about him, the weaker is his bond to society, and the freer he is to violate the law. The three indicators we use are "Do you ever feel like you are not a part of things?" "Do you ever feel that no one cares about you?" and "Do you ever feel unwanted?"

The third dimension of self-concept, perceived scholastic ability, was used by Hirschi (1969:117) in his discussion of attachment to school. He found that a large amount of objective ability was mediated by the item, "How do you rate yourself in school ability?" We

use an identical indicator, plus two others, "How intelligent do you feel?" and "How good a reader are you?"

Our measurement model of self-esteem, anomie, and belief is diagrammed in Figure 4.5. The model appears to fit the data reasonably for both wave one (chi-square=234 with 69 df ($p<.001$); AGFI=.97; CN=729) and wave two (chi-square=250 with 69 df ($p<.001$); AGFI=.95; CN=584).

Standardized parameter estimates are found in Tables 4.9 and 4.10. Each of the constructs representing a component of one's personality is fairly stable over time. Perceived scholastic ability in particular, is extremely stable. This is expected, since any change in perceived ability is tempered by an unchanging objective ability. The construct representing belief in the moral order is substantially correlated with delinquent behavior for both wave one (.39) and wave two (.32). It is also correlated nontrivially with the other three factors (Table 4.10).

Taken individually, the two indicators referring to cheating and lying are fairly reliable: the validity coefficients are substantial and the small error variance is almost serially independent (Table 4.9). The other

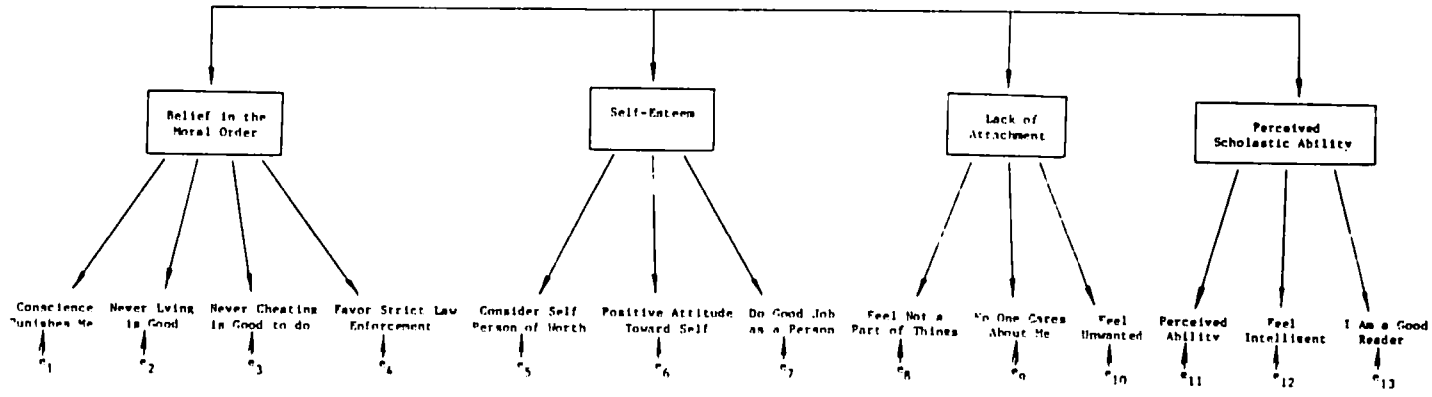

Figure 4.5 A Measurement Model of Belief, Self-Esteem, and Anomie

Table 4.9: Parameter Estimates for Measurement Models of Self-Esteem, Anomie, and Belief

Variable Description	Validity Coefficient		Intertemporal Correlation		Correlations With Delinquency Index	
	Wave 1	Wave 2	Variable	Error	Wave 1	Wave 2
A. Belief in the Moral Order	--	--	.613*	.000[f]	.386*	.315*
1. Conscience punishes me	.323*	.293*	.437	.347*	.213*	.147*
2. Never lying is good to do	.578*	.629*	.271*	.062*	.172*	.149*
3. Never cheating is good to do	.734*	.755*	.299*	-.032	.259*	.261*
4. Favor strict law enforcement	.214*	--	--	--	.233*	--
B. Self-Esteem	--	--	.616*	.000[f]	.116*	.050
5. Consider self person of worth	.611*	.608*	.310*	.070*	.062*	.029*
6. Positive attitude toward self	.591*	.579*	.272*	.076*	.073*	.003
7. Do a good job as a person	.537*	.638*	.306*	.088*	.070*	.054*
C. Lack of Attachment	--	--	.591*	.000[f]	-.229*	-.198*
8. Feel not a part of things	.485*	.556*	.318*	.127*	-.111*	-.091
9. Feel no one cares about me	.703*	.711*	.357*	.068*	-.188*	-.184*
10. Feel unwanted	.746*	.729*	.306*	-.001	-.145*	-.116*
D. Perceived Scholastic Ability	--	--	.878*	.000[f]	.109*	.100*
11. Ability compared to others	.842*	.803*	.569*	-.020	.093*	.061*
12. How intelligent you feel	.673*	.448*	.333*	.055*	.081*	.180*
13. How good a reader are you	.526*	.592*	.683*	.412*	.049*	.022

*Coefficient is at least twice its standard error.

Note: Underlined coefficients refer to latent variables; all others refer to observables.

[f]Indicates a fixed coefficient.

Table 4.10: Zero-order Correlations Among Factors for Self-Esteem, Anomie and Belief

	Moral Order	Esteem	Attachment	Scholastic Ability
Belief in the Moral Order	1.000	.373*	.220*	.224*
Self-Esteem	.287*	1.000	-.410*	.431*
Lack of Attachment	.219*	-.469*	1.000	-.205*
Perceived Scholastic Ability	.100*	.465*	-.113*	1.000

*Coefficient is twice its standard error.

Note: Correlations for the first wave appear above the diagonal, for the second wave, below the diagonal.

two indicators, included for theoretical reasons, are less reliable despite being individually correlated with delinquency. The conscience indicator, important from a social control standpoint, has a large error component that is substantially autocorrelated (.35). The item referring to law enforcement which is conceptually important for both control and differential association perspectives, nevertheless has a very low reliability: the underlying factor accounts for a mere 4 percent of its variance. Thus, some of the indicators of definitions of the law are volatile; overall, however, the construct appears reasonably valid.

Self-esteem works differently. The indicators have similar loadings (.55-.65) and have error components identically and trivially autocorrelated (Table 4.9). Furthermore, the self-esteem construct is distinct from, yet highly correlated with the other factors, indicating discriminant and criterion validity (Table 4.10). However, its correlations with delinquent behavior are trivial, and for wave two, statistically indistinguishable from zero. Thus, we appear to have a construct with good measurement properties, which taps a distinct component of personality -- if by personality we mean one's

attitudes, beliefs, and self-conceptions -- but a component that is unrelated to delinquent behavior. This finding is consistent with previous research on global self-concept and deviance (Schwartz and Stryker, 1970; Kaplan, 1975; 1980; Rosenberg and Rosenberg, 1978; Bynner et al., 1981; Wells and Rankin, 1983).

The construct representing lack of attachment shows small but nontrivial correlations with belief and perceived ability, and fairly large correlations (-.41 and -.47) with self-esteem (Table 4.10). It is also nontrivially correlated with delinquent behavior in both waves (Table 4.9). The indicators "No one cares" and "Feel unwanted", are both very reliable, with validity coefficients greater than .70. The item "Feel not a part of things" is less-reliable and has a slightly larger autocorrelation of errors. Thus, this construct is consistent with a control perspective, and has reasonable measurement properties.

Perceived scholastic ability is highly-correlated with self-esteem but minimally-correlated with belief and lack of attachment, and trivially -- albeit significantly -- correlated with delinquent behavior. Of the three indicators, the most direct measure, which was used by

Hirschi, "Ability compared to others", has very high validities and orthogonal measurement errors. In contrast to the ability and intelligence items, which refer to general scholastic ability, the reader item taps a specific skill. Thus, it is not surprising that it has a large degree of autocorrelation among measurement errors, probably due to an item-specific substantive component.

In sum, our measurement analysis of self-esteem, anomie, and belief yields mixed results. Our construct representing belief appears reasonably valid despite two unreliable indicators. On the other hand, self-esteem and perceived scholastic ability display well-behaved indicators, but perhaps for theoretical reasons, are not well-associated with delinquent behavior. Finally, lack of attachment appears reasonably valid and with reliable indicators.

Summary and Conclusions

As anticipated, this measurement analysis find substantial amounts of measurement error in most indicators of social control and differential association theories. The correlations of indicators with indicators of other constructs and with delinquent behavior are nontrivially

attenuated. When response errors are statistically controlled, however, most of these constructs show reasonable criterion and discriminant validity.

Specifically, by our criteria, the indicators of attachment to teachers, attachment to the school, and attachment to the church appear reasonably valid and reliable. On the other hand, attachment to parents and to peers show mixed measurement properties. Identification and communication with parents have acceptable reliability and criterion validity, but have sufficiently high correlations with each other to raise questions of discriminant validity. Parental supervision and attachment to peers show high reliability but inadequate criterion validity. While this could be due to weak indicators, it could also result from invalid theoretical specification. A more definitive examination of the latter possibility is given in the substantive analyses of the next chapter.

Of the constructs of commitment to conventional activities, achievement orientation and commitment to schoolwork are reliable and valid, while those of aspirations show low criterion validity, despite high reliability coefficients. Measures of involvement presented

difficulties. Unable to estimate a single involvement dimension, we resorted to specifying a two-indicator construct reflecting involvement in extra schoolwork, and three constructs containing a single indicator (assumed to be measured perfectly): homework, GPA, and working. With the exception of working, which is orthogonal to all other constructs, these indicators show marginal criterion validity.

Finally, belief in the moral order shows criterion and discriminant validity, despite two unreliable indicators. Also, lack of attachment is reasonably valid and reliable, but self-esteem and perceived scholastic ability have well-behaved indicators yet low criterion validity.

In sum, while some of our measurement specifications suggest weak indicators and others raise questions about social conttrol theory, most finds the indicators to have reasonable measurement properties. Thus, in a structural equation model of delinquency, these measures should provide a fairly strong test of social control theory.

NOTES

1. Our use of the terms "true" and "error" departs slightly from conventional use in classical measurement theory (cf. Lord and Novick, 1968). We do not have a perfectly valid criterion variable meeting the requirements of a true-score. Instead, our true component refers to the common variation among indicators of a theoretical construct. Accordingly, our error component refers to unique variation in an indicator orthogonal to the true component.

2. For example, the metric measurement slopes of a given construct, λ_{ij}, can only be identified relative to one another. Since our indicators are attitudinal items measured on Likert scales, they have no inherent metric; therefore metric slopes provide little information (see Bielby, 1982). Furthermore, while metric error variances, eijk, are invariant and may be useful to isolate measurement trends over time, we are more interested in the relative measurement properties of a construct's indicators.

3. The correlation between observable indicators of a construct measured at two points in time, X_{11} and X_{12} can be decomposed into the two variance components:

$$\rho_{X_{11}X_{11}} = P_{X_{11}} P_{X_{12}} \rho_{T_1T_2} + P_{X_{11}\varepsilon_1} P_{X_{12}\varepsilon_2} \rho_{\varepsilon_1\varepsilon_2}$$

The first component represents stability in the true score, while the second represents unreliability that remains constant between the two time points.

4. In some instances, we had an abundance of face-valid indicators of a single construct. We estimated preliminary confirmatory factor models on all of the indicators showing reasonable face validity, and on the basis of these estimates, selected measures using an item analysis. The criteria for selection were (1) the ability of a set of indicators to collectively represent each stratum of the construct's domain of content; (2) the magnitude of factor loadings or reliability coefficients; and (3) the absence of indicator contaminations causing correlated measurement errors or unwanted factor-indicator effects. When more than two indicators were available, we kept as many as four to adequately tap the

constructs domain of content. From a statistical standpoint, when full-information estimation is used, adding more well-behaved indicators increases the statistical power (and thus precision) to detect relationships involving the latent variable (see Matsueda and Bielby, 1983).

5. To estimate our models, we used pairwise-present covariance matrices. In models using two waves, we used the maximum amount of available information, rather than limiting the analysis to respondents who completed both waves. Some preliminary comparisons with matrices based on persons completing all four waves suggest only minor differences.

6. A definitive answer to this question requires an analysis of the statistical power of violated constraints (see Matsueda and Bielby, 1983). Some informal tests, however, reveal that the excluded parameters are neither substantively meaningful nor substantial in magnitude. Therefore, we did not carry out the power analysis. For a discussion of this issue and a presentation of indices of fit, see Bentler and Bonett, 1980).

7. This response set could build in within-wave error correlations among the three positive measures. However, the correlations that were detected were neither consistently significant nor persistent across waves.

8. Hirschi (1969) used grade-point average in his analysis of attachment to the school; however, we feel it is conceptually more appropriate as a behavioral indicator of commitment to conventional activities (see Krohn and Massey, 1980). The exploratory factor analysis found grade-point average loading on both aspirations and commitment to schoolwork, lending support to this specification. Although a model specifying grades as an indicator of these factors can be justified on substantive grounds, it is more informative and conceptually pure to specify it as a separate construct (cf. Wiatrowski et al., 1981).

9. This, combined with the finding of only one nontrivially autocorrelated error suggests the absence of a serious response set among our indicators of achievement orientation. Still, given the similarity of the items, a response set could conceivably work identically for all four indicators, building in measurement error

correlations that get pooled into the underlying factor.

10. Strictly speaking, the theoretical construct here is not a ratio; however it is a monotonic transformation of a ratio of definitions of the legal code. Moreover, it captures both favorable and unfavorable behavior patterns weighted by the four modalties, which is what Sutherland ([1942] 1973:22) intended to capture with his concept of ratio. (For more detailed discussion, see Matsueda, 1982.)

11. Specifically, he used "It is all right to get around the law if you can get away with it" and "To get ahead you have to do some things which are not right" to measure attitudes toward the law, and "I have a lot of respect for the Richmond Police" to measure attitudes toward conventional persons. As indicators of techniques of neutralization, he used "Most criminals shouldn't really be blamed for the things they have done" and "I can't seem to stay out of trouble no matter how hard I try" to measure denial of responsibility to indicate denial of injury he used "Most things that people call 'delinquency' don't really hurt anyone"; to measure denial of victim he used "Suckers deserve to be taken advantage of"; and to tap condemnation of the condemners, he used "Policemen try to give all kids an even break". In a reanalysis of these data, Matsueda (1982) found the first three indicators most reliable and found the item relieving criminals of blame to have undesirable measurement properties.

CHAPTER 5

ANALYSIS OF A CAUSAL MODEL OF SOCIAL CONTROL THEORY, DIFFERENTIAL ASSOCIATION THEORY, AND DELINQUENT BEHAVIOR

This chapter analyzes empirically social control and differential association theories of delinquent behavior. From the social-psychological model of social control and delinquency developed in Chapter 2, a causal model is constructed and translated into a system of structural equations. Competing hypotheses derived from the two theories are then tested empirically.

By estimating simultaneously a confirmatory factor model of all latent variables estimated in Chapter 4, a correlation matrix of all unobservables is obtained. Then, estimatiion of structural equation models of the unobservables, which have been corrected for attenuation due to unreliability (Bohrnstedt, 1969; Lord and Novick, 1968), provides parameter estimates with desireable statistical properties. This procedure overcomes loss of precision and biased estimates, which has plagued previous research.

Previous delinquency research, using cross-sectional data, has relied on untestable assumptions about the causal ordering of important variables. The causal order of delinquency and control theory's explanatory concepts, in particular, has been a crucial point of controversy (Hirschi, 1969; Matsueda, 1982). As noted in Chapter 1, for most empirical studies, theoretical concepts measured at one time point are used to predict a retrospective measure of delinquent acts committed in the previous year. But, assuming that causation moves forward in time (cf. Hirschi and Selvin, 1967), the causal order of these variables is incorrect. Moreover, unless both delinquent behavior and the explanatory concepts remain perfectly stable (stationary) over time, estimated effects of these models will be biased and inconsistent.

This analysis capitalizes on the longitudinal design of the Youth in Transition Project to present new evidence on the issue of causal order. Specifically, we will estimate models of social control in which delinquency at one time period is a linear function of variables measured in the previous time period.[1]

Specification of a Causal Model

Figure 5.1 presents a path diagram of the causal model of delinquent behavior. The variables are those latent constructs estimated in Chapter 4. The model is a fully-recursive system of equations. To make estimation tractable, it is assumed that variables within each block are not causally-related (cf. Wiatrowski et al., 1981; 1982). The following presentation of the model will focus on social control theory, discussing other theories -- including differential association, differential identification, and self-concept theories -- when they offer alternate interpretations or competing hypotheses.

Background Variables

The causal model specifies five background variables -- socioeconomic status, urbanicity, broken homes, academic ability, and high school dropout. These variables were included because of their pertinence for an individual-level analysis, their status in the empirical and theoretical literature on delinquency, and their obvious causal relevance to family and school contexts.[2]

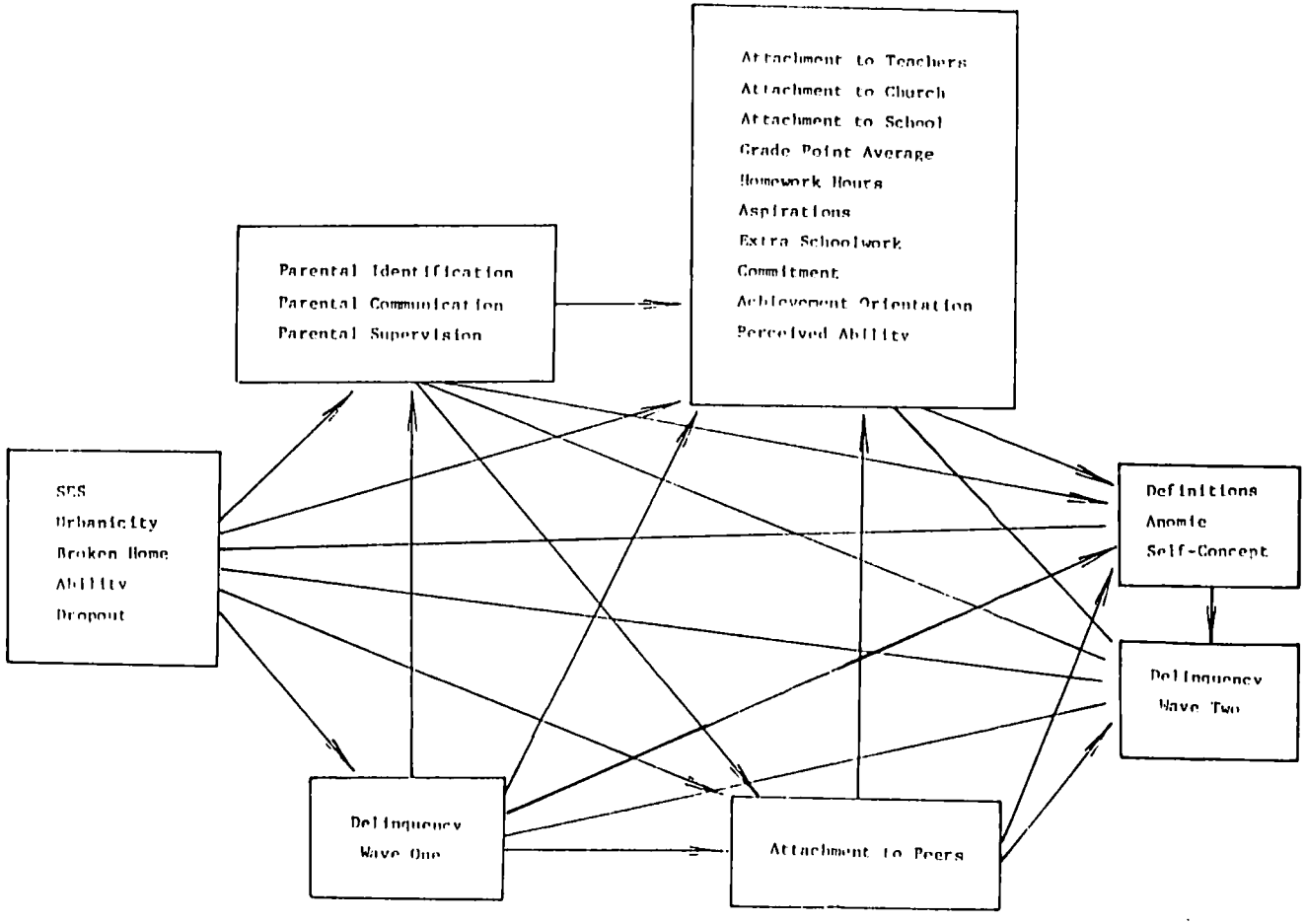

Figure 5.1 Path Diagram of a Causal Model of Social Control and Delinquency

Although Hirschi (1969) did not include socioeconomic status in his social control theory, in light of the discussion of social disorganization in Chapter 2, there is reason to suspect that, logically, it should have a total effect on delinquency mediated by the elements of the social bond. Thus, Kornhauser, (1978:104) argues:

> Since the quality of family relationships, the degree of school success, and the relevance of school to job future are in fact related both to SES and to delinquency, SES should also be related to delinquency. Many control theorists (e.g., Nye and Hirschi), forewarned by their data, do not posit a relation between SES and delinquency. But the logic of control theory and the evidence of known empirical relationships warrant a prediction of such an association.

Kornhauser's argument was persuasive. In a later statement of social control theory, Hirschi (1977:334) proposes that socioeconomic status is mediated by attachment:

> Low income and ethnic minority families are less able to control their children, for the variety of reasons [lack of attachment] mentioned earlier. In addition, such families are more likely to be disrupted and to live in neighborhoods where control is made difficult by the lack of support of the community at large.

By a similar argument, urbanicity should have indirect effects on delinquency mediated by the bond to society.

Hirschi (1969:242) also found little relationship between broken homes and his measure of self-reported delinquent acts, and therefore ascribed little theoretical weight to the variable. But again, given the logic of control theory, a broken or disrupted home should have direct effects on attachment to parents, and perhaps indirect effects on attachment to peers and commitment to school. The net result, then, would be a significant total effect on delinquent behavior mediated by elements of the bond.[3]

For social control theory, a person dropping out of high school will lose whatever commitment, attachment, and involvement he had in the school, and thus will be less constrained to conform to the law. Similarly, according to Hirschi (1969:113), "Academic competence is assumed to operate through attachment, commitment, involvement, and belief to produce delinquent acts." Presumably, the most important mediator is attachment to, commitment to, and involvement in the school (Hirschi, 1977:335-336).

From the voluminous literature on the relationship between social class and delinquency, it seems safe to conclude that social class is strongly and consistently

related to official measures of delinquency but weakly and inconsistently related to self-report measures (Hindelang, et al., 1979; 1981; Elliot and Ageton, 1980; Elliot, 1983; Braithwaite, 1981; Tittle et al., 1978). Moreover, Johnson (1979) and Matsueda (1982) found father's occupational status orthogonal to variables representing social control and delinquent behavior, while Wiatrowski et al. (1981) found SES, in the presence of social control variables, positively-related to delinquency. This last finding will be reassessed by using a more sophisticated analytic strategy to analyze the same Youth in Transition data. The measure of SES is a composite index consisting of equally-weighted measures of father's occupation, father's and mother's education, possessions in the home, number of books in the home, and numbers of rooms per person in the home. (See Bachman, 1970: 219-227 for a discussion of this measure.)

While some research finds that urban rates of delinquency are greater than rural rates, little research has attempted to account for this relation (Jensen and Rojeck, 1980). Using a measure of the size of the city or town in which the person lives, we will seek to isolate the mechanisms by which city size affects delin-

quency.

Paralleling the relationships of SES and delinquency, the broken home is highly correlated with official reports of delinquency (Chilton and Markle, 1972), it is not always associated with self-reported delinquency (Nye, 1958; Dentler and Monroe, 1961; Hirschi, 1969). Recently, Canter (1982) found significant effects of broken homes on self-reports of delinquent behavior in a national sample of youth. Matsueda (1982) found the slight positive effect of broken homes to be mediated by variables representing attachment and belief. This present analysis will subject this hypothesis to a new test, using a dummy variable for intact or disrupted homes.

Numerous studies document a negative relationship between intelligence and both official and self-reported delinquent behavior. After thoroughly reviewing this literature, Hirschi and Hindelang (1977) conclude that the non-spurious effect of intelligence on delinquency is mediated by a host of school variables. We will examine this hypothesis, using scores on the General Aptitude Test Battery for verbal and math ability, and reassess Wiatrowski et al.'s (1981) finding that this measure of

intelligence has a negative total effect which, in the presence of social control variables, becomes significantly positive.

Several studies reveal that enrollment in high school is an important factor in the genesis of delinquent behavior. In particular, Elliot (1966) and Elliot and Voss (1974) found that delinquent acts of future dropouts progressively increase when they are in school, and decline after they drop out. This varies somewhat by social status. Although they attributed this finding to frustration from structural strain, it is also consistent with a control perspective: Negative school experiences cause a student's bonds to weaken, leading to delinquency and dropping out; subsequently, new bonds form through marriage or a job, thereby reducing the likelihood of delinquency (Jensen and Rojek, 1980).

Previous Delinquent Behavior

As discussed earlier, social control theory and differential association theory both imply a dynamic relationship between delinquent behavior and the process of socialization. According to social control theory, the relevant process has four major phases: (1) a person's

bonds to conventional society are weakened; (2) he becomes free to engage in delinquency; (3) confronted with a situation of temptation, he breaks the law; (4) his delinquent act further alienates him from conventional society, causing his bonds to weaken even more. According to differential association on the other hand, the relevant process has three steps: (1) a person learns an excess of definitions favorable to law violaton; (2) confronted with a situation his learned behavior patterns define as appropriate for a delinquent act, he commits the act; (3) his delinquent behavior isolates him from associating with antidelinquent patterns, and brings him into closer contact with prodelinquent behavior patterns.

Empirically, the last two phases of the process postulated by control theorists imply that previous delinquent behavior should affect attachment, commitment, involvement, and belief. Moreover, these elements should intervene in the process by which previous delinquency brings about future delinquent acts. On this issue, prior research has found the effect of previous delinquent behavior to be unmediated by the elements of the social bond (Paternoster et al., 1983; Wiatrowski et al, 1982; Krohn et al, 1982). This finding will be

reassessed.

Parental Relationships

Current parental attachment is specified as a function of previous delinquency plus the background variables (Figure 5.1). As noted earlier, Hirschi located three dimensions of parental attachment -- identification with parents, communication with parents, and parental supervision -- and found each to have substantial effects on delinquent behavior (see also, Nye, 1958; Hindelang, 1973; Canter, 1982). Conversely, Krohn and Massey (1980), Krohn et al. (1982), and Paternoster et al. (1983) found the effect of attachment to parents to be mediated by other elements of the social bond. This is an important issue, since for social control theory, parental attachment represents perhaps the most important element of the bond.

Differential association theory posits that within relationships that are warm, intimate, and emotional, effective (heavily-weighted) definitions of delinquency are transmitted from parent to child. Presumably, on the average, more of these definitions are antidelinquent than prodelinquent. Thus, persons who identify and com-

municate openly with their parents, are less likely to receive an excess of delinquent definitions, and consequently, are less likely to violate the law (Sutherland and Cressey, 1978:219-224). Glaser's (1956) differential identification, in contrast, argues that identifying with parents should reduce the likelihood of delinquency both directly, and indirectly by modifying a person's definitions of the law.

Parental relationships, particularly supervision, also work indirectly to modify a person's definitions by influencing the kinds of persons he befriends and the kinds of experiences he has in school. For example, Matsueda (1982) and Paternoster et al. (1983) found that the process of learning definitions of the law mediated attachment to parents, while Jensen (1972), Krohn and Massey (1980), Krohn et al. (1982), and Wiatrowski, et al. (1981) did not. Using constructs representing identification with parents, communication with parents, and parental supervision -- all corrected for attenuation due to measurement error -- we will reassess this evidence.

Peer Relationships

Hirschi (1969) maintained that peer processes influ-

enced delinquent behavior through attachment: the more intimate a boy's relationships with his peers, the less likely he will break the law. Moreover, he argued that attachment to peers should reduce the likelihood of delinquency regardless of the values, beliefs, and behavior of the boy or his peers.[4] While Hirschi (1969) found a negative effect of attachment to peers on delinquency, Hindelang's (1973) replication found a positive relation, contrary to the control perspective (see also Paternoster et al., 1983).

Differential association theory argues that more intimate peer relationships transmit behavior patterns that are more heavily weighted by the modality, "intensity." Therefore, attachment to peers should affect delinquency by modifying a person's ratio of definitions of the law. The specific direction of the effect, however, is contingent on the direction of patterns transmitted -- whether for or against delinquency (Matsueda, 1982). On this point, Krohn and Massey (1980) and Krohn, et al. (1982) found that attachment to peers had a small unmediated positive effect on delinquency, while Matsueda (1982) found a slight negative effect mediated by definitions of the law, and Wiatrowski, et al. (1981) and

Paternoster, et al. (1983) found no relationship whatsoever.

Attachment to peers is here specified as a linear function of the background factors, previous delinquency, and attachment to parents (Figure 5.1). This specification allows us to examine the extent to which school experiences and beliefs intervene in the process by which attachment to peers affects delinquent behavior.

School Experienes

Paralleling attachment to parents and peers, attachments to teachers, who represent important conventional authority-figures, contain a moral element that reduces the likelihood of delinquency. As we argued in Chapter 4, when conceptualized in terms of Mead's (1934) theory of social control, attachment to school (a significant generalized other) should constrain a person from delinquency. Similarly, attachment to church, which is a significant conventional institution, and indeed, has the sole purpose of inculcating on its members a set of conventional moral beliefs, should reduce the likelihood of delinquent behavior.

According to social control theory, persons who invest time, energy, and other resources in a conventional line of action are less likely than others to violate the law because they fear losing their investment. For adolescents, the educational institution provides the principal arena for developing commitments to conventional activities. Hirschi specified that persons with greater achievement orientation, with higher occupational and educational aspirations, and who consequently spend more time getting ahead in school are more committed to conventional activities, and therefore, are less likely to violate the law. As discussed in Chapter 4, in the face of negative evidence in his data, Hirschi rejected his original involvement hypothesis, in which engrossment in conventional activities was said to prevent persons from having time to even contemplate delinquency. He concluded that only activities involving commitment were efficacious in delinquency causation.

Previous research on the school has generally found attachment and commitment to be important predictors of delinquent behavior. Thus, Hirschi (1969), Hindelang (1973), Elliot and Voss (1974) and Wiatrowski et al. (1982) found that average grades, commitment to conven-

tional activities, and attachment to school all reduce the incidence of delinquency. Waitrowski et al., in particular, simultaneously controlled for these and other elements of the bond, finding significant effects for each. On the other hand, Gottfredson (1982) found commitment and attachment mediated by negative peer influence and Paternoster et al. (1983) found that informal sanctions mediated the impact of stakes in conformity but not grades.

Sutherland and Cressey (1978:248) specify four processes by which the school affects students' delinquency. Of these, perhaps the most important is the process of providing pleasant or unpleasant experiences that affect the child's associations with delinquent and antidelinquent behavior patterns. Students lacking the requisite social skills and attitudes toward teachers, students, and scholarship, enter school at a disadvantage, become isolated from other students, become alienated from school, and perhaps become truants or dropouts. Unless these persons are integrated into conventional (antidelinquent) families or peer groups, they are prime candidates for learning delinquent definitions (Sutherland and Cressey, 1978:249). Therefore, variables

representing attachment and commitment to school should affect delinquency by influencing persons' definitions of the legal code.

With regard to this issue, Johnson (1979) found that attachment to school, grades, and aspirations affected delinquency only indirectly through delinquent values and peers, while Wiatrowski, et al. (1981) found grades, involvement, commitment, and attachment to school to have effects on delinquency unmediated by belief in the moral order.

This analysis will test the above hypotheses using the latent variables estimated in Chapter 4. As depicted in Figure 5.1, the variables representing school processes are specified as linearly-determined by the background factors, previous delinquency, and attachment to parents and peers. Furthermore, these school-related variables are allowed to affect delinquency both directly and indirectly through belief and self-concept. The school variables include attachment to teachers, church, and school, and several dimensions of commitment to conventional activities: grade-point average, hours spent on homework, occupational and educational aspirations and plans, extra schoolwork engaged in, commitment to

schoolwork, and achievement orientation. Following Krohn and Massey (1980), average grades are conceptualized as a behavioral component of commitments, and not, as Hirschi specified, as an indicator of attachment. Finally, although Hirschi included perceived scholastic ability in his discussion of attachment, we view it as a component of one's self, and thus an additional element of the social bond. This allows a test of Hirschi's (1969) hypothesis that perceived ability, along with other elements of the bond mediate the impact of intellectual ability on delinquent behavior.

Definitions of the Law, Self-Concept, and Anomie

The model considers three latent constructs that directly affect future delinquency and that are linear functions of the background variables, previous delinquent acts, parental and peer relationships, and school experiences. Specifically, they are definitions of the legal code, self-esteem, and personal feelings of anomie. We assume that these variables are not causally related.

For differential association theory, a person's ratio of delinquent to antidelinquent definitions should reduce his delinquent behavior, and should intervene in

the process by which other factors produce delinquency. These other factors, including social class, family, peer, and school processes -- as important components of differential social organization -- provide contexts for the differential learning of delinquent and antidelinquent definitions. In contrast, social control theory treats learned antidelinquent definitions of delinquency as belief in the moral order, and stipulates that while they intervene in the effects of various background variables on delinquency, they do not mediate attachment, commitment, and involvement.

The second construct investigated is self-esteem, an important component of self-concept. A number of researchers argue that having a positive self-esteem reduces the likelihood of delinquent behavior (Kaplan, 1975; 1980; Jensen, 1973; Hall, 1966; Reckless et al., 1956, 1957d, 1957b; Dinitz et al., 1962). Reckless and his associates, in particular, specify self-concept as an important component of control theory, and argue that having a positive self-concept "insulates" one from the temptations of delinquency. Recently, several studies using the YIT data found that in the presence of other pertinent variables, self-esteem has little impact on

delinquent behavior (Bynner et al., 1981; Wells and Rankin, 1983). We will reassess these findings and assesss the degree to which self-esteem mediates the effects of other constructs.

We also investigate a third construct, lack of attachment or "episodic anomie" (Matza, 1964). This concept taps, in a direct way, the extent to which a person feels he is not attached to other persons. Thus, we hypothesize that it may capture residual amounts of disaffiliation not picked up by our other measures of attachment. This variable may mediate the effects of other dimensions of attachment, and other elements of the bond as well.

Delinquent Behavior

Delinquent behavior measured at one time point is specified as a linear function of delinquent behavior of the previous time point (Figure 5.1). This provides a measure of stability or change in delinquency, while holding constant other variables. Moreover, this specification provides a test of the extent to which the substantive explanatory variables mediate the effect of prior delinquency on future delinquency. The measure of

delinquent behavior is the 26-item unweighted composite.[5] (See Bachman, 1980, for descriptions and frequency distributions of all observable variables.)

Estimating and Testing the Causal Model of Social Control and Delinquency

Two models of social control and delinquency were estimated: One predicts wave two delinquency with wave one explanatory variables; the other predicts wave three delinquency with wave two variables. Ideally, it would be more desireable to estimate a cross-lagged regression model over the three time points (cf. Kessler and Greenberg, 1981). Then, one could potentially examine the causal ordering of all variables. The complexity of the models models considered here, however, made it unwise to estimate all theoretical variables over time. Not only would our budget be exceeded, but the analysis would also be overly cumbersome. One alternative is to analyze a subset of theoretically-significant constructs arrayed through time. This alternative was rejected, however, because it was felt that a logically prior step is to estimate simultaneously all effects on delinquency to determine which are worth pursuing further. Thus, the issue of causal order among explanatory variables is

secondary to the issue of causal ordering of delinquent behavior and its explanatory variables.

To correct for unreliability due to measurement error, confirmatory factor models of all unobservables were simultaneously estimated. The size and complexity of these models (55 observables, 22 factors, and 339 parameters for wave one alone) made estimation within our budget prohibitive. Therefore, we resorted to a three-step procedure to obtain a correlation matrix of all pertinent unobservable constructs. First, we split the social control variables into two groups -- one consisting of parental, peer, and belief variables, the other consisting of school variables -- and estimated separate confirmatory factor models with all relevant parameters freed. These models achieved acceptable fits to the data.[6]

In a full model combining these two sets of variables, we fixed all of these parameters to their estimated values, and estimated the cross-correlations of unobservable factors across the two groups of variables. We fixed these parameters to reduce the number of coefficients LISREL had to estimate, and thereby reduced the time (and cost) it took for the program to converge to a

maximum likelihood solution. These models also achieved resonable fits. For wave one, the chi-square was 2215.86 with 1205 degrees of freedom ($p<.001$; AGFI=.937; CN=782); for wave two, the chi-square was 2236.42 with 1155 df ($p<.001$; AGFI=.933; CN=745).[7] Third, within the two submodels, we estimated correlations of the background variables with the social control variables.[8]

After obtaining the correlation matrix of unobservable constructs, we again used the LISREL program to estimate a recursive structural-equation model of our latent constructs. We are primarily interested in three issues: (1) whether the constructs representing the elements of the social bond have independent and significant effects on delinquency, as Hirschi claims; (2) whether effects of causally-prior sets of variables, diagrammed in Figure 5.1, such as school, family, and peers are mediated by causally-subsequent variables; and (3) whether, as differential association theory predicts, definitions of the legal code mediate the effects on delinquency of all causally-prior variables. Therefore, we estimate structural- and reduced-form equations of future delinquency and definitions of the law only. We use a single equation model, in which the correlations among

explanatory variables are, with the exception of belief, left unanalyzed. Two sets of models were estimated: one that includes previous delinquency as a control variable, and a second that omits this variable. (For a similar strategy, see Wiatrowski et al., 1982.)

Table 5.1 presents a correlation matrix of unobservable latent constructs. With the exception of attachment to peers, all variables are correlated with delinquency in the direction predicted by social control theory. The negative correlation of attachment to peers and delinquency is consistent with the findings of several previous studies (Hindelang, 1973; Erickson and Empey, 1965; Stanfield, 1966; Paternoster, et al., 1983). The largest

Table 5.1 Zero-Order Correlations Among Unobservables of Wave One (N=1347).

	DELINQ2	SES	ABILITY	DROPOUT2	URBAN	BROKHOME	IDENTIFY	SUPER	COMMUNIC	PEERS
DELINQ2	1.0000									
SES	-0.0070	1.0000								
ABILITY	-0.0720	0.3580	1.0000							
DROPOUT2	0.1350	-0.1250	-0.1470	1.0000						
URBAN	0.0080	0.2400	0.1020	-0.0100	1.0000					
BROKHOME	0.0610	-0.0680	-0.0100	0.0100	0.0270	1.0000				
IDENTIFY	0.2698	-0.0329	0.1037	0.0122	0.0421	0.1399	1.0000			
SUPER	0.0747	0.0463	0.0436	-0.0310	0.0080	0.0416	0.1795	1.0000		
COMMUNIC	0.2040	-0.1639	-0.1129	0.0711	-0.0024	-0.0023	0.7595	0.0092	1.0000	
PEERS	-0.0544	-0.0848	-0.0693	0.0412	0.0814	0.0667	0.2195	0.0716	0.2212	1.0000
ACHIEVE	0.2027	-0.1699	-0.2222	0.0851	-0.0473	-0.0357	0.2778	-0.0042	0.2911	0.1641
COMMIT	0.2936	-0.1306	-0.1880	0.1088	-0.0702	-0.0100	0.2597	0.1007	0.2484	0.1365
EXTRA	0.1903	-0.1819	-0.1381	0.0348	-0.0152	0.0142	0.4258	0.2238	0.2903	0.1625
ATTSCHOL	0.2443	-0.0580	-0.0589	0.0647	-0.0369	0.0345	0.4632	0.1118	0.3950	0.1913
TEACHERS	0.1428	-0.1855	-0.0721	0.0358	0.0379	0.0760	0.4594	0.2057	0.4090	0.2355
CHURCH	0.1947	-0.1215	-0.1812	0.1206	0.0356	-0.0172	0.3600	0.1027	0.3380	0.2479
ASPIRE	-0.0924	0.4446	0.5070	-0.1098	0.3029	-0.0030	-0.0255	0.0013	-0.1556	-0.1353
GRADES	-0.1926	0.2390	0.5420	-0.1320	0.0170	-0.0170	-0.0477	-0.0218	-0.1817	-0.0974
HOMEWORK	-0.1478	0.0500	0.0730	-0.0280	-0.0410	-0.0240	-0.0989	-0.0336	-0.0929	-0.0270
PABILITY	0.0974	-0.4217	-0.6418	0.0980	-0.1242	0.0082	0.0050	0.0051	0.1618	0.1069
ESTEEM	0.1371	-0.1445	-0.2654	0.0263	-0.0552	0.0491	0.2838	-0.0013	0.3742	0.1777
ATTACH	-0.1477	0.0847	0.1049	-0.0185	0.0637	0.0032	-0.4067	0.0666	-0.4024	0.0033
BELIEF	0.3410	-0.0788	-0.1749	0.0521	0.0792	-0.0198	0.4003	0.0963	0.3204	0.1944

	ACHIEVE	COMMIT	EXTRA	ATTSCHOL	TEACHERS	CHURCH	ASPIRE	GRADES	HOMEWORK	PABILITY
ACHIEVE	1.0000									
COMMIT	0.2629	1.0000								
EXTRA	0.4325	0.4007	1.0000							
ATTSCHOL	0.5134	0.3575	0.6240	1.0000						
TEACHERS	0.2424	0.3744	0.8298	0.4802	1.0000					
CHURCH	0.6941	0.2282	0.3921	0.4106	0.3049	1.0000				
ASPIRE	-0.3058	-0.2069	-0.3274	-0.2015	-0.2091	-0.2002	1.0000			
GRADES	-0.2593	-0.4873	-0.2467	-0.2134	-0.2544	-0.2597	0.4805	1.0000		
HOMEWORK	-0.1375	-0.3473	-0.2121	-0.1768	-0.1875	-0.1623	0.0971	0.1613	1.0000	
PABILITY	0.2875	0.4170	0.3887	0.2074	0.3041	0.2326	-0.5773	-0.6219	-0.1128	1.0000
ESTEEM	0.3664	0.3134	0.4833	0.4281	0.3314	0.3750	-0.2392	-0.2557	-0.1312	0.4554
ATTACH	-0.2402	-0.2895	-0.2635	-0.3661	-0.3418	-0.2064	0.1503	0.1409	0.0368	-0.1878
BELIEF	0.7523	0.2260	0.3937	0.4977	0.2799	0.7813	-0.1789	-0.2184	-0.1704	0.1780

	ESTEEM	ATTACH	BELIEF
ESTEEM	1.0000		
ATTACH	-0.4574	1.0000	
BELIEF	0.3323	-0.2472	1.0000

correlations with delinquent behavior are previous delinquency, belief, commitment to schoolwork, identification with parents, and attachments to school, church, and teachers. These findings appear to provide strong evidence in favor of social control theory: at least one variable from every element of the social bond is highly-related to delinquent behavior. Indeed, had we stopped here after considering just the bivariate relationships, or just small subsets of multivariate relations, as much research supporting control theory has done (Hirschi, 1969; Hindelang, 1973; Jensen, 1972; Rankin, 1976), we would have concluded that the theory was overwhelmingly supported. A more rigorous examination of the theory would consider complex relationships among all relevant variables.

Standardized parameter estimates for wave one's substantive equations in their reduced, semi-reduced, and structural forms predicting belief appear in Table 5.2, and predicting delinquency appear in Table 5.3. Of the background variables influencing belief, intellectual ability and urbanicity have statistically-significant effects (line 1 of Table 5.2). The reduced-form R-squared of .043 is increased substantially, to .254, when

Table 5.2: Standardized Parameter Estimates Predicting Belief: Wave One (N=1374).

	SES	Ability	Dropout 2	Urban	Brokhome	Delinql	Identify	Super	Commun	Peers
1.	-.044	-.167*	.023	.108*	-.027					
	(.029)	(.029)	(.027)	(.027)	(.027)					
2.	-.058	-.145*	-.054*	.082*	-.040	.467*				
	(.026)	(.025)	(.024)	(.024)	(.024)	(.024)				
3.	-.034	-.194*	-.039	.076*	-.080*	.347*	.310*	.012	-.027	
	(.025)	(.025)	(.023)	(.023)	(.023)	(.025)	(.041)	(.023)	(.038)	
4.	-.027	-.186*	-.042	.065*	-.084*	.356*	.292*	.005	-.038	.113*
	(.025)	(.025)	(.023)	(.023)	(.023)	(.025)	(.040)	(.023)	(.038)	(.023)
5.	-.004	-.101*	-.065*	.062*	-.033*	.187*	.141*	.016	-.106*	.003
	(.016)	(.019)	(.014)	(.015)	(.014)	(.016)	(.026)	(.014)	(.025)	(.015)

*Coefficient is at least twice its standard error.

Note: Standard errors appear in parentheses.

Achieve	Commit	Extra	Attschol	Teacher	Church	Aspire	Grades	Homework	Pability	R^2
										.043
										.254
										.321
										.334
.371* (.021)	-.034 (.018)	-.097 (.033)	.101 (.020)	.032 (.029)	.443* (.020)	.014 (.020)	.020 (.020)	-.034* (.014)	-.046* (.022)	.762

Table 5.3: Standardized Parameter Estimates Predicting Delinquency: Wave One (N=1374)

	SES	Ability	Dropout2	Urban	Brokhome	Delinql	Identify	Super	Commun	Peers
1.	.035	-.066*	.129*	.006	.061*					
	(.030)	(.029)	(.027)	(.028)	(.027)					
2.	.019	-.039	.036	-.026	.046*	.566*				
	(.024)	(.024)	(.023)	(.023)	(.022)	(.022)				
3.	.028	-.038	.036	-.027	.045	.547*	.011	.009	.057	
	(.025)	(.025)	(.023)	(.023)	(.023)	(.025)	(.040)	(.023)	(.037)	
4.	.022	-.045	.039	-.017	.049*	.539*	.026	.014	.067	-.099*
	(.025)	(.025)	(.023)	(.023)	(.023)	(.025)	(.040)	(.023)	(.037)	(.023)
5.	.011	-.006	.030	-.008	.063*	.519*	.001	.013	.097*	-.094*
	(.026)	(.031)	(.022)	(.024)	(.023)	(.026)	(.042)	(.023)	(.040)	(.023)
6.	.011	-.008	.030	-.007	.060*	.518*	.012	.011	.090*	-.099*
	(.026)	(.031)	(.022)	(.024)	(.023)	(.026)	(.045)	(.023)	(.042)	(.025)
7.	.013	.018	.046*	-.024	.069	.470*	-.025	.006	.119*	-.100*
	(.026)	(.031)	(.022)	(.024)	(.023)	(.027)	(.045)	(.023)	(.042)	(.024)

*Coefficient is twice its standard error.

Note: Standard errors appear in parentheses.

Achieve	Commit	Extra	Attschol	Teacher	Church	Aspire	Grades	Homework	Pability	Esteem	Attach	Belief	R^2
													.026
													.335
													.339
													.348
-.025 (.034)	.136* (.029)	.108* (.053)	-.006 (.032)	-.171* (.046)	.007 (.032)	.005 (.031)	-.054 (.032)	-.045 (.023)	-.034 (.036)				.376
-.022 (.035)	.140* (.029)	.085 (.061)	-.001 (.032)	-.153* (.052)	.005 (.033)	-.000 (.032)	-.052 (.033)	-.043 (.024)	-.037 (.037)	.017 (.032)	.023 (.030)		.377
-.118* (.038)	.149* (.029)	.112 (.061)	-.027 (.032)	-.162* (.051)	-.109* (.037)	-.003 (.032)	-.057 (.032)	-.034 (.023)	-.024 (.037)	.013 (.032)	.024 (.029)	.258* (.044)	.392

previous delinquency is added to the model (line 2). As expected, persons who have engaged in more delinquent acts in the past three years have weaker conventional beliefs. The small positive effect of dropout on belief is entirely mediated by prior delinquency; thus, persons who drop out of high school commit more delinquent acts, which, in turn reduces their belief in the conventional social order and (for differential association) increases their belief in conventional rules. Prior delinquency also mediates modest amounts of other background factors (compare lines 1 and 2).[9]

Of the three dimensions of attachment to parents, parental identification significantly increases one's antidelinquent definitions and reduces his prodelinquent patterns, while supervision and intimacy of communication have effectively zero impact (line 3). Jointly, the parental attachment variables mediate substantial amounts of ability, broken homes, and prior delinquency. Thus, less-intelligent persons, persons from broken homes, and persons who have committed more delinquency acts, all become less-attached to their parents, and consequently learn more delinquent definitions. With the addition of parental attachment, the model accounts for almost one-

third of the variance in belief; adding attachment to peers increases this only marginally (line 4). Moreover, although attachment to peers increases persons' delinquent definitions significantly, this effect is modest and does not substantially mediate other effects. Adding the ten school variables to the model, however, increases the explained variance to over 75 percent. Two variables, achievement orientation and attachment to church, have by far the largest direct effects on belief in the law (line 5). Extra homework, attachment to school, and perceived scholastic ability also have nontrivial effects. Thus, not surprisingly, persons more attached to the church, more achievement oriented, more attached to the school, and more willing to do extra schoolwork, have greater belief in the moral validity of legal rules. Furthermore, these school variables collectively intervene substantially in the effects on delinquency of intellectual ability, broken homes, prior delinquent behavior, and identification with parents. Finally, in the structural form, dropouts, broken homes, and identification with parents still maintain statistically-signficant (unmediated) effects on belief (line 6).

Thus, the model predicting definitions of delinquent

behavior (belief) is entirely in line with predictions from both social control and differential association theories. These predictions account for a remarkably large proportion of variance in the construct underlying definitions of the law. We now turn to our model of delinquent behavior.

The reduced-form equation finds socioeconomic status and urbanicity to have trivial and statistically insignificant total effects on delinquent behavior (line 1 of Table 5.3). High school dropout has a nontrivial effect, while intellectual ability and broken homes show small but statistically-significant effects. The reduced-form explains less than three percent of the variation in delinquent behavior. Adding delinquent behavior committed in the three years prior to wave one increases the R-squared to over one-third (line 2). The total effect of prior delinquency is very large -- over ten times the magnitude of other coefficients in the equation. Moreover, it intervenes in the effects of intellectual ability and dropping out of school.

Adding the three parental attachment variables does not increase the explained variance, and does not yield any significant effects (line 3). Thus, contrary to

social control theory, attachment to parents, in the presence of previous delinquent behavior and the background variables, does not reduce the likelihood of delinquency. This finding is devastating for control theory: attachment to parents should represent one of the most important elements of the bond to society. And with the exception of parental supervision, our measurement models of these constructs used indicators that are both conceptually and empirically strong.

Attachment to peers has a nontrivial total effect on delinquent behavior that is statistically-distinguishable from zero; however the effect is opposite in sign to that predicted by control theory. Thus we find that the more attached a person is to his friends, the more likely he is to engage in delinquent behavior. This is an important finding, for Hirschi (1969:145-152; 1977) made much of his finding to the contrary, arguing that because attachment to peers reduced delinquent behavior, his social control theory was supported over cultural deviance perspectives.

Adding the school variables into the equation increases the R-squared to .38 (line 5). Of these variables, attachment to teachers has the largest effect

(-.17); however the sign of the effect is exactly opposite to that predicted by social control theory. Thus, we find that persons more closely attached to their teachers tend to commit more delinquent acts -- implausible from a control perspective. Commitment to schoolwork and willingness to engage in extra homework, on the other hand, have statistically significant effects in the direction predicted by control theory.[10] The total effects of the remaining seven variables cannot, at conventional levels of significance, be distinguished from zero. Of these, achievement orientation, attachment to school, aspirations, and perceived scholastic ability have effects opposite in sign to that specified by control theory.

These results seriously question social control theory. We cannot attribute them to measurement artifacts, since our measurement models of achievement, attachment to school, and perceived ability were among the strongest both conceptually and empirically. Indeed, if we must raise questions of adequate measurement, they would be concerned with commitment to schoolwork and extra schoolwork -- the two variables whose total effects are consistent with control theory.

Collectively, the school variables mediate modest amounts of ability, parental identification, and communication with parents. For this last variable, a net negative effect through school processes increases the direct effect, which is now statistically significant.

Neither self-esteem nor lack of attachment have significant impact on delinquent behavior (line 6). Nor do they intervene in the effects of any causally-prior variables. Belief, however, has a relatively large (.26) effect that is statistically distinguishable from zero (line 7). Moreover, as both control theory and differential association specify, the less a person believes in conventional rules, the more likely he is to engage in delinquency. Furthermore, consistent with differential association theory, prior delinquency, achievement orientation, and attachment to the church have nontrivial indirect effects on delinquency through belief. Thus, persons who have committed fewer delinquent acts in the previous three years, who are more achievement-oriented, and who are more attached to the church, have greater beliefs in conventional rules, and consequently, commit fewer delinquent acts.

On the other hand, several variables still maintain significant effects on delinquency. By far, the largest direct effect on a person's delinquent behavior is his previous delinquency (.47). Thus, contrary to control and differential association theories, neither elements of the social bond, nor definitions of the legal code substantially intervene in the 18-month lagged effect of delinquent behavior. While both dropouts and broken homes have effects on delinquency that are statistically significant, they are substantively small in magnitude.

Communication with parents and commitment to school also have unmediated effects on delinquency that are both nontrivial in size and statistically distinguishable from zero. Even so, the two effects are dwarfed by the effect of belief (.12 and .15 versus .26). These are the only estimates that favor control theory over differential association. All of the other 13 point estimates contradict social control theory. Only four of these are statistically significant, and all four are, for control theory, significant in the wrong direction. Thus, using our unidirectional point-interval tests, we cannot reject the null hypothesis of no effect.

These hypotheses can be formally tested by nesting the constrained model within the less-constrained alternative. The likelihood ratio chi-square test (presented in Table 5.4), provides a joint test of individual coefficients. This test finds that the variables representing social control theory fail to mediate the joint effects of background factors and previous delinquency (line 1), as well as the background varibles alone (line 2). Furthermore, contrary to differential association theory, the definitions construct fails to mediate the effects on delinquency of all prior variables of the model (line 4).[11] But, since previous delinquency obviously has a very large direct effect on current delinquency, it could be solely responsible for the significant joint test. Therefore, we also tested the hypothesis that definitions mediate: (1) all variables but prior delinquency (line 5); and (2) only social control variables (line 6). The first hypothesis is disconfirmed: definitions of delinquency fail to mediate the joint effects of causally-prior variables.[12] The second hypothesis, however is not rejected (p=.003). Thus definitions of delinquency mediate the effects of social control variables taken alone.

Table 5.4: Likelihood-Ratio Chi-Square Tests of the Mediation by Belief Hypothesis: Wave One

	Chi-Square	df	p
1. Social Control Variables Mediate Background Variables and Prior Delinquency	317.65	6	<.001
2. Social Control Variables Mediate Background Variables	14.43	5	.013
3. Excluding Delinquency, Social Control Variables Mediate Background Variables	31.01	5	<.001
4. Belief Mediates all 22 Constructs	441.33	22	<.001
5. Belief Mediates Background Factors and Social Control Variables	48.27	21	<.001
6. Belief Mediates Social Control Variables	36.55	16	.003
7. Excluding Prior Delinquency, Belief Mediates All 21 Constructs	123.50	21	<.001
8. Excluding Prior Delinquency, Belief Mediates Social Control Variables	90.95	16	<.001

Thus, our wave one model supports differential association theory over social control theory. The definitions construct is substantially-related to delinquency. The finding that only two of 16 control theory variables are statistically distinguishable from zero, and that both of these are much smaller than the effect of defintions, contradicts the hypothesis derived from control theory that all constructs should have independent additive effects on delinquent behavior.

We also analyzed a model predicting wave three delinquency from wave two variables. Where wave one boys were entering the tenth grade, by wave three, most boys were preparing to graduate from high school. Two differences between the two models are worth noting. First, the length of lag between waves was 18 months for the first model; here it is 12 months. Second, the wave two measure of belief lacks the face-valid indicator referring to "strict enforcement of laws."[13]

Table 5.5 presents the correlation matrix for the unobservables of the second wave. Again, with the exception of attachment to peers, all variables are correlated with delinquency in the direction predicted by social control theory. The variables with the largest

correlations with

Table 5.5 Zero-Order Correlations Among Unobservables for Wave Two

	DELINQ3	SES	ABILITY	DROPOUT3	URBAN	BROKHOME	IDENTIFY	SUPER	COMMUNIC	PEERS
DELINQ3	1.0000									
SES	-0.0035	1.0000								
ABILITY	-0.0569	0.3569	1.0000							
DROPOUT3	0.1495	-0.1457	-0.1892	1.0000						
URBAN	0.0080	0.2391	0.1015	0.0010	1.0000					
BROKHOME	0.0624	-0.0674	-0.0101	-0.0124	0.0267	1.0000				
IDENTIFY	0.2210	0.0045	0.1013	0.0793	0.0711	0.1795	1.0000			
SUPER	0.1369	0.0064	0.0137	0.0895	-0.0141	0.0672	0.2481	1.0000		
COMMUNIC	0.1370	-0.1681	-0.1702	0.0742	-0.0492	-0.0508	0.7738	0.0751	1.0000	
PEERS	-0.1076	0.0055	-0.0103	0.0106	0.0653	-0.0012	0.3855	0.0100	0.1783	1.0000
ACHIEVE	0.1648	-0.0131	-0.1025	0.0327	-0.0683	-0.0409	0.3636	0.0818	0.2841	0.2342
COMMIT	0.3784	-0.0410	-0.1596	0.0742	-0.0243	0.0144	0.2607	0.1469	0.1378	0.0754
EXTRA	0.3162	-0.0913	-0.1069	0.1067	-0.0404	0.0559	0.4677	0.2304	0.3280	0.1932
ATTSCHOL	0.2839	-0.0033	-0.0472	0.1254	-0.0255	0.0407	0.5005	0.1243	0.3599	0.2267
TEACHERS	0.1727	-0.1596	-0.1110	0.1170	-0.0118	0.0944	0.4963	0.2171	0.3909	0.2440
CHURCH	0.1886	0.0235	-0.0808	0.0878	0.0600	0.0040	0.4233	0.1898	0.2524	0.1700
ASPIRE	-0.1677	0.4387	0.5470	-0.2359	0.2930	-0.0132	0.0128	-0.0369	-0.2181	-0.0741
GRADES	-0.1885	0.2363	0.4975	-0.1063	-0.0177	-0.0229	-0.0795	-0.0372	-0.1708	-0.0624
HOMEWORK	-0.1534	0.1009	0.0794	-0.0776	-0.0086	-0.0102	-0.1402	-0.0863	-0.1099	-0.0763
PABILITY	0.1204	-0.4014	-0.7016	0.2403	-0.1041	0.0011	-0.0372	-0.0188	0.2132	0.0621
ESTEEM	0.0912	-0.1459	-0.2151	0.0250	0.0184	-0.0042	0.2037	0.0168	0.3389	0.2240
ATTACH	-0.1418	0.0817	0.0507	-0.0620	0.0351	-0.0056	-0.4020	0.0315	-0.4022	-0.1219
BELIEF	0.2761	0.0241	-0.1138	0.0862	0.0460	-0.0203	0.4761	0.2064	0.3728	0.2277

	ACHIEVE	COMMIT	EXTRA	ATTSCHOL	TEACHERS	CHURCH	ASPIRE	GRADES	HOMEWORK	PABILITY
ACHIEVE	1.0000									
COMMIT	0.2496	1.0000								
EXTRA	0.3797	0.4740	1.0000							
ATTSCHOL	0.4970	0.3755	0.6210	1.0000						
TEACHERS	0.2191	0.3286	0.7815	0.4978	1.0000					
CHURCH	0.5700	0.1384	0.2697	0.3564	0.2223	1.0000				
ASPIRE	-0.2179	-0.1916	-0.2100	-0.2257	-0.1830	-0.0924	1.0000			
GRADES	-0.1721	-0.4918	-0.2709	-0.2240	-0.2592	-0.1404	0.5043	1.0000		
HOMEWORK	-0.1595	-0.3805	-0.3521	-0.2255	-0.2342	-0.0845	0.1161	0.1739	1.0000	
PABILITY	0.1344	0.2885	0.3359	0.1723	0.3005	0.1059	-0.6313	-0.6044	-0.1494	1.0000
ESTEEM	0.3001	0.3258	0.3373	0.4356	0.3454	0.2264	-0.2569	-0.2982	-0.1496	0.4510
ATTACH	-0.2160	-0.1304	-0.1515	-0.3270	-0.1936	-0.1477	0.0954	0.0950	0.0093	-0.1076
BELIEF	0.6676	0.2280	0.3949	0.4444	0.2590	0.6684	-0.0860	-0.1973	-0.1541	0.1131

	ESTEEM	ATTACH	BELIEF
ESTEEM	1.0000		
ATTACH	-0.4965	1.0000	
BELIEF	0.2929	-0.2087	1.0000

delinquency are prior delinquency, commitment, extra schoolwork, and attachment to school, followed by belief.

Table 5.6 presents standardized estimates of the wave two model predicting belief. We will briefly highlight some differences with the model of wave one. Unlike wave one, socioeconomic status and dropping out have significant (though small) effects on belief (line 2). The positive coefficient for SES is contrary to expectations: one would expect that members of lower classes have less-conventional beliefs. Skipping to line 3, identification with parents has a very large total effect on belief, but one which is entirely mediated -- principally by the school variables (compare lines 3 and 5). The structural form coefficient, in fact, becomes implausibly negative (line 5). Conversely, communication with parents has a small effect in the wrong direction, the result of a very large negative indirect effect through school variables, offset somewhat by a substantial positive direct effect. The school variables also mediate over half the effect of prior delinquency.

Again, attachment to church and achievement orientation have the largest effects on belief, but unlike the

Table 5.6: Standardized Parameter Estimates Predicting Belief: Wave Two (N=1374).

	SES	Ability	Dropout3	Urban	Brokhome	Delinq2	Identify	Super	Commun	Peers
1.	.069*	-.130*	.072*	.043	-.017					
	(.030)	(.029)	(.027)	(.028)	(.027)					
2.	.055	-.114*	.003	.043	-.039	.326*				
	(.028)	(.027)	(.026)	(.026)	(.025)	(.026)				
3.	.062*	-.203*	-.023	.012	-.135*	.178*	.533*	.066*	-.105*	
	(.025)	(.027)	(.024)	(.023)	(.025)	(.024)	(.046)	(.024)	(.044)	
4.	.065*	-.184*	-.022	.012	-.119*	.200*	.449*	.077*	-.055	.080*
	(.025)	(.027)	(.024)	(.023)	(.025)	(.026)	(.054)	(.024)	(.047)	(.027)
5.	.000	-.074*	.027	.013	.022	.153*	-.177*	.086*	.268*	.116*
	(.019)	(.024)	(.017)	(.018)	(.019)	(.019)	(.049)	(.018)	(.039)	(.021)

*Coefficient is twice its standard error.

Note: Standard errors appear in parentheses.

Achieve	Commit	Extra	Attschol	Teacher	Church	Aspire	Grades	Homework	Pability	R^2
										.025
										.126
										.313
										.317
.348* (.022)	-.048* (.022)	.205* (.032)	.030 (.023)	-.131* (.028)	.378* (.022)	.187* (.025)	-.114* (.024)	.004 (.018)	-.086* (.030)	.652

wave one model, communication with parents and extra school work have substantial effects in the predicted causal direction. In this model, parental identification and attachment to teachers reverse signs relative to their signs in the wave one model. Again, the model accounts for a substantial proportion of the variation in the belief construct (.65).

Table 5.7 presents estimates of the wave two model of delinquent behavior. Again we will here only illuminate the differences with the wave one model. The first three equations parallel those of wave one: dropping out and broken homes have modest effects mediated by the large effect of previous delinquency; the attachment to parents variables contribute little. With the addition of attachment to peers in the equation, identification with parents becomes significant, and communication with parents becomes implausible in sign (line 4). As control theory specifies, persons who communicate and identify with their parents tend to develop closer relationships with their peers which reduces the likelihood of delinquency.

As we found in wave one, commitment and extra homework have large effects as expected, but achievement

Table 5.7: Standardized Parameter Estimates Predicting Delinquency: Wave Two (N=1374)

	SES	Ability	Dropout3	Urban	Brokhome	Delinq2	Identify	Super	Commun	Peers
1.	.037 (.029)	-.042 (.029)	.148* (.027)	.002 (.028)	.066* (.027)					
2.	.010 (.024)	-.013 (.023)	.021 (.022)	.001 (.022)	.026 (.022)	.604* (.022)				
3.	.011 (.024)	-.017 (.025)	.019 (.022)	.001 (.022)	.021 (.023)	.591* (.023)	.026 (.044)	.028 (.023)	.006 (.042)	
4.	.008 (.024)	-.038 (.026)	.018 (.022)	.000 (.022)	.002 (.024)	.565* (.024)	.125* (.051)	.015 (.023)	-.054 (.044)	-.094* (.026)
5.	.014 (.024)	.035 (.031)	.017 (.022)	.035 (.023)	.038 (.024)	.497* (.025)	-.066 (.063)	-.001 (.022)	.056 (.049)	-.080 (.026)
6.	.015 (.024)	-.058 (.032)	.010 (.022)	.046* (.023)	.060* (.025)	.496* (.025)	-.189 (.072)	.014 (.023)	.128* (.054)	-.047 (.028)
7.	.015 (.024)	.068* (.032)	.007 (.022)	.045 (.023)	.058* (.025)	.479* (.025)	-.176* (.072)	.005 (.023)	.104 (.055)	-.058 (.028)

*Coefficient is twice its standard error.

Note: Standard errors appear in parentheses.

Achieve	Commit	Extra	Attschol	Teacher	Church	Aspire	Grades	Homework	Pability	Esteem	Attach	Belief	R^2
													.028
													.375
													.377
													.383
-.076* (.029)	.189* (.030)	.193* (.041)	.047 (.030)	-.101* (.036)	.077* (.028)	-.087 (.032)	.038 (.030)	.041 (.023)	-.029 (.038)				.436
-.076* (.029)	.214* (.030)	.198* (.042)	.066* (.032)	-.089* (.036)	.100* (.029)	-.072* (.032)	.043 (.030)	.041 (.023)	.001 (.040)	-.104* (.034)	-.082* (.028)		.442
-.114* (.031)	.221* (.030)	.175* (.042)	.065* (.031)	-.074* .036)	.060 (.031)	-.092* .(.033)	.056 (.030)	.040 (.023)	.013 (.040)	-.111* (.034)	.084* (.027)	.109* (.034)	.446

works in the opposite direction of that specified by control theory (line 5). Unlike wave one, attachment to church and aspirations have significant total effects on delinquency. Furthermore, unlike wave one, lack of attachment has a significant effect on delinquency, as does self-esteem, but in the wrong direction (line 6).

While the structural model accounts for almost 45 percent of the variance in delinquency, very little of this is due to belief (line 7). Thus, in contrast to wave one, belief has a relatively modest (.109) effect on delinquency. Moreover, it is substantially smaller than the effects of commitment to schoolwork and extra homework. In addition to commitment and extra schoolwork, attachment to school, aspirations, and lack of attachment have significant, though small, effects on delinquency unmediated by delinquent defintions. According to the mediation hypothesis then, social control theory is supported over differential association theory.

On the other hand, we still find evidence contradicting control theory. Prior delinquency still has the largest unmediated effect on current delinquent behavior. Moreover, attachment to peers, achievement orientation, attachment to teachers, and self-esteem all have

significant effects but in directions directly opposite of control theory's predictions. Finally, parental supervision, communication with parents, attachment to church, grades, homework, and perceived scholastic ability all have effects indistinguishable from zero. Thus, again, the hypothesis that each construct has an independent unmediated effect on delinquent behavior is not supported.

Table 5.8 lists the chi-square tests of the hypotheses, derived from control theory and differential association. As expected from the tests of point estimates, the social control variables fail to adequately mediate the effects of the background and prior delinquency variables (line 1). However, the social control variables do mediate the efffects of the background variables alone (line 2). The test of differential association fails: belief mediates neither all prior variables (line 4), all prior variables except delinquency (line 5), nor all social control variables (line 6). Therefore, for wave two, both control theory and differential association theory receive little empirical support.

As we have noted before, neither social control theory nor differential association implies a direct

Table 5.8: Likelihood-Ratio Chi-Square Tests of the Mediation by Belief Hypothesis: Wave Two

	Chi-Square	df	p
1. Social Control Variables Mediate Background Variables and Prior Delinquency	347.52	6	<.001
2. Social Control Variables Mediate Background Variables	13.04	5	.023
3. Excluding Delinquency, Social Control Variables Mediate Background Variables	14.43	5	.013
4. Belief Mediates all 22 Constructs	630.97	22	<.001
5. Belief Mediates Background Factors and Social Control Variables	84.32	21	<.001
6. Belief Mediates Social Control Variables	81.56	16	<.001
7. Excluding Prior Delinquency, Belief Mediates All 21 Constructs	215.57	21	<.001
8. Excluding Prior Delinquency, Belief Mediates Social Control Variables	183.92	16	<.001

effect of past delinquency on present delinquent acts unmediated by social bonds or definitions of the law. How, then, can we account for our finding that previous delinquency has the largest causal effect on current delinquency? The most obvious explanation is that the two theories are incorrect, and another mechanism is operating, such as the formulation of a habit no longer requiring bonds or definitions, or the direct reinforcement of the behavior independent of definitions or bonds.

A second possibility is that our time lag is too long, and thus, insensitive to the true covariation, over time, of our explanatory variables and delinquency. It may be that within an 18- or 12-month period, persons' learned definitions or social bonds do indeed determine delinquency, but that both explanatory variables and outcome variables change together within that period. While our measure of delinquency taps behavior occuring throughout the previous time period, our measures of theoretical variables refer only to the distal endpoints. Furthermore, our measurement analyses found stabilities of about .50-.60, indicating substantial change between those endpoints. Thus, the theories could be correct, but a time lag shorter than 12 months is needed to cap-

ture the causal mechanisms implied.

A third explanation of the impact of previous delinquency on current delinquency suggests a different specification of our model. Recall that in Chapter 2 we argued that both control and differential association theories specify a random effect on delinquency orthogonal to all other explanatory variables. For differential association, this component refers to opportunities for delinquency, alternatives to a delinquent line of action, and other interactions between person and situation. For social control theory, these represent the inability to positively-account for delinquency (Hirschi, 1969), the presence of situational motives or inducements (Briar and Piliavin,1965; Short and Strodtbeck, 1965), or the workings of persons' will (Matza, 1964).

Since it is highly likely that these effects would remain similar for persons across time, some or all of the effect of prior delinquency could work through this orthogonal component. We examined this possibility by assuming the lagged effect of delinquency worked entirely through the social control variables and the orthogonal disturbances. In other words, we posited no direct effect from prior delinquency to current delinquency.

The easiest way to accomplish this was to drop the prior delinquency variable from the model.[14] Although in reality some of the substantial effect of delinquency probably is direct, this specification combined with our earlier one gives us the extreme cases; and moreover, this confirguration is consistent with control theory and differential association.

Table 5.9 presents our model without prior delinquency for wave one; the model for wave two appears in Table 5.10. We will touch on those estimates that differ from our earlier models. For both waves, the effect of identification with parents is exceedingly larger than we found in our model with delinquency. The substantial total effect is mediated by school effects, but not entirely, leaving a modest, but statistically significant direct effect. This finding is consistent with both social control theory and Glaser's theory of differential identification. Also, for both waves, the effects of commitment and belief are larger. Belief, in particular, more than doubles in size for both waves.

For wave one, attachment to school now has a significant total effect that, consistent with differential association theory, is mediated by belief. Also, the

Table 5.9: Standardized Parameter Estimates Predicting Delinquency Without Previous Delinquency: Wave One (N=1374)

	SES	Ability	Dropout2	Urban	Brokhome	Identify	Super	Commun	Peers
1.	.035	-.066*	.129*	.006	.061*				
	(.030)	(.029)	(.027)	(.028)	(.027)				
2.	.053	-.109*	.125*	-.006	.019	.305*	.026	-.041	
	(.029)	(.029)	(.026)	(.027)	(.027)	(.044)	(.027)	(.043)	
3.	.044	-.116*	.128*	.007	.024	.321*	.033	-.025	-.133*
	(.029)	(.029)	(.026)	(.026)	(.026)	(.044)	(.026)	(.043)	(.026)
4.	.044	-.040	.099*	.030	.045	.228*	.025	-.029	-.158*
	(.029)	(.036)	(.025)	(.027)	(.026)	(.047)	(.026)	(.045)	(.027)
5.	.044	-.044	.099*	.030	.042	.242*	.021	-.035	-.165*
	(.029)	(.036)	(.025)	(.027)	(.026)	(.049)	(.027)	(.048)	(.028)
6.	.041	.012	.118*	-.008	.062*	.130*	.011	.043	-.154*
	(.028)	(.035)	(.024)	(.026)	(.025)	(.049)	(.025)	(.046)	(.027)

*Coefficient is twice its standard error.

Note: Standard errors appear in parentheses.

Achieve	Commit	Extra	Attschol	Teacher	Church	Aspire	Grades	Homework	Pability	Esteem	Attach	Belief	R^2
													.026
													.101
													.118
.047 (.039)	.200* (.033)	.009 (.061)	.073* (.036)	-.074 (.052)	.038 (.037)	-.048 (.035)	-.079* (.037)	-.034 (.027)	-.079 (.041)				.187
.051 (.039)	.206* (.034)	-.016 (.070)	.081* (.037)	-.053 (.059)	.036 (.037)	-.054 (.036)	-.074 (.037)	-.031 (.027)	-.080 (.043)	.012 (.037)	.033 (.034)		.187
-.146* (.042)	.211* (.032)	.055 (.067)	.017 (.036)	-.089 (.057)	-.187* (.041)	-.050 (.035)	-.080* (.036)	-.016 (.026)	-.046 (.041)	.005 (.036)	.033 (.032)	.494* (.046)	.251

Table 5.10: Standardized Parameter Estimates Predicting Delinquency Without Previous Delinquency: Wave Two (N=1374)

	SES	Ability	Dropout3	Urban	Brokhome	Identify	Super	Commun	Peers
1.	.037	-.042	.148*	.002	.066*				
	(.029)	(.029)	(.027)	(.028)	(.027)				
2.	.029	-.096*	.115*	-.016	.001	.301*	.062*	-.121*	
	(.029)	(.031)	(.027)	(.027)	(.028)	(.052)	(.028)	(.050)	
3.	.017	-.149*	.101*	-.015	-.052	.554*	.019	-.278*	-.274*
	(.028)	(.030)	(.026)	(.026)	(.028)	(.057)	(.027)	(.051)	(.029)
4.	.038	.001	.078*	.050	.003	.269*	-.005	-.121*	-.238*
	(.028)	(.035)	(.025)	(.026)	(.027)	(.069)	(.026)	(.055)	(.029)
5.	.040	-.022	.072*	.061*	.024	.144	.012	-.055	-.205*
	(.028)	(.036)	(.025)	(.026)	(.028)	(.080)	(.026)	(.061)	(.031)
6.	.038	.046	.060*	.058*	.024	.148	-.007	-.097	-.218*
	(.027)	(.036)	(.025)	(.025)	(.028)	(.079)	(.026)	(.061)	(.030)

*Coefficient is at least twice its standard error.

Note: Standard errors appear in parentheses.

Achieve	Commit	Extra	Attschol	Teacher	Church	Aspire	Grades	Homework	Pability	Esteem	Attach	Belief	R^2
													.028
													.081
													.137
-.063 (.033)	.265* (.032)	.245* (.047)	.051 (.034)	-.075* (.041)	.082* (.032)	-.200* (.036)	.029 (.034)	.021 (.026)	-.048 (.043)				.266
-.065* (.033)	.287* (.034)	.256* (.047)	.061 (.036)	-.166* (.041)	.106* (.033)	-.188* (.036)	.032 (.034)	.019 (.026)	-.026 (.045)	-.095* (.038)	-.103* (.031)		.272
-.152* (.035)	.297* (.033)	.200* (.048)	.059 (.035)	-.126* (.041)	.015 (.035)	-.223* (.036)	.062 (.034)	.020 (.026)	.003 (.045)	-.110* (.038)	- .106* (.031)	.247* (.038)	.294

effect of grades is now significant, while communication with parents no longer is. Thus, the only variables with significant unmediated effects (in the correct direction) are high school drop-out, broken homes, parental identification, commitment to school work, and grades. Moreover, of these, only commitment has an effect substantial in size (.211). Even so, this effect is relatively small compared to the effect of definitions on the law (.494). The more formal likelihood-ratio tests find that social control variables mediate the effect of background variables (line 3 of Table 5.4). Contrary to differential association, definitions of delinquency fail to mediate entirely the effects on delinquency of all prior variables or social control variables taken separately (lines 7 and 8). Thus, this wave one model provides unequivocal support for neither theory.

For wave two, in contrast to the model that includes prior delinquency as a predictor, coefficients for aspirations and belief are now twice their previous size (Table 5.10). The construct underlying occupational and educational aspirations now has a direct unmediated effect on delinquency (line 6). The total and direct effects of attachment to school are now trivial and no

longer statistically significant, while high school dropout and urbanicity now show significant but small effects on delinquent behavior. Also, in comparison to wave one, extra schoolwork has a slightly larger effect, as do attachment to peers and achievement orientation -- although the latter two remain significant in the wrong direction.

On the issue of mediation, the significant effect of attachment to church is entirely mediated by our construct representing definitions of the law. Thus, consistent with differential association theory, persons more attached to the church commit fewer delinquent acts because they learn more antidelinquent definitions and fewer prodelinquent definitions. However, four social control variables -- commitment, extra schoolwork, aspirations, and lack of attachment have significant direct effects on delinquency, lending evidence supporting control theory over differential association.

The formal chi-square test finds that the social control variables collectively mediate effects of the background variables (line 3 of Table 5.8). In turn, however, the social control variables are not mediated by definitions of delinquency (lines 7 and 8). On the other

hand, we still have 12 social control variables, which Hirschi argues should have direct effects on delinquent behavior, with coefficients either statistically indistinguishable from zero, or related to delinquency in the wrong direction. Thus, again, our model of wave two provides little support for differential association theory. While some evidence supports social control theory, other hypotheses regarding separable independent effects are disconfirmed.

Summary and Conclusions

When we began this study, we had hoped that in the end we would be in a position to draw unequivocal conclusions about our test of social control theory. Unfortunately, the data did not leave us in that position. Instead, we are left with some evidence favoring differential association theory, some favoring control theory, and some favoring neither. The following results bearing on the relative efficacy of the two theories is firm.

First, whether conceptualized as belief in the moral validity of conventional rules or a person's ratio of learned behavior patterns favorable and unfavorable to

delinquency, definitions of the law have a substantial effect on delinquent behavior. Furthermore, as differential association theory predicts, our definitions construct mediates the effects on delinquency of several social control variables. In light of the weak face validity of the indicators of definitions -- at least from a differential association perspective -- this finding draws control theory into serious question.

Second, as social control theory predicts, commitment to schoolwork is unmediated in its effects on delinquency. This finding emerges consistently across both waves and across a variety of specifications of the model. Also, for wave two, extra schoolwork and lack of attachment have significant unmediated effects on delinquency. From the perspective of differential association theory, either the theory is wrong or our belief construct fails to adequately tap the content domain of those delinquent definitions learned in the process of building commitments to schoolwork. As we have emphasized all along, the latter is likely the case. On the other hand, for persons with their learned ratios of definitions held constant, commitments to schoolwork could, within a situation in which delinquency is a

viable alternative, provide persons with a nondelinquent situation to a problematic solution (Sutherland, [1944] 1973). Or commitments could restrict persons' likelihood of entering situations in which delinquency may occur (Cohen, 1966; Short and Strodtbeck, 1965). In both cases, commitment will have a direct effect on delinquency unmediated by a person's learned behavior patterns.

Third, contrary to predictions from Hirschi's social control theory, when estimated simultaneously, most of the constructs representing elements of the bond to society fail to independently affect delinquent behavior. The direction of the effects of attachment to peers, achievement orientation, and attachment to teachers are consistently opposite to the predictions of control theory. Effects of several other constructs are effectively zero. Thus, we must seriously question Hirschi's claim that each of the concepts representing various strands of the bond to society, which he examined in smaller models controlling for only a subset of other constructs, has an independent effect on delinquent behavior. On this point, it could be that control theory is correct, but that the dimensions within an element

such as attachment, commitment, and belief work as a single unit, rather than independently and additively. Similarly, it may be that some strands of the bond are efficacious, while others are not. Alternatively, control theory may be wrong. The many elements of the bond may constitute no more than another set of "multiple factors" organized around a false assumption of a society based on a single common moral order.

In sum, our analyses fail to provide unequivocal support for Hirschi's (1969; 1977) social control theory. This contrasts sharply with the work of Wiatrowski et al. (1981), who analyzed these data and concluded that the theory was empirically supported. We improved on their conceptualization and data analysis by testing competing hypotheses derived from divergent theories, explicitly modeling the data's measurement structure, and capitalizing on the longitudinal design of the Youth in Transition Project. Following this strategy, we find some evidence supporting social control theory, some supporting differential association theory, and some supporting neither.

NOTES

1. This procedure was used by Paternoster et al. (1983). A more complete analysis would examine the causal ordering of endogenous predictor-variables as well, using a cross-lagged panel model (Kessler and Greenberg, 1981). Such models have been used to examine simple relationships (usually a single explanatory concept) in delinquency research (Minor, 1981; Paternoster et al. 1983; Minor and Harry, 1983; Rosenberg and Rosenberg, 1978; Kaplan, 1977; 1978; Bynner et al., 1981; Wells and Rankin, 1983). Our primary interest is in testing a model of social control that includes all explanatory concepts. Given the size and complexity of this model, estimating cross-lagged models would greatly exceed our resources. We feel the task of examining the causal ordering of explanatory concepts vis-a-vis delinquent behavior, as hypothesized by social control and differential association theories, is logically prior to the task of examining the causal order of the explanatory variables themselves.

2. We do not consider here other background variables referring to characteristics of geographic locations. Variables such as geographic mobility and school attended would more directly test a social disorganization hypothesis (Kornhauser, 1978). For this dataset, in particular, the sampling design, clustered by schools, would allow a test of contextual effects of schools. Specifically, by partialling out the effects of individual-level substantive effects, the residual between-school variance component can be attributed to schools.

3. In perhaps the most persuasive essay advocating a social control perspctive, Hirschi (1977) explicitly postulates that elements of the social bond -- particularly attachment to parents and commitment to school activities -- account for the relationships between delinquency and socioeconomic status, family disruption, and intelligence. In this way, paralleling Sutherland's presentation of differential association theory as a scientific generalization accounting for the correlates of crime, Hirschi proposes that his social control theory can explain these relationships. The difference is that Hirschi (1977:236-237; Hirschi and Selvin, 1967), advances a statistical definition of causality, and therefore labels these factors "causes", while Sutherland

used a more stringent definition of causality, and therefore termed them mere "correlates."

4. Thus, he viewed his finding (that delinquent friends affect a person's delinquent behavior regardless of their attachment) as negative evidence for control theory. On the other hand, he also speculated that the causal ordering could be incorrect -- that is, committing delinquent acts might cause one to befriend delinquents -- which would save control theory after all (cf. Elliot and Voss, 1974). This finding is one of the most well-documented in delinquency research. Unfortunately, the YIT dataset does not include a measure of delinquent companions.

5. For wave one, respondents were asked: "Please tell us how many times you have done these things in the last three years -- say since you started the seventh grade." Eighteen months later, for wave two, the question was changed to: "Please tell us how many times you have done these things in the last 18 months -- since we last talked with you." Twelve months later, for wave three, the question was repeated, but the time interval was not changed to 12 months. Thus, some error is introduced if subjects responded to the "18 months" rather than to the "since we last talked to you" (Bachman et al., 1978:173).

6. For wave one, the parents, peers, and belief model produced a chi-square of 754.15 with 263 degrees of freedom ($p<.001$; AGFI=.946; CN=539); the school model yielded a chi-square of 574.44 with 241 degrees of freedom ($p<.001$; AGFI=.955; CN=655). For wave two, the first model yielded a chi-square of 602.39 with 239 df ($p<.001$; AGFI=.953; CN=617); for the school model, the chi-square was 672.75 with 241 df ($p<.001$; AGFI=.993; CN=557).

7. Technically, the degrees of freedom for these models should not include those parameters we fixed to obtain convergence in the maximum likelihood iteration procedure. Therefore, the true degrees of freedom for wave one is 936; for wave two, it is 888.

8. Again, we attempted to estimate these background factors in the context of the full models, but could not, within our cost constraints, get LISREL VI's fitting function to converge.

9. Because we have not estimated relationships among

explanatory variables, we cannot compute indirect effects through each variable of a given causal block, such as parental and school blocks of variables. But we can calculate the net indirect effect through an entire block of such variables. For a complete discussion of the decomposition of effects in a structural equation model, see Duncan, 1975; Alwin and Hauser, 1975.

10. These findings pertaining to commitment to schoolwork and involvement in extra homework are consistent with microeconomic approaches to crime, which are not considered here. Thus, by allocating time to conventional activities rather than to illegal acts, persons are said to be optimizing their returns to a combination of investments. This approach, however, has little to say about our other social-psychological variables such as belief in the moral order. Indeed, economic theories have difficulty accounting for relationships involving attitudes, values, and behavior patterns.

11. While we wanted a one-dimensional test of joint coefficients, LISREL's likelihood-ratio chi-square statistic tests only two-tailed hypotheses. Therefore, to force a one-directional test, we fixed to zero those coefficients of the less-restricted model that had incorrect signs, and used this as the test comparison. In other words, we assumed the variables with incorrect signs had zero effects (the null holds). We then computed the difference of likelihood-ratios, but adjusted the degrees of freedom to equal the number achieved without restricting the coefficients with wrong signs.

12. These tests could be significant because we have sufficient statistical power to detect trivially-small effects. Indeed, given our large sample size, our efficient estimation procedures, and the likelihood that our ad hoc method of estimating parameters underestimates Type I error, this may be the case. Moreover, of the coefficients tested, only one (commitment=.149) is non-trivial in size.

13. As noted in Chapter 4, this is perhaps a greater problem for differential association theory, which explicitly stipulates definitions of the law as the crucial explanatory variable. On the other hand, if our measurement model for wave one is correctly-specified, the wave two model should also be correct. When indicators of a

multiple-indicator model are well-behaved -- that is, load only on their appropriate constructs, and have orthogonal measurement errors -- deleting any one indicator reduces precision in estimates of relationships between unobservables, but does not bias such estimates.

14. This procedure is possible because we are not estimating equations predicting our endogenous explanatory variables. If we were, we would retain the prior delinquency variable and allow its structural distrubance to correlate with that of current delinquency.

CHAPTER 6

CAUSES OF DELINQUENCY: IMPLICATIONS FOR CRIMINOLOGICAL THEORY AND POLICY

Using longitudinal data on a national probability sample of tenth-grade boys, correcting for measurement error, and testing competing theories of delinquent behavior, this study produced three principal findings. First, the Youth in Transition data contain indicators of social control theory that have reasonable measurement properties. Although the indicators contain large amounts of measurement error, unreliability is adequately controlled by confirmatory factor analysis. If uncorrected, however, the large response errors would likely bias substantive results.

Second, social control theory is not empirically supported. Two of the three hypotheses derived from Hirschi's (1969) version of control theory were disconfirmed. The first hypothesis that the elements of the social bond intervene in the effects of background variables on delinquency is supported. But the second hypothesis specifying that the bond to society mediates the effects of both background factors and previous del-

inquency is clearly rejected. Moreover, the third hypothesis, which stipulates that each dimension within an element of the social bond has an independent effect on delinquency, is also disconfirmed. When estimated simultaneously in a causal model, most constructs representing the elements of the bond either fail to reduce the incidence of delinquency significantly, or work to increase its incidence significantly. In fact, only commitment to schoolwork and involvement in extra schoolwork have effects on delinquency that are consistently significant.

Third, differential association theory receives only modest support: the construct representing definitions of the legal code has a substantial effect on delinquency and mediates several measures of the social bond. It fails, however, to intervene in the effects of others. Furthermore, we find negative evidence for differential identification and self-concept theories of delinquency.[1]

These results have implications for (1) policies designed to reduce or prevent the incidence of delinquency; (2) theories developed to explain the incidence of delinquency; and (3) methodology intended to test

theories and explanations of delinquent behavior.

From a policy standpoint, these findings suggest that an intervention program designed to reduce high-school delinquency should focus on increasing boys' commitments to schoolwork and inculcating strong antidelinquent definitions while attenuating strong prodelinquent patterns. On the other hand, this study also found that the best predictor of tenth- and eleventh-grade delinquency is a boy's previous participation in delinquency. This implies that a more effective prevention program based on social controls or differential associations is one that intervenes in the years of elementary school or junior high. Presumably, an important stage of socialization occurs prior to high school.

Along these lines, Joseph Weis and his collagues have developed a delinquency prevention strategy that intervenes in each element of the social bond (Weis and Hawkins, 1979; 1981; Weis and Sederstrom, 1981). Based on a social development approach that draws from both social control and differential association theories, their Social Development for Youth Project seeks to intervene in the lives of both first- and seventh-grade children over a perion of several years.

A precise evaluation of such intervention programs requires the kind of data and methods used in this study. If an experimental design is used, and one is interested only in knowing if the treatment intervention works or does not work, a simple statisical procedure on outcome data is adequate. If, however, a non-experimental or quasi-experimental design is used and one is interested in knowing why a treatment based on control theory or differential association succeeds or fails, survey data on attitudes is required. We have found that, if uncorrected, measurement error will hinder the use of such data for testing competing theories. This problem also applies to the evaluation of treatment effects of prevention programs. In particular, the effects of processes (such as strengthened bonds or learned antidelinquent definitions), which may intervene between a treatment and delinquent behavior will be seriously attenuated. Therefore, our strategy for controlling measurement errors may be crucial for isolating the mechanism by which a treatment succeeds or fails.

From a theoretical standpoint, some of our findings question the empirical efficacy of both social control and differential association theories, suggesting that

either or both theories need to be revised, augmented, or replaced. One major difficulty with both theories is the absence of a clearly-articulated dynamic process in which explicit causal lags are specified. Thus, either theory could be correct, while our analysis specifies an incorrect time lag between explanatory concepts and delinquent behavior. A more precise theoretical statement would explicitly and accurately stipulate the temporal causal structure by which prior conditions lead to delinquent behavior. By including an analysis of the immediate situation, this statement would specify the conditions under which a person freed from social controls or having learned an excess of delinquent definitions will initiate and consummate an illegal act.

Some previous research has illuminated this this of a situational explanation of delinquency. Briar and Piliavin (1965) argued that a large proportion of delinquency is carried out in groups. Moreover, these deinquent behaviors are said to result in part from weakened commitments and in part from situationally-induced motives displayed by one or more members of the group.

Short and Strodtbeck (1965) argue that much gang delinquency often results from a three-step sequence.

First, a prospective delinquent is socialized into values and behavior patterns that (1) puts him in situations in which delinquency is likely to develop (eg., milling about on street corners) and (2) makes it difficult, in some group contexts, to refrain from delinquency and still save face. Second, the boy enters a situation in which aleatory processes transform it into a delinquency situation. Third, as the illegal behavior unfolds, the boy calculates the risk of being caught and punished for committing the act against the risk of losing status within the group for not committing the act. Depending on his personality, or more specifically, the on the values he places on the two possibilities, he either joins the action or remains aloof. Similarly, Gibbons (1971) called for a situational explanation of deviance and proposed a utility matrix of decision-making.

Cressey (1953 [1971]) isolated a three-stage temporal sequence leading to embezzlement. First potential trust violators define a personal financial problem as "unshareable." Second, they discover that their problem can be solved by violating their position of trust. Third, they must have at some time learned a set of verbalizations making it "all right" to embezzle.

Luckenbill (1978; 1980) found that transactions eventuated in armed robbery when parties to the situation jointly carved out a common definition of the situation. Specifically, victims had to suppress opposition and hand over valued goods, while the robber had to maintain the definition of the situation as one of robbery by controlling the victim and obtaining his compliance.

Cohen (1966:102-106) has provided a theoretical framework with which to account for these findings. Organized around what he terms "interaction process," he develops five points. First, a process model is needed, which isolates causal sequences through time. Second, both properties of the person and properties of the situation must be considered to determine movement along a particular path. Third, some of the immediate circumstances determining a delinquent act are outgrowths of previous developments which, at the time of their occurance, were unrelated to law violation. For example, a burglar, unexpectedly confronted with an angry homeowner, may murder him to save his own life. Fourth, the most important aspect of the immediate situation is the feedback, and anticipated feedback from others (see also, Luckenbill, 1978; Short and Strodtbeck, 1965). Fifth,

these processes refer both to criminal and noncriminal social processes, as well as group and

This framework, however, is merely a general frame of reference; it does not specify the specific mechanisms operating in a give situation. More indictive research is needed to develop concepts, measures, and hypotheses intending to delineate these precise mechanisms. Specifically, the situations leading to delinquency can be reconstructed through police reports and accounts by victims, witnesses, and offenders (cf. Short and Strodtbeck, 1965; Luckenbill, 1977; 1979). By combining this with data on backgrounds of offenders, the process by which personality attributes interact in a particular situation can be isolated. In addition, this information will provide insight into the mechanisms by which the social bond and a ratio of learned definitions are translated into delinquent behavior. Accordingly, perhaps the issue of causal lags will be resolved, and a more powerful theory in the tradition of social control theory and differential association theory will be developed.

NOTES

1. We argued that estimating and testing a model of social control containing all explanatory concepts was logically prior to investigating relationships among explanatory concepts themselves. This report has summarized the first leg of our ongoing analyses of these data. In the future, we will focus on the most significant effects located here, and estimate a cross-lagged causal model, locating the causal structure among various loci of social control. Furthermore, we will attempt to model the other indexes of delinquent behvavior, including theft and vandalism, school delinquency, interpersonal aggression, and trouble with one's parents. It may be, for instance, that attachment and commitment to school is more effective in dissuading students from school-related delinquent acts. Also, our construct underlying definitions of delinquency, which emphasize honesty and cheating may be more pertinent to cheating in school.

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