Generation and verification of prediction equations for delinquency: cross-validational analysis

Galan Marvin Janeksela
Iowa State University

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Generation and verification of prediction equations for delinquency: Cross-validational analysis

by

Galan Marvin Janeksela

A Dissertation Submitted to the Graduate Faculty in Partial Fulfillment of The Requirements for the Degree of DOCTOR OF PHILOSOPHY

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CHAPTER I: INTRODUCTION

Problem Statement

The problem which stimulated this investigation is three-fold: (1) the trend of increased involvement in criminal behavior by juveniles; (2) the need for a distinction, both theoretically and empirically, between criminal behavior and juvenile status offenses; and, (3) the current state of delinquency research and theory. Each of these problem areas are elaborated in the following paragraphs.

Juvenile involvement in criminal behavior

Juveniles are disproportionately represented in the official arrest statistics. In 1968, 16 year old juveniles had the highest arrest rates of any age group in the United States (Federal Bureau of Investigation, 1968). In addition, three juvenile age groups ranked second, third, and fourth in this order: 17, 15, and 18 year olds.

Official statistics indicate that juvenile involvement in criminal behavior is increasing. The increase in adult involvement in crime for 1960 to 1970 was 31 percent. The increase in juvenile involvement in crime for that same period was over 50 percent (Scarpitti, 1974:388). Therefore, juvenile involvement in crime increased 66 percent more than adult involvement for the time period, 1960 to 1970, as indicated by official crime statistics.

As stated above, the age group 15-18 had the highest arrest rates in 1968. Criminal behavior committed by juveniles under age 15 is also increas-
ing at a rapid pace. "In the period from 1958 to 1967, there was a 300 per-
cent increase in assaults by 10 to 14 year olds and a 200 percent increase
in robberies by members of this age group" (Scarpitti, 1974:388).

**Criminal offenses versus juvenile offenses**

From a legal perspective, the concept juvenile delinquency includes
those behaviors committed by a juvenile which are in violation of the
criminal law or are in violation of statutes governing juvenile behavior.
The statutes governing juvenile behavior are commonly referred to as juve-
nile status laws because they are applicable only to those who are cur-
rently defined as juvenile; i.e. the status of juvenile makes one subject
to the jurisdiction of these laws. Juvenile status laws exist as a control
mechanism for the protection of the juvenile from harming himself, and for
the protection of the juvenile from an unhealthy family environment. Some
of the behaviors sanctioned by the juvenile status laws include: habitual
vagrancy, truancy, sexual promiscuity, incorrigibility, running away, defy-
ing parents, etc. Violation of juvenile status laws is referred to as
juvenile status offense or juvenile offense, and the violator may be
subjected to the same sanctioning processes as those who have committed
criminal acts.

Some social scientists and practitioners alike are coming to realize
the potential damage to be done by the sanctioning process. More and more,
the emphasis is on diverting juveniles from the criminal justice system,
especially, if the behavior is such that community social agencies can
more effectively deal with the behavioral problem by dealing with its causes and symptoms. The trend is toward differential treatment of different behavioral problems. The basis for developing differential treatment strategies is the existence of behavioral typologies (Hood and Sparks, 1970). In the area of delinquency theory and treatment, it is important to realize that for any given type of offender there is one type of treatment which is the most appropriate. This implies that delinquency researchers can make a significant contribution by defining the empirical and theoretical dimensions of the various types of delinquent behavior. Merton's (1957) distinction between utilitarian and nonutilitarian delinquency, and Rodman and Grams' (1970) distinction between the occasional delinquent, the gang delinquent, and the maladjusted delinquent, are two frequently quoted references on delinquency typologies. Many other theoretical typologies have been forwarded, however, the practical utility of currently existent typologies is negligible as evidenced by the fact that treatment strategies have not followed the construction of the typology, and, the ineffectiveness of treatment strategies which are based on a delinquency typology.

A very basic delinquency typology is implicit in the current literature in the delinquency area; it involves the distinction between violations of the criminal law and violations of juvenile status laws. This distinction is needed at both the theoretical level and the empirical level. Then, researchers can construct more elaborate typologies within the framework of criminal law violations verses juvenile status law violations. Such typologies are more likely to be useful in treating juveniles because it
makes the greatest possible dichotomous distinction among behaviors traditionally included in the concept of delinquency.

**Current state of the delinquency field**

Scientific theories of delinquency are the product of scientific research, and, scientific research is guided by scientific theory; i.e., theory and research are interrelated in a dynamic fashion which allows continual revision as new discoveries are uncovered at the theoretical or empirical levels. Given the dependence of theory on research, it is necessary to consider the nature of delinquency research.

The present state of delinquency research is impoverished. "Theorists, practitioners, and laymen are virtually unanimous in condemning delinquency research as inconclusive and inconsistent" (Hirschi and Selvin, 1973:15). To the extent that delinquency research has failed, it is likely that something is wrong with its assumptions, methods, or techniques. More specifically, the difficulty may lie in: (1) the philosophical underpinnings of quantitative research; (2) explicit or implicit theories of delinquency that the research assumes; (3) the investigator's training and competence; (4) the procedures of sampling and data collection; (5) the quality of the inferences drawn from the data; and, (6) the statistical techniques employed (Hirschi and Selvin, 1973:16).

This study focuses on improving the quality of the inferences drawn from research data by approximating the scientific requirement of replication through the utilization of cross-validational analysis. Cross-valida-
tion contributes toward improving the quality of inferences by reducing the probability that a research finding is due to chance. This increases confidence in one's empirical generalizations which in turn, allows one to have a greater level of confidence in one's theoretical network.

Theoretical and Empirical Significance

In general, the theoretical and empirical significance of a study can usually be derived from the statement of problems which stimulated the study. This investigation is no exception. Therefore, many of the theoretical and empirical contributions which are anticipated have already been discussed, either implicitly or explicitly, within the problem statement section. Those contributions and others which were not mentioned will be discussed and summarized in this section.

At the theoretical level, this study makes an important distinction between criminal offenses and juvenile offenses. Such a distinction is theoretically important because it focuses attention on the notion that different categories of behavior must be explained by different factors. At the theoretical level, it is important to refine one's concepts so that the conceptual definitions do not include phenomena which are unrelated. It follows that delinquency researchers must be concerned with developing behavioral typologies where the various behaviors can be defined, and the variables associated with the different behaviors can be delineated. The distinction between criminal offenses and juvenile offenses is an effort to call attention to the potential value of typologies in the delinquency area.
Another important attribute of this study is the theoretical and operational definitions for criminal offenses and juvenile offenses. This study is based on the notion that once a behavior is committed, it is a social phenomena whether the behavior is observed or not. This type of definition allows the researcher to study the committed behavior without the biasing affects of discrimination and selection by the criminal justice system. This conceptual definition is most appropriately operationalized by using a self-report instrument, because, it allows the researcher to study all those who may have committed the behavior of interest. Use of official arrest statistics, on the other hand, would allow the researcher to study only that minute proportion of all youth who are officially defined as delinquent (President's Commission, 1967A:56).

It is also anticipated that this study can contribute to the theory building process in the delinquency area. The research strategy used in this study can serve as a model design for other delinquency researchers in that the strategy used here, cross-validational analysis, has not been exploited by social scientists in the delinquency area. The rationale and procedures of cross-validation are described in a later chapter. The significance of this design is that it reduces the chances that one's research findings are due to accidental factors. This has implications for the degree of confidence assigned to one's empirical generalizations which, in turn, affects the validity of one's theory. One empirical test provides empirical evidence for a theory, but, more than one test is needed to achieve confidence in the validity of one's theory. Cross-validation contributes
to the validity of theory by improving the quality of the inferences drawn from research data. This is accomplished by utilizing two tests of a theory, thereby, approximating the scientific requirement of replication. Cross-validation also contributes to the validity of theory by eliminating the biases which are inherent when a researcher attempts to construct a theory and test that theory on the same sample.

**Practical Significance**

The practical significance of this dissertation is that the variables and the prediction equations are validated across samples. This allows more confidence in the findings than a design where only one sample is used. The practical utility of the validated findings is dependent on the characteristics of the significant variables. The maximum practical utility of these findings will be achieved if the variables to be manipulated: (1) do not violate public morality and democratic ideals; (2) are relatively easy to manipulate; (3) have a low cost per unit change in comparison to other variables; and (4) have a high benefit per unit change in comparison to other variables.

Many of the variables in this study (e.g. sex, age, race, and birth order) can not be manipulated. Other variables are potentially manipulable, but, do not meet the four criteria listed above. For example, manipulation of parental behavior or the family environment without parental support may be problematic.

Perhaps, social policy aimed at changing community institutions and juvenile justice system agents may be more feasible. Therefore, the
findings of this study will have greater practical significance if the sig-
nificant variables reflect needed changes in community institutions and in
the juvenile justice system.

Before any theoretical framework can be accepted as a meaningful and
valid guide to treatment of delinquency, it must be put to the test of ex-
perience as reflected in empirical evidence. This research is aimed at
validating its findings so that the resulting evidence can be interpreted
with confidence, and, if the results have utility to practitioners, the
results can be applied with more confidence because this study has approx-
imated the scientific requirement of replication.

Purpose of This Study

The purpose of this study is to better understand juvenile delinquency
via empirical generation and verification of prediction equations for delin-
quency. Two subtypes of delinquency, criminal offenses and juvenile of-
fenses, are investigated. The generation and verification of prediction
equations for criminal offenses and juvenile offenses is exploratory. The
purpose of studying criminal offenses and juvenile offenses is to better
understand the similarities and differences of these two subtypes of delin-
quency, thereby, filling a gap in the research literature.

A main concern of this investigation is the unanimity with which delin-
quency research has been condemned as inclusive and inconsistent. The pur-
pose of using cross-validational analysis is to improve on the quality of
Inferences drawn from research data by approximating the scientific requirement of replication. Cross-validation contributes toward improving the quality of inferences by reducing the probability that a research finding is due to chance. This increases confidence in one's empirical generalizations which in turn, allows one to have a greater level of confidence in one's theoretical framework.

Scope of This Investigation

The prediction equations for delinquency, criminal offenses, and juvenile offenses will be generated from a variable set of thirty independent variables. The data for this study was gathered by Dr. Martin Miller in Lansing, Michigan. For the purposes of this study, the original sample from Lansing was divided randomly into two subsamples. In Sample 1, each of the thirty independent variables is entered into the prediction model for each dependent variable via stepwise regression procedures. In Sample 2, the variables which were significant in Sample 1 are subjected to the multiple regression procedure to determine the predictive utility of the equation generated in Sample 1. The prediction equations are evaluated by comparing the predictive weights and the explained variance of Sample 1 to the predictive weights and the explained variance of Sample 2.
Summary

The problems which stimulated this investigation include: (1) the trend of increased involvement in criminal behavior by juveniles; (2) the need for a distinction between criminal offenses and juvenile offenses; and (3) the current state of delinquency research and theory. This chapter discussed these three problems, and the anticipated theoretical, empirical, and practical significance of this study. In general, the purpose of this study is to better understand juvenile delinquency via empirical generation and verification of prediction equations for delinquency, criminal offenses, and juvenile offenses.

Now let us turn to Chapter II, "Theoretical Background", where the theoretical orientations for this study will be presented.
CHAPTER II: THEORETICAL BACKGROUND

Introduction

This chapter will discuss several of the major orientations within criminology which are commonly referred to as theories of causation. Criminology does not embody a single coherent set of propositions and codified knowledge, rather, it includes a wide variety of different assumptions and ideas. There are two reasons for the fact that this study examines a variety of explanations and schools of thought in relation to delinquency. First, the available data (as described in Chapter I) in the present study includes such a wide variety of variables that there is no single theory which would encompass the variables or which would allow logical deduction of the relationships and predictive equations under investigation in this study. Secondly, the nature of the delinquency problem is so complex in nature that it is necessary to examine a variety of explanations and schools of thought regarding those variables which are related to delinquency.

Criminological Theoretical Orientations

Within the field of criminology, several disciplines have been interested in studying the many factors that may contribute to delinquency and crime. Sociology and psychology have led the way in the scientific quest to understand the complexities of delinquent and criminal behavior. Psychologists have taken a more individualistic, specific view of human behavior and they have focused on the personal internal factors (e.g. motivation, emotional disturbance, self-concept, personality, perceptions)
that may contribute to delinquency and criminality. Sociologists have taken a more general view and they have focused on the environmental factors (e.g. poverty, ineffective social controls, the learning process) that may contribute to delinquency and criminality.

The available data for this investigation includes both sociological and psychological variables. The purpose of this chapter is to derive these variables from existing theoretical frameworks. The theoretical orientations represented in this study are: family environment, differential opportunity, compliance theory, differential association, and labeling theory.

**Family environment**

The family environment orientation focuses on: (1) the social structure of the family; (2) the nature of family relationships; and (3) the implications for criminal and delinquent behavior. "The family institution provides the child with his first experiences in social living, and these experiences have an effect on most of his later development" (Trojanowicz, 1973:62). The family environment can have a significant impact on how the child behaves in other social institutions and on whether or not he becomes defined as normal or delinquent. Difficulties which can lead to delinquent behavior may arise from faults in the roles played by members of the family, from the nature of the interrelationships between family members, and from the social structure of the family.

Trojanowicz (1973) states that an interdisciplinary model which focuses on the family environment is useful in examining the delinquency phenomena. Such a model provides the basis for incorporating concepts and variables
from psychology and sociology to give a more insightful understanding of the delinquency problem.

Psychologists believe that early emotional deprivation is directly associated with later psychological disturbances and emotional problems. August Aichhorn (1969) stresses the importance of the family in shaping the individual, and he believes that the family should provide the child with love and security. In addition, the family should provide the child with a protective shelter from outside pressures. Early familial experiences lay the framework for the child's future behavior and the development of the child's attitudes, values, and life-style. If the family does not help the child to adjust to his social environment, the child does not receive the most important means of psychological support and the most effective agent for socialization. Parental hostility, affection, and inconsistent punishment patterns can all contribute to delinquent behavior (Berman, 1964:142). Aichhorn (1969) states that those families which have one or more delinquent youngsters are characterized by some type of pathology. The following characteristics are some possible pathologies which may exist in such a family: open hostility, shallow relationships between family members, a lack of concern by parents for their children, absence of a role model with whom the youngster can identify (Berman, 1964). When parents fail to transmit positive community norms and values and when they fail as positive identification models, the children may come in conflict with community institutions.
While psychology emphasizes the process of personal or internal control that is represented by the conscience, sociology emphasizes the institutions that directly influence the external social control processes. The psychological and sociological approaches are complementary, and, both can enhance the understanding of delinquency (Trojanowicz, 1973:65). Delinquent behavior can be viewed as the result of that situation where both personal and social controls have failed.

Delinquency results when there is a relative absence of internalized norms and rules governing behavior in conformity with the norms of the social system to which legal penalties are attached, a breakdown in previously established controls, and/or a relative absence of a conflict in social rules or institutions of which the person is a member. Hence, delinquency may be seen as a function or consequence of the relationship established among the personal and social controls (Reiss, 1951:196).

When community institutions of social control are ineffective, delinquency and crime are more prevalent. When internal personal control is ineffective, delinquency and crime are more prevalent. When a lack of internal control is combined with a lack of social control, it is likely that crime or delinquent behavior will result. The family can influence the development of the internal control structure, and, it can have an effect on the external control social process by its methods of direct control and discipline (Nye, 1958). Community institutions of control may intervene when the family has been unsuccessful in controlling the individual's behavior. If the parents are not adequate identification models, if the parents do not facilitate the development of a positive conscience, and/or if their methods of discipline are not effective, community agencies are likely to intervene (Nye, 1958).
There are a number of variables which can be included in the family environment orientation. In one of the most comprehensive studies of the family environment, the Gluecks utilized the following theoretical concepts: milieu of parents, adequacy of parents for responsibilities, parents' dependence on social welfare, economic circumstances of parents, employment history of father, orderliness of household, cultural refinement of home, family pride, conduct standards of home, conjugal relations of parents, dominant parent, supervision by mother, recreational outlets of family, cohesiveness of family, age of parents at birth of boy, years foreign-born parents have been in the United States, nativity of parents and boy, size of family, rank of boy, years between birth of boy and next older child, household instability, affectional relationship between child and parents, affection of brothers and sisters for boy, concern of parents for welfare of boy, discipline of boy by parents (Glueck and Glueck, 1950:93-133).

Another study regarding family environment and delinquency was conducted by Ivan Nye in the 1950's. Nye (1958) investigated the following concepts: family socioeconomic status, church affiliation and participation, birth order, family size, birthplace of parents, broken homes, employed mothers, increased residential mobility, lack of family integration, rejection of parents by the adolescent, rejection of adolescent by the parents, ineffective parental discipline, nature of parental punishment practices, freedom and responsibility given to the adolescent by the parents, family recreational activities, adolescent perception of parental appearance, parental disposition, parental character, parent-adolescent value agreement, amount of family funds available to the adolescent, generosity and partiality in
the allocation of family funds, adolescent perceptions of parental information and advice.

The purpose of the above discussion was not to present a comprehensive review of the literature for each of the many variables delineated, but rather, the purpose was to discuss the orientations briefly and to point out some of the variables that have been studied within the area of family environment. In the present study, the following variables from the family environment orientation will be investigated: broken homes, substitute parents, family size, ordinal position, maternal supervision. The comprehensive literature review for the relationship between each of these variables and delinquency is presented in Chapter III.

**Differential opportunity**

The differential opportunity orientation focusses on the strains which affect lower class individuals and the alternative means of adapting to these strains. Our culture stresses equality for all participants. However, our society does not allow all groups to have equal access to institutionalized means to achieve goals, and, strains may result.

Within every society there are: (1) cultural goals which are learned during socialization; (2) the norms for achieving the goals; and (3) the institutionalized means that are available for goal achievement (Merton, 1938:672). Cultural structure consists of norms and values which defines acceptable ends and approved means for reaching these ends (Merton, 1938: 162). Social structure consists of the patterned sets of human relationships which determine the actual distribution of the facilities and
opportunities for achieving cultural goals. Achievement to be sanctioned must be consistent with regulatory norms or "institutionalized means" (Merton, 1938:162).

A stable society is one where goals and means are fairly well integrated, while an unstable society is one where these two elements are out of balance (Merton, 1938:162). This imbalance between goals and means leads to a weakening commitment to either the culturally prescribed goals or the institutionalized means. In both cases, the result is a state of anomie. Anomie is a state of normlessness, or a breakdown in cultural structure which occurs "when there is an acute disjunction between cultural norms and goals and the socially structured capacities of members of the group to act in accord with them" (Merton, 1938:162).

Our culture stresses equality for all participants, equal cultural goals and equal opportunities to achieve these goals. The work ethic states that everyone can achieve their goals if they are diligent. The promise of equal opportunities in principle is denied in reality. Subjective reaction to this situation can take a variety of forms, one of which is alienation.

Alienation is a process of withdrawal of allegiance to the legitimacy of established social norms. A common source of alienation from established social norms is failure, or the anticipation of failure, in achieving success-goals by socially approved means. Lower-class males often find themselves at a competitive disadvantage in gaining access to legitimate routes to success-goals (Goward and Ohlin, 1960:110). The competitive disadvantages relate to the different cultural experiences which chil-
dren from different social classes are exposed. Cultural experiences of middle class children focus on those values and motives which lead to achievement of conventional goals. Lower class cultural experiences may place limits on a juvenile's life chances in a social structure which stresses middle class goals (Rosen, 1956). The result may be an intense sense of frustration that may alienate some youth from conventional rules and expectations.

The disparity between what lower class youths are led to want and what is actually available to them is a source of a major problem of adjustment. Adolescents who form delinquent subcultures have internalized an emphasis upon conventional goals. Faced with limitations on legitimate avenues of access to these goals and unable to revise their aspirations downward, they experience intense frustrations and exploration of nonconformist alternatives may be the result (Cloward and Ohlin, 1960:86).

Faced with a situation of unfulfilled aspirations and blocked opportunity, many lower class youth turn to illegitimate means which might offer a possible route to successful goals (Cloward and Ohlin, 1960:105).

Lower class youth can be viewed as victims of a contradiction between goals toward which they have been taught to strive and socially structured means of striving for these goals. In this situation, there is a definite pressure toward deviant behavior (Merton, 1938:131; Cloward and Ohlin, 1960).

The means of achieving success goals are not as readily available to lower class youth, therefore, deviant adaptations are more likely in the lower classes (Marsh, 1961). Because the composition of the lower class includes a disproportionate number of nonwhites, deviant adaptations will be even more prevalent for those who are nonwhite members of the lower class. This orientation rests on the assumption that barriers
to success do exist and that those who experience blockage to goal achievement perceive the blockage.

Several attempts to empirically test the theory of differential opportunity have been made. In a New York State study, Haskell (1961) concluded that delinquent groups provide a source of satisfaction for boys who are unable to attain legitimate success goals. Marsh (1961) studied the relationship between goal-mean disjunction and deviant behavior, and, concluded that legitimate means of achieving success were not available for the lower classes. Also, deviance was more prevalent in the lower classes. Wood (1961) found that an inability to satisfy achievement needs led to frustration, and, deviance rates were high in population segments reporting frustration. Karacki and Toby (1962) concluded that delinquency is not more prevalent in the lower classes and that delinquents were not deprived of the opportunity to achieve. Pearlin (1962) concluded that the most intense forms of alienation was associated with high aspirations but limited achievement. Regarding alienation, Jessor et al. (1968) state that alienation partially explains the relationship between anomie and deviant behavior. Another investigation found that access to illegitimate means was positively related to deviance (Hanson and Graves, 1963). Landis et al. (1963) found that the rejection of middle class values and greater perception of limited opportunity was positively correlated with delinquency. Delinquency causes low self-esteem which influences an individual's perceptions of the opportunity structure. Mizruchi (1964) studied the relationship between perceptions of limited opportunity and socioeconomic standing, and, found that socioeconomic standing is inversely related to
perceptions of limited opportunities. Spergel (1964) found that high aspirations and an absence of legitimate means leads to delinquency. However, in a study that challenges the assumptions of differential opportunity theory, Liu and Fahey (1963) conclude that perceptions of limited opportunity is the result, and not the cause, of delinquency.

Controlling for race, class, and gang status, Short et al. (1965) investigated the perceptions of available opportunities. The authors concluded that legitimate opportunities are perceived as available less often by gang than by nongang boys and most often by middle-class boys. White boys are more likely than Negro boys to perceive that legitimate opportunities are available. Differences in perceptions of illegitimate opportunities are reverse of those found for legitimate opportunities. This is supportive of the differential opportunity theory. This study does not provide time order evidence as to which occurred first the perceptions or the delinquency but will focus upon the strength of the relationship.

In summary of the above, the following variables have been studied within the framework of differential opportunity: anomie, alienation, achievement motivation, internalization of middle-class goals, goal-mean disjunction, perceptions of available legitimate opportunities, perceptions of available illegitimate opportunities, race, socioeconomic standing, level of educational aspirations, level of occupational aspirations, rejection of middle class values, anticipated achievements, and sex. The theory of differential opportunity is specifically applied to male lower class youth. In addition, Cloward and Ohlin (1960) state that access to illegitimate and legitimate opportunities..."depends upon a variety of factors,
such as one's socioeconomic position, age, sex, ethnic affiliation, personality characteristics, and the like."

From the above listing, the data available for this study includes the following variables: sex, race, age, socioeconomic standing, educational aspirations, anomie, and alienation. The literature review for the relationship between each of these variables and delinquency is presented in Chapter III.

Compliance theory

The term compliance refers to conformity to the rules of the system. Although a formal statement of compliance theory has not yet been forwarded, several social scientists have been concerned with compliance to system norms (Miller, 1971; Hess and Torney, 1967; Etzioni, 1961). The focal concerns of compliance theory are the attitudes of system participants toward the established rules, and the compliance agents, and the actual behavior with regards to the rules and the compliance agents.

An individual attributes legitimacy to a system of rules and the corresponding models of approved behaviors, when he accepts them as binding on his conduct. If a system of rules is accepted as legitimate, rules become an authoritative set of directives for action.

Haas and Drabek (1973:142) list ten conditions which will result in a high level of compliance to system norms: (1) the norm has been internalized by the system participants; (2) people define the norm as being reasonable; (3) system participants view the source of the norm as legitimate, that is, that individual has the right to make that kind of
norm; (4) compliance will be greater when the enforcement agent is viewed as legitimate; (5) when a norm is supported by authority figures and by group members, compliance will be greater; (6) compliance will be greater when norms are supported by relevant reference groups; (7) the greater the observability of norm relevant behavior, the higher will be the level of compliance; (8) conformity to norms will be greatest when the norms are supported by powerful sanctions; (9) compliance will be greater for norms that reinforce the desirable characteristics of the group; and (10) when group members participate in norm formation, the level of conformity will be greater. The applicability of these conditions depends on the characteristics of the social system. Simple compliance with rules is not sufficient to establish that an actor defines the rules as legitimate. Behavioral compliance must be coupled with an attitude of acceptance of the authoritative rules for full compliance. Therefore, compliance theory is interested in the attitudes toward the rules implied in behavior that conforms to the rules as well as in behavior that violates the rules (Weber, 1947).

In addition to the focus on compliant behavior, social scientists are interested in participant attitudes toward the system's authority figures and, the relationship between attitudes and behavior as it relates to compliance to system rules. Within the community, the general compliance system "is a network of laws, persons, and institutions vested with authority to enforce their demands" (Hess and Torney, 1967:50).
In the study of compliance within the community, social scientists are interested in attitudes toward laws, attitudes toward compliance agents, and attitudes toward compliance institutions. In this framework, Hess and Tormey (1967) have studied perceptions of functions of laws, attitudes concerning the fairness of laws, perception of the coercive power of authority figures, attitudes toward noncompliance in a police encounter, beliefs about punitive sanctions under the law, and attitudes towards the police. Fortune (1965) studied attitudes towards police in Cincinnati junior high schools; Mylonas and Reckless (1968) studied attitudes toward law enforcement in Greece and the United States; Clark and Wenninger (1964) studied the attitudes of juveniles toward the legal institution; Stratton (1967) investigated attitudes toward the law; and, Maher and Stein (1968) analyzed the attitudes of delinquent's toward the law and community control systems. Reckless (1965) and later Waldo and Hall (1972) sought to establish a relationship between attitudes toward the justice system and delinquent behavior. These findings are discussed in the next chapter.

The present study seeks to understand the relationship between attitudes toward the compliance system and delinquent behavior. This study includes nine variables which relate to the framework of compliance theory. These variables have been grouped into three categories: attitudes toward institutions within the compliance system, attitudes toward compliance agents, and attitudes toward compliance agents. The variables within each of these categories and the evidence regarding attitudes toward the compliance system and delinquent behavior will be examined in Chapter III.
Differential association

The differential association orientation focuses on the learning of attitudes and behaviors from those who are already delinquent or criminal. Trojanowicz (1973:38) states that "...this theory is probably one of the most systematic and complete theories of delinquency causation that has yet been constructed."

According to differential association theory, criminal behavior is learned in interaction with other persons in the process of communication. The principal part of this learning occurs within intimate personal groups. The learning of criminal behavior includes the techniques for committing the crime and the specific direction of motives, drives, rationalizations, and attitudes that are consistent with criminal behavior. The specific directions are learned from definitions of legal codes as favorable and unfavorable. A person becomes delinquent because of an excess of definitions favorable to violation of the laws.

Differential association may vary in frequency, duration, priority, and intensity. The process of learning criminal behavior by association of criminal and anticriminal patterns involves all of the mechanisms that are involved in any other learning (Sutherland, 1956).

The child is exposed to both criminal and noncriminal patterns of behavior. Delinquent behavior is predictable if there is an excess of definitions which are favorable to the violation of laws versus those definitions which are unfavorable to the violation of laws. If a juvenile associates mostly with delinquent youths, chances are greater that
he will become involved in delinquent behavior. Conversely, if a juvenile associates mostly with nondelinquent youths, chances are greater that he will not become involved in delinquent behavior.

The quality and quantity of an individual's associations are defined by the frequency, duration, priority, and intensity of such relationships. Involvement in delinquent behavior is more likely if an individual has many contacts with criminals over a long period of time, and if those contacts are important to him as well as intense.

The major variables within this framework are priority, intensity, duration, and frequency of associations. Regarding these variables, Short (1960) studied an individual's perception of the delinquency of his best friends; Voss (1964) investigated the extensiveness of delinquent associations and its affect on behavior; and, Reiss and Rhodes (1964) investigated the covariation in a boy's delinquent behavior and that of his friends for different kinds of delinquent behavior. The specific findings of these studies will be discussed in Chapter III.

The present study examines three variables within the framework of differential association: involvement in organized school activities, involvement in other organized activities, and involvement in church activities. It is assumed that organized athletic, social, and religious activities cultivates behavior which is favorable to legal norms, and that such associations will locate an individual in peer groups which foster definitions that are unfavorable to the violation of legal codes.
Labeling theory focuses on the impact of social control mechanisms on the individual. Although social control is necessary, inappropriate or insensitive control mechanisms may intensify those behaviors which it is designed to control (Gibbons, 1973; Miller, 1971; Piliavin and Briar, 1964; Gold and Williams, 1969; and Goldman, 1963). This process has been defined as deviance amplification (Wilkins, 1964), secondary deviance (Lemert, 1967), and dramatization of evil (Tannenbaum, 1938).

Formal sanctioning is the contact with an official agency of social control. Regardless of the outcome of this formal contact, other people may define the individual as permanent deviant (Rubington and Weinberg, 1968:213). Formal sanctioning can alienate the juvenile from the system by: (1) exposing him to alienated people; (2) exposing him to impersonal criminal justice processes; and (3) allowing him to learn neutralization techniques, skills, attitudes, and values from hardened criminals. Therefore, official contact with social control agencies for minor deviations may be harmful to the individual's self-concept, his reputation, and his attitudes toward the system and its controlling agents.

Gibbons (1973:246) has stated that "one of the major factors that may drive juveniles toward delinquency as a systematic role is the extent to which community organization have defined the individual as delinquent and bad boy." Lemert (1967) has suggested that agency contacts may be of major significance in this process; and the police is the agency which is most likely to have contact with juveniles.
The data suggest that the police-juvenile contact may be a contributing factor in the etiology of delinquency. The formal contact at the time of apprehension may stimulate more delinquency than would have occurred if the delinquent had not been apprehended. Two independent studies provided data to support this notion (Gold and Williams, 1969). Another study concludes that relatively brief police-juvenile contacts are influential in the development of delinquent careers; "...The interaction, or exchange of gestures, between the policeman and the child apprehended in law violations may serve to increase or to decrease the probability of future excursions into delinquency. Thus the behavior of the police toward the child may be a significant determinant of the child's continued participation in delinquent conduct" (Goldman, 1963:133). Wattenberg and Bufe (1963) also conclude that even relatively brief police-juvenile contacts can greatly influence delinquent careers.

The present study utilizes two variables from labeling theory: formal sanctioning and police-juvenile contact. The relationship between these variables and delinquency will be further examined in Chapter III.

Summary

The purpose of this chapter was to relate the variables in this study to criminological theoretical orientations. The following theoretical orientations are represented in this study: family environment, differential opportunity, compliance theory, differential association, and labeling theory. Each of these theoretical orientations was discussed, and research studies from each orientation were identified. Now
let's turn to Chapter III, "Conceptual Framework," where the literature review for the relationship between delinquency and the independent variables will be presented.
CHAPTER III: CONCEPTUAL FRAMEWORK

Introduction

The previous chapter has delineated the five theoretical orientations which are used in this study: family environment, differential opportunity, compliance theory, differential association, and labeling theory. This chapter further defines the dependent variables investigated in this study. Also, this chapter presents the literature review for the relationship between delinquency and the independent variables.

DEPENDENT VARIABLES

The dependent variables for this study are: delinquency, criminal offenses, and juvenile offenses. This investigation utilizes a legalistic definition of delinquency wherein delinquency includes criminal offenses and juvenile offenses (Scarpitti, 1974:388). Criminal offenses are those behaviors which are in violation of the criminal law regardless of the offender's age. Criminal offenses include offenses against property (e.g. auto theft, larceny, vandalism) and offenses against persons (e.g. assault, rape, murder). Whatever the offender's age, he may be processed through the justice system for a criminal offense.

In addition to the legal codes for adults, juveniles are subject to the jurisdiction of a series of status offenses; e.g. habitual vagrancy, truancy, sexual promiscuity, incorrigibility, running away, defying parents, drinking alcohol and behavior which endangers the morals, health, or general welfare of the child. This array of noncriminal acts are classified as juvenile offenses because only juveniles can be accused, convicted,
and sentenced for committing them. Under the juvenile status provisions, juveniles may be subject to stricter laws than adults, and to greater punishment for non-criminal acts than are many adults who commit felonies. A review of ten studies on state and local juvenile detention programs found that 48 percent of the 9,500 subjects had not committed criminal offenses. In addition, a study of twenty juvenile correctional institutions found that 30 percent of the institutionalized juveniles were children convicted of conduct which would not have been criminal if committed by adults (Sheridan, 1967:27).

This study sharpens the definition of juvenile delinquency by distinguishing between criminal offenses and juvenile offenses. Although this distinction is not common in the empirical literature (Short and Nye, 1958), it is a necessary distinction because violating the criminal law and violating juvenile statutes are very different types of behavior. Juvenile offenses are those behaviors which the adult population defines as inappropriate for youth while criminal offenses are those behaviors which are inappropriate for everyone. Juvenile offenses are age specific while criminal offenses are not age specific. After the age of minority, the individual can not be processed for a juvenile offense while an individual who commits a criminal offense can be processed no matter what the age. Juvenile offenses exist to protect the child from harming himself, while criminal statutes exist to protect society and ensure order in society.

The above discussion illustrates a need for knowledge regarding the subtypes of delinquency: criminal offenses and juvenile offenses. This
study contributes to this end by generating and verifying prediction equations for criminal offenses, juvenile offenses, and delinquency (criminal offenses plus juvenile offenses).

The literature contains information on the relationships between delinquency and the independent variables introduced in Chapter II. This literature review is presented in the following section. The investigation of criminal offenses and juvenile offenses is exploratory; i.e. the relationships between criminal offenses and the independent variables and between juvenile offenses and the independent variables are not yet reflected in the research literature.

INDEPENDENT VARIABLES FOR DELINQUENCY

Traditionally, empirical investigations have utilized a legalistic definition of delinquency; i.e. all behaviors which are governed by legal codes, either criminal law or juvenile statutes. Therefore, this section is a literature review for the relationship between legalistically defined delinquency and the independent variables introduced in Chapter II under criminological theoretical orientations. The five criminological theoretical orientations used are: family environment, differential opportunity, compliance theory, differential association, and labeling theory.

Family Environment

This study investigates five concepts from the family environment theoretical orientation: (1) broken homes; (2) substitute parents; (3) family size; (4) ordinal position; and (5) maternal supervision. The
following section presents the literature review for the relationship between each of these concepts and delinquency.

**Broken homes**

Several studies have found a significant relationship between delinquency and broken homes. Browning (1960) found that delinquents were more likely to come from disorganized homes. Slocum and Stone (1963) and Morris (1964) found a positive relationship between delinquency and broken homes.

In Norway, it was found that 17.4 percent of offenders and 12.7 percent of nonoffenders were from broken homes (Sutherland and Cressey, 1970:208). A study in England found that broken homes were twice as prevalent for delinquents as nondelinquents (Burt, 1925). A similar ratio was found in the United States (Glueck and Glueck, 1950:208).

Other researchers have concluded that broken homes is not an important cause of crime. In an analysis of juvenile offenders who appear in Cook County Court, Shaw and McKay (1932) found that broken homes were not an important factor in delinquency. Sterne (1964), also concludes that broken homes were of limited value in explaining delinquent behavior.

Toby (1957) offers an organizational explanation for the relationship between broken homes and delinquency. "Perhaps police are reluctant to refer a young boy to juvenile court unless they regard the family situation as unfavorable" (Toby, 1957:507). Therefore, selectivity by the juvenile justice system rather than the social and psychological consequences of a broken home may account for the high incidence of broken homes among official delinquents.
When a parent is absent (for whatever reason), supervision may be reduced and family authority may decline. Guidance, advice, and control may lessen and barriers to delinquent associations may weaken, thus allowing the juvenile to drift into delinquent conduct (Sterne, 1964:27).

A pilot study at the New Jersey State Diagnostic Center, found that the more disorganized the home, the greater the delinquency (Sterne, 1964). The four categories of disorganized homes were identified as: (1) illegitimate and homeless child (most disorganized); (2) both parents together in conflict; (3) divorced parents; and (4) one or both parents dead (least disorganized). In a study of 500 delinquents and 500 nondelinquents, Eleanor and Sheldon Glueck (1950:123) found that delinquents were more represented in each of the above categories than nondelinquents. This study investigates two of these categories: (1) broken homes due to divorce; and (2) broken homes due to death. Most of the past research leads to the conclusion that broken homes due to divorce, and broken homes due to the death of either parent or both parents may be significant factors in the etiology of delinquency.

Substitute parents

Substitute parents are in a difficult position, because they have to fight a natural prejudice because they often have natural born and adopted children in the home, which often makes it impossible for them to distribute love and justice impartially. Not all children can adjust to substitute parents. Those who cannot, develop a self-centered and ruthlessly
egotistical attitude, with the unconscious purpose of getting some sort of satisfaction through themselves in place of what real parents might have given them (Jung, 1928:335). There is little empirical data on the effects of substitute parents on delinquent behavior. However, Eleanor and Sheldon Glueck did include substitute parents as a variable in their study entitled *Unraveling Delinquency* (1950).

The Gluecks found that 54 percent of the delinquents sampled and 88 percent of nondelinquents sampled had been reared continuously by both or one of their real parents. This means that although one parent may have died or left the home (deserted, disappeared, separated, divorced), no parent substitute (stepparent, foster parent, or relative) came into the family to replace the departed parent (Glueck and Glueck, 1950:124). The available evidence shows that delinquents are more likely to be living with substitute parents than nondelinquents. It can be concluded that youth who live with both natural parents are less likely to be delinquent than youth who live with one natural parent and one substitute parent; and youth who live with two substitute parents are more likely to be delinquent than youth who live with one natural parent and one substitute parent.

**Family size**

A tragedy ensues when families become so large that some or all children are neglected and are forced to gain their character in the streets and not in the home (Mannheim, 1955:611). Under conditions of overcrowding, the necessity of protecting oneself from complete invasion of privacy can lead to a defensive attitude and an irritability which produces mental
strain and resentment by others (Baber, 1953:11). This resentment in turn, heightens the tension and the tension may be expressed in delinquent behavior.

Delinquents are more likely to come from larger families (President's Commission, 1967B). The Gluecks' (1950) found that the family size for delinquents is significantly larger than the family size for nondelinquents. Nye (1958) also found that delinquent boys were from larger families than nondelinquent boys. The past research leads to the conclusion that the larger the family size, the greater the involvement in delinquency.

**Ordinal position**

Ordinal position is another aspect of family structure which differentiates between delinquent and nondelinquent behavior (President's Commission, 1967B). Juveniles in the intermediate ordinal position are believed to be more delinquency prone because parents give most of their attention to the oldest and the youngest children. This may squeeze the intermediate children out of the family and into delinquent associations (Lees and Newson, 1954).

The Gluecks' (1950) found that 60 percent of their delinquents and only 47.8 percent of their control group were intermediate children. Lees and Newson (1954) in England, and Nye (1958) in the United States found that children having both older and younger siblings were significantly overrepresented in a sample of delinquents. These research results lead to the conclusion that those who are in an intermediate ordinal position are more likely to be delinquent.
Maternal supervision

Maternal supervision is indicated by whether or not a mother worked outside the home. With regard to working mothers, the Gluecks' (1964, 1950) suggest that absence of the mother from the home is "markedly implicated in the complex of criminogenic influences." The mother's irregular, sporadic work outside the home has a deleterious influence on family life and contributes to delinquency.

The Gluecks' (1950), found that more children in the families of delinquents than in those of nondelinquents were deprived of necessary maternal affection and supervision, and mothers who work provide less suitable supervision to their children than housewives do. For children who eventually became delinquent, supervision by working mothers was less suitable than for housewives. Also, a boy who is poorly supervised and has a working mother is more likely to become a delinquent than a poorly supervised boy whose mother does not work (Glueck and Glueck, 1950). Based on this research, it can be concluded that working mothers provide less adequate supervision, and poor maternal supervision is a factor in the etiology of delinquency.

Differential Opportunity

This study investigates seven concepts from the differential opportunity theoretical orientation: sex, race, age, socioeconomic standing, achievement motivation, anomie, and alienation. The following section presents the literature review for the relationship between each of these concepts and delinquency.
Sex

Sex differences are prevalent in our society. Males have different life goals, different means, different socialization, and different attitudes than females (Coleman, 1961). Bouma and Williams (1968) found sex differences when studying adolescent attitudes toward police, and FBI statistics illustrate sex differences with regards to quality and quantity of delinquent behavior. Males were responsible for 90.4 percent of all violent offenses and 81.3 percent of property crimes in 1970 (Federal Bureau of Investigation, 1970).

"Crime and delinquency rates for males are greatly in excess of rates for females: in all nations, all communities within a nation, all age groups, all periods of history for which organized statistics are available, and for all types of crime except for a few which are peculiar to women, such as prostitution, infanticide, and abortion" (Cohen and Short, 1971: 108). Sex status is of greater significance in differentiating criminals from noncriminals than any other trait (Sutherland and Cressey, 1970:126). This accounts for the formulation of lower class male oriented theories of delinquent behavior (Miller, 1958; Cohen, 1955; and Cloward and Ohlin, 1960).

The overrepresentation of males in the official crime rate may reflect the more docile and dependent role played by females in society (Bloch and Flynn, 1956:37; Sutherland and Cressey, 1960:115). In addition, females are more supervised and sheltered from deviant influences (Clark and Haurek, 1966; Maxwell, 1966). "From infancy, girls are taught that they must be nice, while boys are taught that they must be rough and tough; a
boy who approaches the behavior of girl is regarded as a sissy" (Sutherland and Cressey, 1970:130).

Lower class males often find themselves at a competitive disadvantage in gaining access to legitimate routes to success. The result may be an intense sense of frustration that may alienate these boys from conventional rules and expectations. In the situation of blocked opportunity, these boys may turn to illegitimate means to success (Gloward and Ohlin, 1960). If the social structure continues to block opportunities for lower class boys, then, the pressures toward delinquency are likely to continue. Therefore, males are more likely to be recidivists. Clark and Haurek (1966) found that there is a greater proportion of males involved in delinquency especially for those who admitted committing offenses four or more times. The available evidence strongly supports the conclusion that males are more likely to be involved in delinquency than females.

Race

For the purposes of this study, race was dichotomized into white nonwhite. The emphasis in the following discussion is on Negroes because they comprise almost the entire nonwhite group in the research community.

In a longitudinal study of 9,945 boys in Philadelphia, Wolfgang et al. (1972) conclude that race (and SES) were most strongly related to delinquency. Recidivists are more likely to be low SES nonwhites than are one time offenders and there were three times as many nonwhite recidivists as white recidivists (Wolfgang et al., 1972:248).
In another study, Monahan (1960) found that age for age, Negro rates exceed white rates for each of four years 1923, 1941, 1949, and 1957. Blacks comprised one-tenth of the population in 1967, however, Blacks constituted nearly one-third of all persons arrested in that year (Wolfgang and Cohen, 1970:31). Therefore, Blacks are overrepresented in the arrest statistics, and, a study by Johnson (1941) found that the "actual crime rate" of Negroes is higher than whites. The actual crime rate is defined as crimes committed rather than crimes arrested for.

The social position of Blacks is such that opportunities to achieve are blocked. Criminal behavior is an alternate means to achieve goals (Merton, 1957). Furthermore, the culture of the Black community may be in conflict with the culture of the white community. What is deviant in the white community may be normative in the Black community (Mannheim, 1965:563).

Discrimination by the criminal justice system may account for the overrepresentation of Blacks in the official statistics. Harassment by police and the negative consequences of criminal justice processing (stigmatization, deprivation, and criminalization) may account for any increases in criminal behavior by Blacks. The negative consequences may be passed on to future generations via a process of socialization.

Blacks are overrepresented in the arrest statistics. This may be due to differential law enforcement which formally sanctions Blacks while informally sanctioning whites (Gibbons, 1973:114). A study by Wolfgang et al. (1972) found that after the police take an adolescent into custody, he is most likely to be processed if he is nonwhite and poor. Negro
youths were more often approached by the police because Blacks were stereotyped as potential troublemakers (Piliavin and Briar, 1964:34).

"In conjunction with police crime statistics, the criterion of demeanor led police to concentrate their surveillance activities in areas frequented or inhabited by Negroes. The consequences of this is reflected in police statistics showing a disproportionately high percentage of Negroes among juvenile offenders, thereby providing 'objective' justification for concentrating police attention on Negro youths" (Piliavin and Briar, 1964:214). Black juveniles may respond to such harassment via intensified criminal behavior.

Given the factors of blockage, culture conflict, discrimination by the criminal justice system, the negative consequences of criminal justice processing, and police practices, it is likely that Blacks will be more involved in official and unofficial delinquency than whites.

Age

Different age groups have different arrest rates. Differential involvement of juveniles in delinquent behavior by age can be explained by the dissimilarity of roles prescribed for persons who occupy different age statuses. "An elementary knowledge of American cultural definitions of adult and child roles obviously leads to anticipate differential rates of behavior for age groupings" (Clark and Haurek, 1966:501). Adolescent age groups are more likely to display differential rates of behavior because it is a period of transition from childhood to adulthood (Clark and Haurek, 1966).
Adolescence is the time when an individual is most deviant (Neumeyer, 1961; Sutherland and Cressey, 1960). Older adolescents are more involved in criminal behavior (Neumeyer, 1961); this is verified by official statistics. The official statistics show that older juveniles (15-18 age group) have higher arrest rates than any other age group (Federal Bureau of Investigation, 1970).

This study's sample consists of only 14, 15, and 16 year olds. Of this age group, 16 year olds have the highest arrest rates; 15 year olds are second. Although the official rates are increasing for 14 year olds, they are still well behind the rates for 15 and 16 year olds. Therefore, it can be concluded that as age increases, juvenile involvement in delinquency increases.

Socioeconomic standing

The theory of lower class delinquency rests heavily on evidence from official sources (Shaw and McKay, 1942; Wattenberg and Balistrieri, 1950; Burgess, 1952; Cohen, 1955; Eaton and Polk, 1961; President's Commission, 1967). The problem is that official records do not accurately reflect the distribution of delinquency by age, sex, social status, race, and other variables (Gould, 1966; Williams and Gold, 1972).

As early as the 1940's, Porterfield suggested that there is no direct association between delinquency and social status (Empey, 1956). More recently, other researchers (Bordua, 1958; Cavan, 1962; Empey and Erickson, 1966; Epps, 1967; Kupfer, 1966; Nye et al., 1958) have arrived at similar conclusions. Clark and Wenninger (1964) found that among high
school seniors, delinquency is inversely related to socioeconomic conditions in the community but is not related to social class. In Detroit, Angell (1962) found little relationship between social class and deviancy. Also, Karacki and Toby's (1962) data rejected the socioeconomic explanations of delinquency. Empey and Lubeck (1971) assume that there are a series of events which lead to delinquency. It was hypothesized that these events must occur in this order: lower social class → lower achievement → increased strain → identification with delinquent peers → delinquency. However, the researchers concluded that class membership itself is a poor predictor of a variety of different delinquent acts. Similarly, Wilcox (1969) did not find support for his hypothesis that delinquency is more common in the lower strata of society. Self-report studies in small non-industrial communities do not support those theories which assume that there is a higher rate of delinquency for lower class children (Nye et al., 1958; Empey and Erickson, 1966).

The available evidence suggests that official records may exaggerate the differences in delinquency among different social classes (Gold, 1966). Self-report studies which draw their data from subjects in the public school system have shown that delinquency cuts across all social levels (Short and Nye, 1953; Dentler and Monroe, 1961). Gold (1966) found that the official ratio of lower class delinquents to higher class delinquents was reduced when a self-report instrument was used. The self-report ratio was 1.5 to 1 while the official rate was five to one.

A large percentage of delinquent acts and the identities of children who committed them are unrecorded in the official records of the police and
the courts. The frequency and nature of delinquency committed by adolescents but for which no one is arrested is an important but unknown dimension of delinquent behavior (Short and Nye, 1958). Standards for defining delinquency are so broad that virtually all juveniles can be included. Therefore, those who are officially defined as delinquent is a function of: (1) the nature and extent of delinquent conduct, and (2) the enforcement practices of control agencies. "It is logically conceivable that the correlation between juvenile delinquency and social class is a statistical artifact produced by the biases of the police and the courts" (Cohen, 1955: 37). The visibility and economic harm of lower class crime may solicit more comprehensive surveillance by law enforcement. Surveillance and the greater visibility of lower class crimes will result in higher official crime rates for that social class. Only about one fourth of those juveniles who have direct contact with the police are referred to the juvenile court (Cavan, 1962); therefore, the majority of juveniles are handled informally by the individual police officer or by police youth bureaus. Official rates do not reflect the fact that lower class offenders are more likely to be arrested and referred to juvenile court (Piliavin and Briar, 1964).

Lower class children are more likely to be formally processed through the criminal justice system because their offenses are more visible and more economically harmful (Mannheim, 1965:461). The negative consequences of this processing is a push toward serious delinquency. Self-report studies of larger cities have found that lower class juveniles are disproportionately involved in delinquency (Short and Strodtbeek, 1965;
Miller et al., 1961). In a self-report study Gold (1966) found that lower class boys were more frequently delinquent and committed more serious offenses. For those committing the most serious offenses, lower class boys reported almost four times as many offenses as did middle and upper class boys. Reiss and Rhodes (1961) also found that lower class boys were more frequently and seriously delinquent.

In that lower classes place relatively high value on social ascent and have equal or less opportunity to achieve, it is likely that there will be relatively greater position discontent in the lower class. For many lower class boys, there is a severe disjunction between aspiration levels and expectations. This goal-means discrepancy generates pressure to engage in deviant behavior (Cloward and Ohlin, 1960). The solution which lower class youth seek entails the acquisition of higher positions in terms of lower class rather than middle class criteria (Cloward and Ohlin, 1960:92).

On a study of deviant adaptations, Marsh (1961) concluded that legitimate means of achieving success goals were not available to lower classes, so that deviant adaptations were more likely here. Landis et al. (1963) found support for opportunity theory among lower class youth. Their data suggested that delinquent youth do reject middle class values (as stated by Hyman, 1953, and by Cohen, 1955) and delinquency was positively correlated with greater perception of limited opportunity. Short (1964) found that the degree of goals-means discrepancy and the frequency of delinquency were negatively related to social class position.
In short, the empirical evidence regarding the relationship between socioeconomic standing and delinquency is contradictory. Therefore, it is difficult to derive conclusions from the literature review. For the purposes of this study, it is assumed that there is an inverse relationship between socioeconomic standing and delinquency; i.e. the lower the socioeconomic standing the greater the involvement in delinquency.

Achievement motivation

In this study, educational orientation is used to indicate one's motivation to achieve middle class educational goals. It is believed that educational orientation reflects cultural and school experiences. Cultural experiences may place limits on a juveniles performance in an educational system which stresses middle class goals. There is evidence that suggests that lower class children do not have the cognitive nor social skills for coping with school expectations, and the middle-class school authorities (Deutsch, 1967; Dennis, 1960; Goldfarb, 1953; Hunt, 1961).

Rosen (1956) found class variations for achievement motivation, cultural orientations and aspirations, and he concluded that middle class children are more likely to be taught both the motives and values which lead to achievement than lower class children. "Born into conditions of poverty, and deprived of the kinds of intellectual and interpersonal experiences that are necessary for achievement in a success-oriented society, lower class children are terribly handicapped, if not doomed to failure" (Empey and Lubeck, 1971:3). The result is frustration that not only alienates some youth from conventional rules and expectations, but
turns a significant number to membership in delinquent groups where the norm is to repudiate basic values (Cohen, 1955; Empey and Lubeck, 1971).

Reiss and Rhodes (1969) found that a student's motivation is related to school grades. They suggest that low grades may produce anxiety, shame or frustration. Empey and Lubeck (1971:30) suggest that the school intensifies deficiencies by establishing low expectations and by anticipating failure. True to the Mertonian self-fulfilling prophecy (Merton, 1957), failure occurs.

Two independent studies conclude that achievement motivation is related to delinquency for lower class youth. Gibson and West (1970) found that social handicaps and poor motivation is correlated with early delinquency, and that these delinquents were from the poorest and most depressed families.

This study utilizes educational orientation to measure achievement motivation. Lower class educational orientation is characterized by post high school plans which emphasizes vocational training in contrast to college education. Short (1964) concluded that those with low educational aspirations are most delinquent. Kleiner (1964) found that delinquency was negatively related to acceptance of the goal of college education. The past research leads to the conclusion that the motivation to achieve the middle class goal of college education is negatively related to delinquency.

Anomie

A stable system is one where goals and means are fairly well integrated, while an unstable system is one where these two elements are out of balance.
This imbalance between goals and means leads to a weakening commitment to either the culturally prescribed goals or the institutionalized means. In both cases, the result is a state of anomie. Anomie is a state of normlessness, or a breakdown in cultural structure which occurs "when there is an acute disjunction between cultural norms and goals and the socially structured capacities of members of the group to act in accord with them" (Merton, 1938:162).

Anomie can be measured by residential mobility, racial heterogeneity, overcrowding, poor housing, education, unemployment, etc. (Cлинard, 1964). This study used residential mobility to indicate anomie. An area characterized by residential mobility is likely to have a low percentage of home ownership.

The social structure exerts a definite pressure upon certain persons to engage in deviant behavior (Merton, 1938:131). The strain leads an individual to reduce his efforts toward legitimate means and increase his experimentation with means that are not institutionally prescribed. Two studies have found a relationship between anomie and delinquent behavior (Lander, 1954; Bordua, 1958). Both studies used home ownership to measure anomie. In a study of 8,464 cases of delinquency in Baltimore, Lander (1954) found that delinquency was more prevalent in areas where there was a high anomie state as indicated by a low percentage of home ownership. In a replication in Detroit, Bordua (1958) confirmed Lander's findings. The past research leads to the conclusion that the greater the anomie, as measured by residential mobility, the greater the involvement in delinquency.
Alienation

This study includes three theoretical indicators of alienation: anomia, powerlessness, and future orientation. "Anomia signifies the state of mind of one who has been pulled up from his moral roots, who has no longer any standards but only disconnected urges, who has no longer any sense of continuity, of folk, of obligation" (MacIver, 1950:84). It is that personal state where an individual has lost touch with all value systems which could give meaning or direction to his life. Powerlessness is "the expectancy or probability held by the individual that his own behavior cannot determine the outcomes or reinforcements he seeks" (Seeman, 1963:784). Future orientation refers to an individual's optimism or pessimism about his future. If an individual anticipates negative events in his/her future, then, he/she is pessimistic. If an individual anticipates positive events in his/her future, then, he/she is optimistic. The more negative and/or pessimistic an individual is about his life chances for the future, then, the more alienated he is.

Reiss and Rhodes (1961), Engstad and Hackler (1971), and Clark and Wenninger (1962) in three separate studies found that the frustration and alienation explanation does not account for delinquent behavior. However, several other authors do not concur with these findings. Gold (1969) submits that delinquent behavior may be a means for convincing oneself that he is not a failure and not self-estranged. Marwell (1966) views delinquency as a search for power in a society where adolescence is a period of powerlessness. Anomia and life goals (which is similar to this study's concept of future orientation) were found to differentiate between delin-
quents and nondelinquents (Liu, 1962). Wood (1961) found that deviance is extensive for those populations which report frustration, and Nettler (1959) found a positive relationship between alienation and self-reported criminal behavior.

Alienation does not lead to criminal behavior in every case. The individual response pattern may lead to other types of anti-social behavior; e.g. neurosis, psychosis, alcoholism. However, crime rates are high in groups where social interaction is characterized by isolation, anonymity, impersonalization and anomia (Jeffery, 1959:195); and delinquents are more alienated than nondelinquents (Allen and Sandhu, 1967; Wood, 1961; Nettler, 1959). The theoretical and empirical literature leads to the conclusion that as alienation increases delinquency becomes more likely.

Compliance Theory

This study investigates nine concepts from compliance theory. These concepts have been grouped into three categories: attitudes toward institutions within the compliance system, attitudes toward roles of compliance agents, and attitudes toward compliance agents. Attitudes toward school and attitudes toward the legal system are the two concepts for the first category. Attitudes toward the teacher's role and attitudes toward the police role are the two concepts for the second category. The third category includes: attitudes toward parents, attitudes toward teachers, attitudes toward legal authorities, attitudes toward police, and attitudes toward the juvenile court and its agents.

The compliance system is that network of laws, persons, and institutions vested with the authority to enforce their demands (Hess and Torney,
The focus of this study is on the attitudes that juveniles have toward the compliance system, its roles, and its agents. It can be argued that attitudes toward authority are related to the behavior of the participants in that system. However, the existence of a theoretical relationship between attitudes and behavior has been rejected by many social scientists. Deutscher (1966) states that the expectation of an attitude-behavior relationship is unreasonable. To anticipate a direct relationship between attitudes and behavior is to commit the fallacy of expected correspondence (DeFleur and Westie, 1963). Festinger found that there is a low relationship between a person's verbal report of his attitudes, and his actual behavior toward the object of the attitude. Green states that "many investigations have found that specific acts or action attitudes often cannot be predicted very accurately from elicited verbal attitudes" (Green, 1954:340). Fishbein (1966:199) also indicates the lack of evidence: "we have attempted to predict some behavior from some measure of attitudes and found little or no relationship between these variables" (Fishbein, 1966:199).

According to Wicker's analysis of fifty studies, it is more unlikely that attitudes will be unrelated than closely related to behavior. Wicker (1969) found a correlation of .30 between attitudes and behavior which means that only nine percent of the variance in actual behavior is explained by attitudes. However, there are several studies which have found that individuals who have negative attitudes toward the legal system are more likely to be involved in deviant activities.
Attitudinal research studies in the criminal justice area have laid the groundwork for the development of a criminality index based on attitudes toward the legal system. Reckless and Newman (1965) found that attitudes toward the justice system are useful for indicating levels of criminality (Reckless, 1965:77). More recently, Mylonas and Reckless (1968) found that attitudes toward the legal system vary in expected directions with criminal and noncriminal samples in the United States and Greece; i.e. the more positive an individual’s attitudes are towards the legal system, the less would be his involvement in criminal behavior.

Clark and Wenninger (1964:489) found a positive relationship between negative attitudes toward authority and illegal conduct. This study suggests a social role which includes both involvement in delinquent behavior and an unfavorable attitude toward the legal institution. Further support was found for the relationship between negative attitudes and deviant behavior in a study of imprisoned offenders. The inmates who were more criminal as measured by their criminal record had more negative attitudes toward law and law enforcement (Brown, 1970). Hirschi (1969) found that those juveniles who reported one or more delinquent acts had no respect for the police and felt that the police did not treat kids fairly. In a study of 94 British boys, Gibson (1967) concluded that the more positive the attitude toward the police, the lower the rate of self-reported crimes. Chapman (1953) found that delinquents were more hostile toward legal agencies of authority than nondelinquents and that the degree of hostility is greater toward the police than any other compliance system agency. Past research
leads to the conclusion that there is a relationship between delinquency and negative attitudes toward the compliance system, its institutions, its roles, and its agents.

**Differential Association**

The present study utilizes three measures from differential association theory: involvement in organized school activities, involvement in other organized social activities, and involvement in church activities. It is assumed that organized school, social, and religious activities cultivate behavior which is favorable to legal norms, and that such associations will locate an individual in peer groups which foster definitions that are unfavorable to the violation of legal codes. In support of this assumption, Schafer (1969) found a negative relationship between athletic participation (an in-school activity) and delinquency.

Although Short (1960) questions whether differential association theory lends itself to operationalization without reformulation, several attempts to test it have been made. In an empirical test of differential association theory, Reiss and Rhodes (1964) concluded that the probability that an individual will commit a specific delinquent act depends on the commission of that act by his peer group. Using a subjects' perception of the delinquency of his best friends as a measure of intensity of association, Short (1960) found that intensity is strongly related to the delinquency of youth. Voss (1964) found that boys whose association with delinquent friends is fairly extensive engage in more delinquent behavior than those whose contact is minimal. The available evidence appears to support Sutherland's differential association theory.
Labeling

This study investigates two concepts from labeling theory: police-juvenile contact and formal sanctioning. The focus of this study is on the effects of negative contacts with police and the effects of formal processing through the juvenile justice system. Gold and Williams (1969) found that the contact between police and juvenile may stimulate more delinquency than would have occurred if the juvenile had not been in contact with the police. Three other studies have concluded that the juvenile's contact with the police is a significant variable in the etiology of delinquent careers (Goldman, 1963; Wattenberg and Bufe, 1963; and Miller, 1971).

Formal sanctioning is another significant variable in the etiology of delinquent careers. Once it is known that a person has made contact and been processed through an agency of social control, other people may regard him as a deviant. Not only is the individual labeled as a deviant in the present situation, but, his past behaviors may be redefined to fit his present status in a process of retrospective interpretation (Rubington and Weinberg, 1973). In his observations of this phenomena, Tannenbaum (1938) concludes that the community labels a young person by summarizing all of his acts under one term and then forces him to sustain this redefinition of himself. Goffman (1961) studied the effects of being formally processed through the mental health services system and concluded that the process is degrading and humiliating to the individual and the consequences did not end at the time of dismissal. The community has defined the person as a deviant. In another study, it was found that one's devi-
The ant status transcends time, place, organizational setting, and sometimes even adjudged truth or falsity of the status (Schwartz and Skolnick, 1973). The researchers concluded that would-be employers accept stigma in denying employment even when there is no factual basis for the stigma. Therefore, laymen can become defining agents after formal control agents have acquitted the accused.

The social processes described under the heading of labeling theory are difficult to study without the benefit of a longitudinal research design. The present study seeks to capture these social processes in two variables: (1) how did the juvenile view his contacts with the police; and (2) how did formal sanctioning effect the juvenile's behavior. The evidence presented above leads to the conclusion that negative contacts with the police and frequent formal sanctioning by the juvenile justice system, are important variables in the etiology of delinquency.

CRIMINAL OFFENSES AND JUVENILE OFFENSES

As stated earlier, the literature does not contain evidence which differentiates between the correlates of criminal offenses and juvenile offenses. Therefore, the investigation of each of these dependent variables is exploratory.

There is some evidence which suggests that specific juvenile offenses (e.g. drinking alcohol, running away, truancy) are related to involvement in criminal offenses. MacKay et al. (1963) found that the drinking practices of delinquents differed significantly from those of the normal
adolescent. The use of alcohol is two or three times greater for delinquents as nondelinquents (Blacker et al., 1965). Croft and Grygier (1956) found that truants and delinquents had similar characteristics, and Hildebrand (1968) concluded that the runaway rate is a reliable indicator of delinquency trends. Therefore, there appears to be a relationship between specific juvenile offenses and criminal offenses, but, the relationship is unclear and additional empirical evidence is needed.

Summary

The purpose of this chapter was to specifically define the dependent variables (delinquency, criminal offenses, and juvenile offenses), and to review the literature regarding the relationship between the independent variables and delinquency. Based on the literature review, tentative conclusions about each relationship were forwarded. This chapter also stressed the importance of understanding the relationship between criminal offenses and juvenile offenses.

Now let's turn to Chapter IV, "Methodology", where the procedures for conducting this investigation are presented.
CHAPTER IV: METHODOLOGY

Introduction

This chapter presents the specific methodological procedures which were used in this study. Because this dissertation focuses on cross-validation as a method for increasing confidence in one's research findings, the rationale, purpose, and procedure of cross-validation will be extensively discussed. Following the procedures of the cross-validation design, the original sample from Lansing, Michigan was divided into two subsamples. The procedure for splitting the original sample and for validating findings across the subsamples will be specified. This chapter also includes a brief description of the research community, the research population, the original study from which these data were obtained, and the measurement procedures.

Purpose of Cross-Validation

The degree to which a given research finding can be attributed to chance can be expressed in terms of probability. For example, the .05 level of significance means that one time out of twenty, the results could be due to chance. To reduce the likelihood of this error, research findings can be revalidated or replicated. Cross-validation is a revalidation procedure which allows the researcher to have more confidence that his findings are not due to chance. The results of cross-validation are statistically significant if it is unlikely that a result is due to chance in drawing the sample to be used as a trial group (Ryan and Smith, 1954:88).
Within the framework of cross-validation, a prediction model is defined as valid if that prediction model gives consistent results for different samples from the same population.

The larger the sample, the greater the confidence which can be placed in the statistics derived from it because the sampling distributions of statistics are functions of the number of subjects and the number of variables. Therefore, the larger the sample, the more significant is any given size of correlation and the more confidence one has that the obtained correlation approximates the value which exists for the population as a whole. "The true relationship may not be quite as high, but it is so unlikely that luck alone would produce so high a correlation, that there must be some relationship in the whole population from which the sample was drawn" (Ryan and Smith, 1954:88).

In summary, the observed relationship may be entirely due to chance in small samples. With large samples, the chances of getting accidental relationships are less. Some correlation may still occur by luck alone, but a high correlation in a large sample shows that more than luck is involved (Ryan and Smith, 1954:88).

The general purpose of cross-validation is to assess the likelihood that the observed relationships are not due to chance. However, as has been discussed here, the size of the sample is an influential factor in determining the confidence to be placed in one's research findings. Also, invalid or unreliable measurement will reduce the level of confidence to be placed in one's research findings. Given these determinants the next section will discuss the alternative means of cross-validating.
Alternative Means of Cross-Validating

When seeking to increase confidence in research findings, the researcher can cross-validate to obtain an unbiased estimate of the prediction accuracy of a set of predictors. There are alternative designs for cross-validating (cf. Wolins, 1967; Mosier, 1951). At a general level, one can cross-validate by splitting the measurement instruments into two sub-instruments or by splitting the sample into two subsamples. Each method is appropriate under different conditions.

If the measures are reliable, and the total number of observational units, N, is small, then cross-validation by random partitioning the measures of each variable into two groups is appropriate. If the reliability of the measures is generally low and N is large then cross-validation by splitting the sample appears to be superior (Wolins, 1967:825).

The choice between split samples and split measures, then, can be based in part on the characteristics of the data. Since either precision is sampling or precision in measurement must be sacrificed in order to cross-validate, one's decision should consider both means and choose in an optimum way.

Cross-Validation by Splitting Samples

This section elaborates the procedure for cross-validating by splitting samples. The reader is referred to Wolins (1967), Lee (1969), and Schmidt (1971), for further discussion of cross-validation by splitting measures. Cross validation by splitting samples is the process of testing
a relationship using data collected from two or more samples which are independently drawn from the same population (Brown, 1970:129). The purpose of this process "is to determine prediction weights and multiple correlation values which will most likely apply in those samples for which criterion measures are not or will not be available" (Mosier, 1951:9).

Two separate samples are needed for cross-validation, but, when the researcher has one large sample (500), he can randomly split the sample into two subsamples. Subsample 1 is called the screening sample and subsample 2 is the calibration sample (Lord and Novick, 1968:285). The general procedure includes developing prediction methods on the basis of the screening sample and then determining their validity on the calibration sample (Horst, 1968:377). In multiple regression, this involves the discovery of the linear combinations which yield the best least square estimates for the dependent variable. Regression weights are determined on the basis of these statistics from the screening sample, and these weights are used for validation of the prediction weights used in the calibration sample.

The selection of the variables in the screening sample is based on the zero order correlations between the independent variable and the dependent variable. After the prediction equations have been generated, the task is to determine the predictive effectiveness of the equations by applying it to a calibration sample which is from the same population as the screening sample.
Shrinkage Effect

At a general level, it has been stated that cross-validation is a procedure which allows the researchers to be more confident that his findings are not due to chance. This is accomplished by estimating the shrinkage in the multiple correlation from Sample 1 to Sample 2.

Multiple correlation coefficients (R) may shrink during cross-validation when there is a large amount of measurement error. Therefore, the cross-validated R is a more accurate estimate of the true relationship than the noncross-validated R (Brown, 1970:233). And because the prediction equations have been subjected to validation, the researcher can have more confidence in the observed relationships.

When a set of weights (derived from Sample 1) are applied to the independent variables (predictors) if Sample 2 and then correlated with the observed dependent variable, this R will almost always be smaller than the R obtained in Sample 1. In general..."indices of accuracy of prediction derived from a given sample will overestimate the accuracy of prediction in subsequent samples" (Horst, 1968:378). This is partially due to the fact that the least square procedures capitalize on chance factors and errors of measurement in the screening sample. "In calculating the weights to obtain a maximum R, the zero order correlations are
treated as if they were error free" (Kerlinger and Pedhazur, 1973:282). This is never the case and, therefore, there is capitalization on chance. The result is that $R$ is biased upwards, and the beta's will be less predictive in subsequent samples (Horst, 1968:378).

When a selection procedure (stepwise solution) is used the capitalization on chance is even greater. This is because the "best" set of variables will have errors due to their correlations among each other and with the dependent variable. Large samples (500) will serve to offset some of these errors.

Estimation of the Shrinkage Effect

When the regression equation, as derived from Sample 1, is applied to the independent variables of Sample 2, there will be a $Y'$ for each subject ($Y'$ is the predicted value for the dependent variable). The shrinkage effect is estimated by calculating a Pearson $R$ between the observed dependent variable ($Y$) in the calibration sample and the predicted value for the dependent variable ($Y'$). This Pearson $R$ corresponds to a multiple correlation ($R$) where the regression equation was obtained from the screening sample. This $R$ is then squared. "The difference between $R^2$ of the screening sample and $R^2$ of the calibration sample is an estimate of the amount of shrinkage" (Kerlinger and Pedhazur, 1973:284).
The degree of overestimation of $R$ can not be directly determined, but the amount of shrinkage can be estimated by:

$$\hat{R}^2 = 1 - (1-R^2)\left(\frac{N-1}{N-K-1}\right)$$

where $\hat{R}^2 = \text{estimated squared multiple correlation in the population}$

$R^2 = \text{obtained squared multiple correlation}$

$N = \text{size of the sample}$

$K = \text{number of independent variables}$

The degree of overestimation of $R$ is affected by the ratio of variables ($K$) to the size of the sample ($N$). The greater this ratio the more is the overestimation of $R$. As a rule of thumb, there should be at least 30 subjects per independent variable in order to minimize the amount of overestimation (Kerlinger and Pedhazur, 1973:284).

The smaller the screening group (on which the prediction procedures were developed) and the larger the number of predictor variables, the greater the shrinkage is likely to be. "...The smaller the group and the larger the number of predictor variables, the higher will be the estimates of prediction accuracy on the screening group and, therefore, the more shrinkage one can afford on subsequent groups" (Horsz, 1968:379).

If the estimated shrinkage is large, it is likely that the obtained results may be due to chance. A large shrinkage should be interpreted with regards to the theoretical and measurement frameworks of the study, or, a new prediction model should be generated from another sample, and
validated. When the shrinkage is small and the explained variance is theoretically and empirically significant, then the regression equation obtained in the screening sample can be applied to future predictions (Kerlinger and Pedhazur, 1973:284). However, a regression equation based on a combination of the screening and calibration samples has greater stability than the equation generated from the screening sample because the number of subjects is greater (Mosier, 1951). Therefore, if the shrinkage is small, the two samples can be combined and the regression equation for the combined samples can be used for future prediction. However, when each random sample is large (around 500), the difference between the regression equation generated from the combined versus the screening sample is likely to be negligible.

Application of Cross-Validation

The problem which stimulated this investigation is the lack of empirically derived theories of juvenile delinquency. Traditionally, studies have focused on a specific set of variables which are tested for their relationship to delinquency. Many variables have been studied and the findings have often been in conflict. Also, characteristically small samples, poor measurement, and the lack of validation has prevented confidence in the findings of many of these studies. The traditional procedures can be improved upon when one has a large sample and uses a cross-validational design.
The present study is based on a large sample studied at one point in time, and the reliability of the measures is generally high. Although a variable set has been defined, the model is not completely specified; i.e. a preliminary theoretical variable set has been defined, but, the empirical prediction models have not been generated. Given a variable set of thirty independent variables, the task is to specify a model. In specifying the model, the split-sample cross-validation procedure will be used because it is recommended when one has a large N (Wolins, 1967) and/or when one's model is not completely specified (Warren and Lee, 1971).

The purpose of using cross-validation in this dissertation is to: (1) guard against sampling variability by using more than one sample; and (2) to increase confidence in the empirical generalizations so that they can be inductively inferred to the theoretical level. The biases of testing and generating a model on the same sample are avoided by performing only one process in each sample.

The research community

Lansing, the capital of Michigan, had a population of 133,000 in 1960, with a tributary area population of about 217,000. Lansing is a manufacturing center, a regional distribution center, a governmental center, and an educational center. These four components provide more than half of the employment and the income in the Lansing area. In 1965, manufacturing provided about 30 percent and government about 15 percent of the metropolitan area jobs.
About 39 percent of all jobs are held by commuters, with disproportionate decreases in resident employment. The city population has increased faster than has resident employment. This indicates that non-participants in the labor force are concentrating in the city. There is a tendency toward movement to the suburbs by the more affluent.

Metropolitan Lansing population trends can be summarized as follows:

- Metropolitan area population increased more rapidly than the nation 22 percent compared with 18.5 percent during the 1950-1960 decade.
- Central city population increased only 1.7 percent during the period. Nearly 70 percent of metropolitan population gain occurred in the adjacent suburban fringe.
- Suburban population consists chiefly of middle and higher income dominant families, both immigrants and those moving out of the central city.
- The minority group population in the central city more than doubled during the 1950-1960 decade as a result of high birth rates and immigration. Minority groups comprised 6.5 percent of the city's minority groups comprised 9.0 percent of the city's population.
- Females increased faster than males in the 20 to 30 year age group. This is due chiefly to an emigration of males. Also, the concentration of clerical jobs in the Lansing area is a major drawing variable for younger females from the surrounding region.
- The population became younger as the age structure shifted to a greater proportion of persons under 45. The largest percentage increases were in the very young (under 15) and in the very old (70 and over) age groups (Miller, 1971:188).

The average size of majority households has dropped while the average size of minority households has increased. About 45 percent of all households consist of one or two persons. The number of households have increased faster than the population. This indicates a high rate of household formation and a decrease in multi-family households as a result of rising incomes.
Lansing's Renewal Program found that of 40,145 housing units in Lansing, 46.2 percent were rated as good and in sound condition and 14 percent were rated as poor and in a deteriorated condition, 67.6 percent of the deteriorated housing units were in the inner-city area.

The original study

The data for this study was collected under the supervision of Dr. Martin Miller in Lansing, Michigan in 1968 and 1969. The original study investigated the attitudes, beliefs and perceptions of ninth grade students in Lansing. The data were gathered to evaluate a sensitivity programs in junior high schools of Lansing. The emphasis was on political socialization of students and on developing strategies for increasing sensitivity between youth, teachers, and police.

The funds for this project came from Michigan State University and the city of Lansing. Four trained questionnaire administrators carried out the administration of the questionnaires to the ninth grade students. The questionnaires were administered in social studies classrooms, and the researchers were assisted by the principals, assistant principals and social studies teachers of each junior high school.

The researchers made an effort to make the research situation similar to the classroom situation. The researchers stressed anonymity and requested honesty. The instructions were read aloud to the classes and the students were encouraged to ask questions about those words or instructions which they did not understand. If a student seemed reluctant to trust the administration, he was given the opportunity to seal his questionnaire.
For more information regarding the data collection procedure, please refer to Miller et al. (1969) and Miller (1971).

The sub-samples

The population is defined as all ninth graders present and future who reside in communities which have similar characteristics as Lansing, Michigan. The original study sampled 1,095 students from three Lansing, Michigan junior high schools. The subjects are those ninth graders who were present on the day the questionnaires were administered in their schools. Out of the 1,095 ninth graders, 54 were Negro and 49 were Spanish. Eighty-six Negro students from a fourth school were sampled to increase the Negro student sample to 140. Out of the 1,181 students only 724 had completed two-thirds or more of the items for all scales. These 724 subjects were divided randomly into two subsamples. Sample 1 had 394 subjects and Sample 2 had 330 subjects. Sample 1 is used to determine the model and predictive weights via stepwise regression with dummy variables. Sample 2 is used as a validation sample; i.e. regression analysis is applied to Sample 2 to see if the resultant predictive weights are comparable to the predictive weights of Sample 1.

More specifically, Sample 1 will be used to discover the combination and the order of the variables (X's) that will give the highest $R^2$ for the dependent variables. Given the best prediction equation, the question is how well does it work. The generated regression equations will be tested on Sample 2 using a regular multiple regression model. Also, the $R^2$ obtained by using the weights of the first sample are compared to $R^2$ for the second sample.
The underlying presumptions for this cross-validational analysis are: (1) Sample 1 and Sample 2 are from the same population; (2) because subjects were randomly assigned to each group, Sample 1 and Sample 2 should be comparable; and (3) if the empirically derived model is verified using subjects from a comparable group from the same population, then it can be applicable to other populations which have similar characteristics.

The measurement procedure

Five different measurement techniques are used to measure the theoretical concepts: (1) biographical information; (2) sentence completion scales; (3) summative scales; (4) rating scales, and (5) frequency scales.

The biographical inventory asked the subject factual questions about his personal history: parents divorced, parent(s) living, who living with, number of siblings, birth order, working mother, sex, race, age, occupation, home ownership, in-school activities, out-school activities, and church attendance. Please refer to Appendix B for the coding of the biographical information and the above identified scales.

The sentence completion technique involves presenting the subject with sentence stems and asking him to complete the sentence. The sentence stems were categorized by content so that attitudes toward various objects could be analyzed. The responses were categorized over a range of one through five depending on the nature of the attitude: 5 for direct positive; 4 for indirect positive; 3 for neutral; 2 for indirect negative; and 1 for direct negative. For each of the eight sentence completion scales, a total score was computed.
The summative scale technique (Likert Scale) provides the individual with a statement to which he can choose one of the following responses:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
</table>

If an individual strongly agrees with a positively worded statement then, his item score is 1 and if he strongly agrees with a negatively worded statement then, his item score is 5.

<table>
<thead>
<tr>
<th>Positively worded items</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
</table>

| Negatively worded items | 5 | 4 | 3 | 2 | 1 |

The item scores are then added to get a total score for each of the four Likert Scales.

The rating scales technique involves placing a statement somewhere along a continuum from high (6) to low (1) and then adding up the score for each statement to get a total score. There are two rating scales.

The frequency scale simply asks the respondent to indicate how often (on a 1-4 continuum) he has had a given experience or committed a given act. An item score of 1 means many or very often and a score of 4 means no or never. The item scores are added to get a total score for each of the five frequency scales.

Table I (on the next page) lists the concepts which were measured by each type of scale. The items for each scale and the reliability for each scale are presented in Appendix A.
<table>
<thead>
<tr>
<th>Sentence Completion Scale</th>
<th>Summative Scale</th>
<th>Rating Scale</th>
<th>Frequency Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Future orientation</td>
<td>Anomia</td>
<td>Attitude toward teachers role</td>
<td>Police juvenile contact</td>
</tr>
<tr>
<td>Attitude toward school</td>
<td>Powerlessness</td>
<td>Attitude toward police role</td>
<td>Formal sanctioning</td>
</tr>
<tr>
<td>Attitude toward legal system</td>
<td>Attitude toward police</td>
<td></td>
<td>Involvement in criminal offenses</td>
</tr>
<tr>
<td>Attitude toward parents</td>
<td></td>
<td></td>
<td>Involvement in juvenile offenses</td>
</tr>
<tr>
<td>Attitude toward teachers</td>
<td></td>
<td></td>
<td>Involvement in delinquency offenses and juvenile offenses</td>
</tr>
<tr>
<td>Attitude toward legal authorities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude toward police</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude toward juvenile court and its agents</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Summary

The purpose of this chapter was to describe the methodological procedures employed in this investigation. This study was guided by the precepts of cross-validational analysis which is a revalidation procedure that allows the researcher to have more confidence in his research findings. The present study utilizes the split-sample cross-validation procedure; i.e. the original sample from Lansing was split into two subsamples, one subsample is used to generate prediction equations and one subsample is used to verify the prediction equations. Within the framework of cross-validation, the explained variance is expected to shrink from Sample 1 to Sample 2. The specifics of the shrinkage effect were discussed in this chapter. This chapter also described the research community, the original study, the two subsamples, and the measurement procedure.

The next chapter presents the analysis of the prediction equations that are generated in Sample 1 and the procedure for verifying the prediction equations.
CHAPTER V: ANALYSIS

Introduction

The procedures for generating and verifying the prediction equations within the framework of the cross-validational design are presented in this chapter. The stepwise regression procedure was used to generate the prediction equations for each of the three dependent variables. The goal of the generation process is optimum prediction of the dependent variables so that any other prediction weights in the regression equation would result in a larger standard deviation for the residual. The goal of the verification process is to see how useful the predictive weights from Sample 1 are in Sample 2.

Bivariate Relationships

In Chapter III, tentative conclusions were drawn about the relationship between the overall measure of delinquency and each of the independent variables. It was not possible to draw conclusions about the relationships between criminal offenses and the independent variables or between juvenile offenses and the independent variables. Therefore, the analysis of criminal offenses and juvenile offenses is exploratory.

In Table II (please refer to page 73) the correlations between delinquency and the independent variables are presented. The respective levels of significance are included. In the following paragraphs, the correlations are discussed with reference to the conclusions drawn in Chapter III.
Table II. Pearson correlation for delinquency and the independent variables.

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Correlation</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable Number</td>
<td>Concept</td>
<td></td>
</tr>
<tr>
<td>X₁</td>
<td>Broken homes: divorce</td>
<td>-0.1094</td>
</tr>
<tr>
<td>X₂</td>
<td>Broken home: death of parent(s)</td>
<td>0.0952</td>
</tr>
<tr>
<td>X₃</td>
<td>Substitute parent</td>
<td>0.1247</td>
</tr>
<tr>
<td>X₄</td>
<td>Family size</td>
<td>0.1210</td>
</tr>
<tr>
<td>X₅</td>
<td>Ordinal position</td>
<td>0.0440</td>
</tr>
<tr>
<td>X₆</td>
<td>Maternal supervision</td>
<td>-0.0948</td>
</tr>
<tr>
<td>X₇</td>
<td>Sex</td>
<td>-0.2439</td>
</tr>
<tr>
<td>X₈</td>
<td>Race</td>
<td>0.0271</td>
</tr>
<tr>
<td>X₉</td>
<td>Age</td>
<td>0.1434</td>
</tr>
<tr>
<td>X₁₀</td>
<td>Socioeconomic standing</td>
<td>-0.0102</td>
</tr>
<tr>
<td>X₁₁</td>
<td>Achievement motivation</td>
<td>0.2036</td>
</tr>
<tr>
<td>X₁₂</td>
<td>Anomie</td>
<td>-0.0397</td>
</tr>
<tr>
<td>X₁₃</td>
<td>Anomia</td>
<td>0.1194</td>
</tr>
<tr>
<td>X₁₄</td>
<td>Powerlessness</td>
<td>0.2078</td>
</tr>
<tr>
<td>X₁₅</td>
<td>Future orientation</td>
<td>-0.0945</td>
</tr>
<tr>
<td>X₁₆</td>
<td>Attitude toward school</td>
<td>-0.2497</td>
</tr>
<tr>
<td>X₁₇</td>
<td>Attitude toward legal system</td>
<td>-0.3272</td>
</tr>
</tbody>
</table>
Table II. (Continued)

<table>
<thead>
<tr>
<th>Variable Number</th>
<th>Concept</th>
<th>Correlation</th>
<th>Significance Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>$X_{18}$</td>
<td>Attitude toward teachers role</td>
<td>-.1879</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{19}$</td>
<td>Attitude toward police role</td>
<td>-.1529</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{20}$</td>
<td>Attitude toward parents</td>
<td>-.2636</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{21}$</td>
<td>Attitude toward teachers</td>
<td>-.2526</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{22}$</td>
<td>Attitude toward legal authorities</td>
<td>.4107</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{23}$</td>
<td>Attitude toward police (Likert)</td>
<td>.4314</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{24}$</td>
<td>Attitude toward police (sentence stem)</td>
<td>-.3731</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{25}$</td>
<td>Attitude toward juvenile court and its agents</td>
<td>-.2861</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{26}$</td>
<td>Organized school activities</td>
<td>.0047</td>
<td>.460</td>
</tr>
<tr>
<td>$X_{27}$</td>
<td>Other organized activities</td>
<td>.0121</td>
<td>.401</td>
</tr>
<tr>
<td>$X_{28}$</td>
<td>Organized religious activities</td>
<td>-.2394</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{29}$</td>
<td>Police-juvenile contact</td>
<td>.3557</td>
<td>.001</td>
</tr>
<tr>
<td>$X_{30}$</td>
<td>Formal sanctioning</td>
<td>.5331</td>
<td>.001</td>
</tr>
</tbody>
</table>
Employing a .05 level of significance the following variables did not have a significant relationship to delinquency: ordinal position, socioeconomic standing, anomie, organized school activities, other organized activities.

Achievement motivation and organized religious activities were significantly related to delinquency but, the direction of the relationship was the opposite of the conclusions drawn in Chapter III. The following independent variables were significantly related to delinquency in the direction predicted by the conclusions in Chapter III: broken homes due to divorce, broken homes due to death, substitute parents, family size, maternal supervision, sex, race, age, anomia, powerlessness, attitude toward school, attitude toward the legal system, attitude toward teachers role, attitude toward police role, attitude toward parents, attitude toward teachers, attitude toward legal authorities, attitude toward police (Likert), attitude toward police (sentence stem), attitude toward juvenile court and its agents, police-juvenile contact, and formal sanctioning. The five strongest correlations were between delinquency and: (1) attitudes toward legal authorities; (2) attitudes toward police: Likert scale; (3) attitudes toward police: sentence stem scale; (4) police-juvenile contact; and (5) formal sanctioning. Each of these correlations was .35 or greater. Based on these correlations, one might expect these five variables to be significant in the prediction equations for delinquency. The correlation between delinquency and formal sanctioning (.53) is an exceptionally strong correlation for the social sciences. It is very probable that formal
sanctioning will be a significant variable in the prediction equation for delinquency.

In summary, only five of the thirty independent variables were not significantly related to delinquency. Out of the twenty-five that were significantly related to delinquency, only two were in the opposite direction of the conclusions of Chapter III. This provides empirical support for the conclusions drawn in the conceptual framework. However, the limitations of zero order correlations are obvious. Delinquency is, most likely, caused by several variables which may or may not be independent of one another. The purpose of generating prediction equations, as will be described in the next section, is to analyze the independent and joint contributions of the independent variables.

Theoretical Models

The empirical support for the conclusions drawn in Chapter III allows greater confidence in the theoretical model for delinquency. The theoretical model for delinquency (please refer to page 77) includes all of the thirty independent variables which were introduced in Chapter III. The theoretical models for criminal offenses and for juvenile offenses include all thirty independent variables that were used in the model for delinquency (please refer to page 77).

The theoretical models make the following assumptions: (1) the relationship between the independent variables and the dependent variable is linear; (2) there is one-way causation; and (3) all important variables are included in the models. The author is aware of the fact that the third
Model 1. Original theoretical model for explaining delinquency

Model 2. Original theoretical model for explaining criminal offenses

Model 3. Original theoretical model for explaining juvenile offenses
assumption is not completely satisfied. The limitations of the available data negate the third assumption to some degree. There may be other variables which are important in the etiology of delinquency which are not included in the set available for this study. The role of the other possible variables will be discussed later in this research.

Given the original theoretical models, empirical models will be specified via the stepwise regression procedure. The goal of the stepwise regression procedure is to specify the best prediction equations for the dependent variable. The procedure selects the best predictors while ignoring the linkage among the predictors. A more detailed discussion of this procedure is in the next section.

Generation of Prediction Equations

The prediction equations are generated via the stepwise regression procedure. The goal of this procedure is effective prediction of the dependent variable with the smallest number of independent variables. The order in which the variables are entered into the equation has no impact on the results because each variable is treated as though it were the last variable to be entered into the equation. In other words, the stepwise regression procedure selects the best predictors for each dependent variable by recursively constructing the prediction equation each time a variable is added to the equation. Using a t or a F test, nonsignificant variables are eliminated from the equation. This procedure is continued until no variables can be added or eliminated.
The following outline details the procedures performed by the step-wise regression (adapted from Draper and Smith, 1966; Warren et al., 1972):

1. compute the correlation matrix
2. select the variable which is most correlated with Y
3. if the correlation is significant, run Y on the selected variable
   Model: $\hat{Y}_1 = B_0 + B_1 X_1$
4. obtain partial correlation coefficients for all variables not in the above model
5. select the variable which has the highest partial correlation with Y
6. enter the variable and run Y on the new equation
   Model: $\hat{Y}_{ij} = B_0 + B_i X_i + B_j X_j$
7. re-examine the relative contribution by entering the variables in reverse order
   Model: $\hat{Y} = B_0 + B_j X_j + B_i X_i$
   a. if the partial F-test value of $X_i$ is significant in this equation, then retain $X_i$
   b. if the partial F-test value of $X_i$ is not significant, then reject $X_i$
8. assuming that $X_i$ and $X_j$ are retained, then select (from the remaining variables) the variable that has the highest partial correlation with Y
   Model: $\hat{Y}_{ijk} = B_0 + B_i X_i + B_j X_j + B_k X_k$
9. if $X_k$ has a significant $F$-value then retain it

10. re-examine the relative contribution of $X_1$ and $X_j$ by partial $F$-test (as in step 7 above)
   a. if both $X_1$ and $X_j$ are significant then retain both
   b. if both or one are not significant, then reject the non-significant ones.

The above process is continued until no more variables can be added or eliminated. The resultant equation is the best prediction equation for the dependent variable $Y$.

Categorical variables

This study's variable set contains both continuous and categorical variables. In a regression model where both continuous and categorical variables are present, dummy variables can be used to determine the effects of each categorical variable. Levels are assigned to the categorical variables in order to assess the effects that each variable may have on the response (Draper and Smith, 1966:134). Given the equation $Y = b_0 + b_1 x_1 + b_2 x_2 + b_3 x_3$ where $x_1$ is continuous and $x_2$ and $x_3$ are categorical, regression analysis with dummy variables will give the effects for $x_2$ and $x_3$. The group which is assigned 0's is treated as a control group. The $F$ ratio which is associated with the $R^2$ of the dependent variable and the dummy vectors indicates whether there are significant differences among group means. The $t$ ratios for the $b$'s in effect serve to compare each treatment mean with the control group mean (Kerlinger and Pedhazur, 1973:118). Dummy variables were constructed for the following variables: $X_1$, $X_2$, $X_3$. 
$X_2$, $X_3$, $X_4$, $X_5$, $X_6$, $X_7$, $X_8$, $X_9$, $X_{11}$, and $X_{12}$ (please refer to pages 73-74 for corresponding variable names).

Evaluation Criteria

For each dependent variable the following information is reported:
prediction weights ($B_i$); standardized prediction weights (Beta); standard error of the prediction weights; explained variance at each step; and change in explained variance at each step. For each prediction equation the following information is reported: multiple correlation ($R$); explained variance ($R^2$); and standard error of the prediction equation.

Each $B_i$ measures the expected change in $Y$ and $X_i$ increases by one unit and the other $X$'s remain unchanged. To be included in the prediction equation each $B_i$ must be significant at the .05 level. This requires an $F$ value of 3.84 or greater at 1 and 394 degrees of freedom. Any $B_i$ which has a calculated $F$ of below 3.84 can be interpreted as being due to random variation.

The multiple correlation coefficient $R$ is measured by:

$$ R = \frac{\text{sum of squares due to regression}}{\text{corrected total sum of squares}} $$

The proportion of explained variance is determined by squaring $R$. When the data fits the regression model well, the sum of squares due to regression increases and therefore $R$ and $R^2$ are also increased. If the
corrected total sum of squares is explained by the regression estimate, then $R$ and $R^2$ will approach 1. When $R$ and $R^2$ equal 1, then the residual is equal to zero. Therefore, $R^2$ is a measure of the fitness of a prediction model.

**Empirically Generated Prediction Model for Delinquency**

The theoretical model for explaining delinquency was subjected to the stepwise regression procedure to determine the relative contributions of the thirty independent variables. As a result of the stepwise procedure, the following variables were significant predictors of delinquency: formal sanctioning ($X_{30}$), negative attitudes toward police ($X_{23}$), negative attitudes toward parents ($X_{20}$), negative attitudes toward teachers ($X_{21}$), sex ($X_7$), race ($X_9$), and achievement motivation ($X_{11}$).

Table III (please refer to page 83) reports the findings for the overall prediction equation and for each predictor of delinquency in Sample 1. The optimum regression model for predicting delinquency was found to be:

$$\text{Delinquency} = 1.52158 + .45489(X_{30}) + .14652(X_{23})$$
$$+ .07134(X_{20}) + .05962(X_{21}) + .11513(X_7)$$
$$- .18510(X_9) + .03678(X_{11})$$

Model 4 (please refer to page 84) is the empirical prediction model for delinquency. The zero order correlations between the independent variables are included in this model. The correlation matrix for all variables is presented in Appendix C.
Table III. Significant variables in the prediction equation for delinquency*

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>$B_1$</th>
<th>Standard Error of $B_1$</th>
<th>R Square at Each Step</th>
<th>R Square Change at Each Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.52158</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal sanctioning</td>
<td>.35920</td>
<td>.45489</td>
<td>.05761</td>
<td>.26105</td>
<td>.26105</td>
</tr>
<tr>
<td>Negative attitude toward police (Fortune)</td>
<td>.19570</td>
<td>.14652</td>
<td>.03406</td>
<td>.31961</td>
<td>.05857</td>
</tr>
<tr>
<td>Negative attitude toward parents</td>
<td>.15189</td>
<td>.07134</td>
<td>.01995</td>
<td>.34729</td>
<td>.02768</td>
</tr>
<tr>
<td>Negative attitude toward teachers</td>
<td>.11933</td>
<td>.05962</td>
<td>.02122</td>
<td>.36103</td>
<td>.01373</td>
</tr>
<tr>
<td>Sex</td>
<td>.11009</td>
<td>.11513</td>
<td>.04357</td>
<td>.37190</td>
<td>.01088</td>
</tr>
<tr>
<td>Race</td>
<td>-.09674</td>
<td>-.18510</td>
<td>.07768</td>
<td>.37879</td>
<td>.00688</td>
</tr>
<tr>
<td>Achievement motivation</td>
<td>.09872</td>
<td>.03678</td>
<td>.01558</td>
<td>.38762</td>
<td>.00884</td>
</tr>
</tbody>
</table>

Multiple R  
R Squared  
Standard Error

*.05 significance level = 3.84
Model 4: Empirical prediction model for delinquency as derived from Sample 1.

Unexplained Variance

\( R^2 = 0.1238 \)
Formal sanctioning is the best predictor of delinquency in Sample 1. Formal sanctioning accounts for over 26 percent of the variance in delinquency. This is almost 60 percent of the variance in delinquency explained by the prediction equation. Negative attitudes toward the police was the next best predictor accounting for an additional 6 percent of the variance in delinquency. Negative attitudes toward parents accounted for an additional 3 percent of the variance, and negative attitudes toward teachers accounted for an additional 1 percent of the variance in delinquency. The remaining three predictors, sex, race, and educational orientation each added only 1 percent or less to the variance in delinquency.

In Sample 1, there is strong support for labeling theory (as measured by formal sanctioning) and compliance theory (as measured by negative attitudes toward police, parents, and teachers). Labeling theory accounts for 26 percent of the variance, and compliance theory contributes an additional 10 percent toward explaining the variance in delinquency. The remaining three significant variables in the prediction equation are from differential opportunity theory. These variables (sex, race, and achievement motivation) contribute an additional 3 percent toward explaining delinquency. However, the relationship between race and delinquency was in the opposite direction of the conclusion presented in Chapter III.

**Empirically Generated Prediction Model for Criminal Offenses**

The theoretical model for explaining criminal offenses (please refer to page 77) was subjected to the stepwise regression procedure to determine
the relative contributions of the thirty independent variables. The statistically significant predictors of criminal offenses were: formal sanctioning ($X_{30}$), negative attitudes toward teachers ($X_{21}$), sex ($X_7$), negative attitudes toward police ($X_{23}$), and achievement motivation ($X_{11}$).

Table IV (please refer to page 87) reports the findings for the overall prediction equation and for each predictor of criminal offenses in Sample 1. The optimum regression model for predicting criminal offenses was found to be:

$$\text{Criminal Offenses} = 1.30622 + .51401(X_{30}) + .09783(X_{21}) + .24328(X_7)$$
$$\quad + .13461(X_{23}) + .04193(X_{11})$$

Model 5 (please refer to page 88) is the empirical prediction model for criminal offenses. The correlations between the independent variables are included in this model.

The findings show that formal sanctioning is the best predictor of criminal offenses. Formal sanctioning accounts for over 24 percent of the variance in criminal offenses. This is almost three-fourths of the variance in criminal offenses explained by all variables. Two other predictors, negative attitudes toward teachers and sex, account for an additional 7 percent of the variance in criminal offenses. The remaining two significant predictors, negative attitudes toward police and achievement motivation account for an additional 3 percent of the variance of criminal offenses.

In Sample 1, there is strong support for labeling theory (as measured by formal sanctioning) and compliance theory (as measured by negative
Table IV. Significant variables in the prediction equation for criminal offenses*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>( B_1 )</th>
<th>Standard Error ( B_1 )</th>
<th>R Square at Each Step</th>
<th>R Square Change at Each Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.30622</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal sanctioning</td>
<td>.33916</td>
<td>.51401</td>
<td>.07117</td>
<td>.24473</td>
<td>.24473</td>
</tr>
<tr>
<td>Negative attitudes toward</td>
<td>.16361</td>
<td>.09783</td>
<td>.02573</td>
<td>.28234</td>
<td>.03761</td>
</tr>
<tr>
<td>teachers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>.19438</td>
<td>.24328</td>
<td>.05377</td>
<td>.31614</td>
<td>.03380</td>
</tr>
<tr>
<td>Negative attitudes toward</td>
<td>.15024</td>
<td>.13461</td>
<td>.04081</td>
<td>.33559</td>
<td>.01945</td>
</tr>
<tr>
<td>police (Fortune)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Achievement motivation</td>
<td>.09406</td>
<td>.04193</td>
<td>.01906</td>
<td>.34378</td>
<td>.00819</td>
</tr>
</tbody>
</table>

Multiple R                    \( .58632 \)
R Squared                     \( .34378 \)
Standard Error                \( .51059 \)

*F at .05 significance level = 3.84
Model 5. Empirical prediction model for criminal offenses as derived from Sample 1.
attitudes toward teachers and police). Negative attitudes toward parents and race were significant in the prediction equation for delinquency but were not significant in the prediction equation for criminal offenses. There is also some support for differential opportunity theory in that sex and achievement motivation are significant predictors. Although the investigation into criminal offenses is exploratory, it is interesting to note that the directional signs are consistent with the conclusions drawn for delinquency (in Chapter II) and the empirically generated prediction equations for delinquency.

Empirically Generated Prediction Model for Juvenile Offenses

The theoretical model for explaining juvenile offenses (please refer to page 77) was subjected to the stepwise regression procedure to determine the relative contributions of the thirty independent variables. The statistically significant predictors of juvenile offenses were found to be: formal sanctioning ($x_{30}$), negative attitudes toward parents ($x_{20}$), negative attitudes toward police ($x_{23}$), race ($x_{8}$), and age ($x_{9}$).

Table V (please refer to page 91) reports the findings for the overall prediction equation and for each predictor of juvenile offenses in Sample 1. The optimum regression model for predicting juvenile offenses was found to be:

$$\text{Juvenile Offenses} = .96599 + .40656(x_{30}) + .10315(x_{20}) + .17992(x_{23}) - .25744(x_{8}) + .10187(x_{9})$$

Model 6 (please refer to page 92) is the empirical prediction model for
juvenile offenses. The correlations between the independent variables are included in this model.

The findings show that formal sanctioning is the best predictor of juvenile offenses. Formal sanctioning accounts for over 16 percent of the variance in juvenile offenses. This is over one-half of the variance in juvenile offenses explained by all variables. Two other predictors, negative attitudes toward parents and negative attitudes toward police, combine to account for an additional 10 percent of the variance in juvenile offenses. The remaining two significant predictors, race and age, account for an additional 2 percent of the variance in juvenile offenses.

In Sample 1, there is strong support for labeling theory (as measured by formal sanctioning) and compliance theory (as measured by attitudes toward parents and police). Labeling theory accounts for 16 percent of the variance, and compliance theory contributes an additional 10 percent toward explaining the variance in juvenile offenses. The remaining significant predictors are from differential opportunity theory. These variables, race and age, contribute an additional 2.5 percent to the explanation of juvenile offenses.

Although the investigation into juvenile offenses is exploratory, it is interesting to note that the directional signs are consistent with the signs in the empirically generated model for delinquency. In comparing the prediction equations for delinquency and juvenile offenses, it is interesting to note that negative attitudes toward teachers, sex and achievement motivation were significant predictors of delinquency but not for juvenile offenses, and age was a significant predictor of juvenile
Table V. Significant variables in the prediction equation for juvenile offenses*

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>$B_1$</th>
<th>Standard Error $B_1$</th>
<th>R Square at Each Step</th>
<th>R Square Change at Each Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td></td>
<td>.96599</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formal sanctioning</td>
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<td>.40656</td>
<td>.06225</td>
<td>.16389</td>
<td>.16389</td>
</tr>
<tr>
<td>Negative attitude toward parents</td>
<td>.20563</td>
<td>.10315</td>
<td>.02232</td>
<td>.23005</td>
<td>.06616</td>
</tr>
<tr>
<td>Negative attitude toward police (Fortune)</td>
<td>.22501</td>
<td>.17992</td>
<td>.03847</td>
<td>.26812</td>
<td>.03807</td>
</tr>
<tr>
<td>Race</td>
<td>-.12598</td>
<td>-.25744</td>
<td>.08818</td>
<td>.28260</td>
<td>.01448</td>
</tr>
<tr>
<td>Age</td>
<td>.10335</td>
<td>.10187</td>
<td>.04245</td>
<td>.29309</td>
<td>.01049</td>
</tr>
</tbody>
</table>

Multiple R             | .54138 |
R Squared              | .29309 |
Standard Error         | .47296 |

*F at .05 significance level = 3.84
Model 6. Empirical prediction model for juvenile offenses as derived from Sample 1

Unexplained Variance

\[
1 - R^2 = 0.1056
\]
offenses but not for delinquency. In comparing the prediction equations for criminal offenses and juvenile offenses, it is evident that negative attitudes toward teachers, sex and achievement motivation were significant predictors of criminal offenses but not for juvenile offenses, and negative attitudes toward parents, race and age were significant predictors for juvenile offenses but not for criminal offenses.

The remainder of this chapter deals with the verification of the prediction equations for delinquency, criminal offenses, and juvenile offenses. These equations were generated via the stepwise regression procedure and they are verified via the cross-validation procedure. Two samples were used to prevent the empirical biases of generating and verifying prediction equations on one sample.

Verification of Prediction Equations

Selection procedures capitalize on chance, therefore, the predictive weights from the stepwise regression procedure should be interpreted with caution. However, the cross-validation procedure assists the researcher in assessing the probability that results were due to chance. The prediction models for Sample 1 were subjected to the regular multiple regression procedure in Sample 2. The purpose of this procedure was to test the usefulness of the prediction equations in a sample other than the one in which the equations were generated.
Cross-Validated Prediction Model for Delinquency

The empirically generated prediction model for delinquency (please refer to page 84) was subjected to the regular multiple regression procedure to determine its usefulness for predicting in another sample. The cross-validated prediction model for delinquency was:

\[
\text{Delinquency} = 1.04601 + 0.05806(X_{20}) + 0.03307(X_{21}) \\
+ 0.16402(X_{23}) + 0.52553(X_{30}) + 0.00164(X_{11}) \\
+ 0.11475(X_{7}) + 0.03091(X_{8})
\]

Table VI (please refer to page 93) reports the findings for the cross-validated prediction model and for each predictor of delinquency. In general, the predictive weights were somewhat unstable from Sample 1 to Sample 2. This observation will be further discussed in Chapter VI.

Three of the seven significant predictors from Sample 1 were nonsignificant in Sample 2. The nonsignificant predictors in Sample 2 were negative attitudes toward teachers \((X_{21})\), race \((X_{9})\), and achievement motivation \((X_{11})\). The significant predictors were: negative attitudes toward parents \((X_{20})\), negative attitudes toward police \((X_{23})\), formal sanctioning \((X_{30})\), and sex \((X_{7})\). Model 7 (please refer to page 96) contains only those predictors which were significant in Sample 1 and Sample 2. This model is based on statistical significance within a multiple regression framework. Other variables which have theoretical significance should be considered in future research.

The variance explained in Sample 2 is over five percent greater than the variance explained in Sample 1. This is not consistent with the
Table VI. Prediction equation for delinquency in Sample 2*

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>B&lt;sub&gt;1&lt;/sub&gt;</th>
<th>Standard Error B&lt;sub&gt;1&lt;/sub&gt;</th>
<th>R Square at Each Step</th>
<th>R Square Change at Each Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.04601</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative attitudes toward parents</td>
<td>.13298</td>
<td>.05806</td>
<td>.01920</td>
<td>.06539</td>
<td>.06539</td>
</tr>
<tr>
<td>Negative attitudes toward teachers&lt;sup&gt;1&lt;/sup&gt;</td>
<td>.07152</td>
<td>.03307</td>
<td>.02107</td>
<td>.09324</td>
<td>.02784</td>
</tr>
<tr>
<td>Negative attitudes toward police (Fortune)</td>
<td>.23493</td>
<td>.16402</td>
<td>.03452</td>
<td>.23710</td>
<td>.14386</td>
</tr>
<tr>
<td>Formal sanctioning</td>
<td>.43267</td>
<td>.52553</td>
<td>.05547</td>
<td>.42322</td>
<td>.18612</td>
</tr>
<tr>
<td>Achievement motivation&lt;sup&gt;1&lt;/sup&gt;</td>
<td>.00446</td>
<td>.00164</td>
<td>.01616</td>
<td>.42322</td>
<td>.00000</td>
</tr>
<tr>
<td>Sex</td>
<td>.12512</td>
<td>.11475</td>
<td>.03987</td>
<td>.43764</td>
<td>.01442</td>
</tr>
<tr>
<td>Race&lt;sup&gt;1&lt;/sup&gt;</td>
<td>.02152</td>
<td>.03091</td>
<td>.06376</td>
<td>.43805</td>
<td>.00041</td>
</tr>
</tbody>
</table>

Multiple R .66185
R Squared .43804
Standard Error .34782

*F at .05 significance level = 3.84.

<sup>1</sup>Negative attitudes toward teachers, race and achievement motivation were nonsignificant predictors in Sample 2.
Model 7. Cross-validated empirical prediction model for delinquency

Unexplained Variance

\[(1 - R^2) = 0.5419\]
discussion of the shrinkage effect across samples (please refer to Chapter IV). This observation will be further discussed in Chapter VI.

Cross-Validated Prediction Model for Criminal Offenses

The empirically generated prediction model for criminal offenses (please refer to page 88) was subjected to the multiple regression procedure to determine its predictive effectiveness in another sample. The cross-validated prediction model for criminal offenses was:

\[
\text{Criminal Offenses} = 0.96769 + 0.05726(X_{21}) + 0.21934(X_{23}) \\
+ 0.55348(X_{30}) + 0.00563(X_{11}) + 0.23740(X_7)
\]

Table VII (please refer to page 98) reports the findings for the cross-validated prediction model for criminal offenses.

Achievement motivation \((X_{11})\) was the only predictor that was significant in Sample 1 and nonsignificant in Sample 2. The significant predictors were: negative attitudes toward teachers \((X_{21})\), negative attitudes toward police \((X_{23})\), formal sanctioning \((X_{30})\), and sex \((X_7)\). As discussed in Chapter IV, the predictive weights are likely to vary from sample to sample, and the explained variance \((R^2)\) is likely to shrink from sample to sample. The predictive weights were somewhat unstable across samples, but, the explained variance did not shrink from Sample 1 to Sample 2. The variance explained in Sample 2 is almost eight percent more than the explained variance in Sample 1. This observation will be further discussed in Chapter VI.
Table VII. Prediction equation for criminal offenses in Sample 2*

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>$b_1$</th>
<th>Standard Error $b_1$</th>
<th>R Square at Each Step</th>
<th>R Square Change at Each Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td></td>
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<tr>
<td>Negative attitudes toward teachers</td>
<td>.10277</td>
<td>.05726</td>
<td>.02519</td>
<td>.05230</td>
<td>.05230</td>
</tr>
<tr>
<td>Negative attitudes toward police (Fortune)</td>
<td>.26074</td>
<td>.21934</td>
<td>.04019</td>
<td>.21628</td>
<td>.16397</td>
</tr>
<tr>
<td>Formal sanctioning</td>
<td>.37820</td>
<td>.55248</td>
<td>.06712</td>
<td>.37719</td>
<td>.16091</td>
</tr>
<tr>
<td>Achievement motivation$^1$</td>
<td>.01270</td>
<td>.00563</td>
<td>.01939</td>
<td>.37719</td>
<td>.00000</td>
</tr>
<tr>
<td>Sex</td>
<td>.21485</td>
<td>.23740</td>
<td>.04865</td>
<td>.41983</td>
<td>.04263</td>
</tr>
</tbody>
</table>

Multiple R  
R Squared  
Standard Error  

$^* F$ at .05 significance level = 3.84.

$^1$Achievement motivation was a nonsignificant predictor in Sample 2.
Model 8. Cross-validated empirical prediction model for criminal offenses
Cross-Validated Prediction Model for Juvenile Offenses

The empirically generated prediction model for juvenile offenses (please refer to page 92) was subjected to the multiple regression procedure to determine its predictive effectiveness in another sample. The cross-validated prediction model for juvenile offenses was:

\[
\text{Juvenile Offenses} = .79289 + .07482(X_{20}) + .13736(X_{23}) \\
+ .48260(X_{30}) + .04671(X_9) - .02603(X_8)
\]

Table VIII (please refer to page 101) reports the findings for the cross-validated prediction model for juvenile offenses.

Race and age were the only predictors that were significant in Sample 1 and nonsignificant in Sample 2. The significant predictors were negative attitudes toward parents \( (X_{20}) \), negative attitudes toward police \( (X_{23}) \), and formal sanctioning \( (X_{30}) \). As discussed in Chapter IV, the predictive weights are likely to vary from sample to sample, and explained variance \( (R^2) \) is likely to shrink from Sample 1 to Sample 2. The predictive weights were somewhat unstable across samples, but, the explained variance did not shrink from Sample 1 to Sample 2. Although the explained variance for juvenile offenses increased slightly from Sample 1 to Sample 2, it can be concluded that \( R^2 \) was stable across the two samples. This is not consistent with the somewhat greater inflation of \( R^2 \) across samples for both delinquency and criminal offenses.
Table VIII. Prediction equation for juvenile offenses in Sample 2*

<table>
<thead>
<tr>
<th></th>
<th>Beta</th>
<th>$b_1$</th>
<th>Standard Error $b_1$</th>
<th>R Square at Each Step</th>
<th>R Square Change at Each Step</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative attitudes toward parents</td>
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<td>.07482</td>
<td>.02158</td>
<td>.06260</td>
<td>.06260</td>
</tr>
<tr>
<td>Negative attitudes toward police (Fortune)</td>
<td>.19053</td>
<td>.13736</td>
<td>.03794</td>
<td>.15540</td>
<td>.09280</td>
</tr>
<tr>
<td>Formal sanctioning</td>
<td>.38479</td>
<td>.48260</td>
<td>.06283</td>
<td>.29358</td>
<td>.13818</td>
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<tr>
<td>Age$^1$</td>
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<td>.04671</td>
<td>.04068</td>
<td>.29634</td>
<td>.00276</td>
</tr>
<tr>
<td>Race$^1$</td>
<td>-.01756</td>
<td>-.02603</td>
<td>.07252</td>
<td>.29661</td>
<td>.00028</td>
</tr>
</tbody>
</table>

Multiple R               | .54462
R Squared                | .29661
Standard Error           | .40058

* F at .05 significance level = 3.84.

$^1$ Race and age were nonsignificant predictors in Sample 2.
Model 9. Cross-validated empirical prediction model for juvenile offenses.

Unexplained Variance

\( R^2 \)

\( \text{Regression Coefficients:} \)

- 0.524
- 0.357
- 0.23
- 0.20
- 0.30
Summary

Analysis of the bivariate relationships put forth in Chapter III provided some empirical support for this study's conceptual framework. Only five of the thirty independent variables were not significantly related to delinquency: ordinal position, socioeconomic standing, anomie, organized school activities, and other organized social activities. Out of the twenty-five variables that were significantly related to delinquency, only two were in the opposite direction of the conclusions of Chapter III.

The variables included in the theoretical model for delinquency were based on the available data and a review of the literature. The variables included in the theoretical models for criminal offenses and juvenile offenses were the same variables as the model for delinquency because the literature does not contain evidence regarding the empirical distinction between criminal offenses and juvenile offenses. Therefore, the analysis of criminal offenses and juvenile offenses is exploratory.

The prediction equations for each dependent variable were generated via the stepwise regression procedure in Sample 1. The results of this procedure show strong support for labeling theory and compliance theory for all three dependent variables. The statistical data and the prediction models are presented in this chapter.

The prediction equations from Sample 1 were subjected to the regular multiple regression procedure in Sample 2. The prediction weights were somewhat unstable from Sample 1 to Sample 2. The percent of explained variance however, actually increased from Sample 1 to Sample 2 for all three dependent variables. While this inflation was fairly large for delinquency
and criminal offenses, it was only fractional for juvenile offenses. In any case, the percent of explained variance was expected to decrease from Sample 1 to Sample 2, not increase. The next chapter seeks to interpret this phenomena and a theoretical interpretation of these findings is presented.
CHAPTER VI: INTERPRETATION OF FINDINGS

Methodological Interpretation

In the cross-validational design, the predictive power of the predictive equations generated in Sample 1 was determined by applying the predictive weights to Sample 2 which was from the same population as Sample 1. Theoretically, the prediction weights and the multiple R derived from Sample 1 should overestimate the accuracy of prediction in Sample 2. This is because the zero order correlations (which are used to calculate the prediction weights) are treated as if they were error free. This is never the case, therefore there is capitalization on chance (especially if a selection procedure is used) and the end result is that R is likely to be biased upwards and the predictive weights will be less predictive in subsequent samples. The results obtained here illustrate some instability in the predictive weights, but the multiple R increased from Sample 1 to Sample 2 in contrast to what was expected.

Evaluation of the verification process via cross-validation involves comparing the predictive weights, the standard error of the predictive weights, the multiple correlations, and the explained variance for Sample 1 versus Sample 2. Because the multiple correlation squared is more stable than the predictive weights, there is specific interest in the amount of shrinkage in $R^2$ from the screening sample to the calibration sample.

The total explained variance ($R^2$) is approximately the same in Sample 2 as in Sample 1, but, the relative contribution of the X's has changed somewhat. As illustrated in Table IX (please refer to page 107), Table X
(please refer to page 108), and Table XI (please refer to page 109), the predictive weights fluctuated somewhat across the two samples. The instability of the predictive weights is exemplified by the number of variables which were nonsignificant in Sample 2: (1) three out of seven for delinquency; (2) one out of five for criminal offenses; and (3) two out of five for juvenile offenses. The greatest change in a predictive weight across samples was for race. While race was significant for delinquency and juvenile offenses in Sample 1, it was nonsignificant in Sample 2.

The criteria for establishing significance of a variable is whether the variable makes a significant contribution toward the explanation of \( Y \) after the other \( X_1 \)'s have been accounted for. The formula for determining the significance of the \( B_1 \)'s is: \[ t = \frac{B_1}{\text{standard error of } B_1} \]. Therefore, if a variable is not significant in Sample 2 it is because \( B_1 \) has changed or because the standard error of \( B_1 \) has changed or both. As illustrated in Table XII (please refer to page 110), Table XIII (please refer to page 111), and Table XIV (please refer to page 112), the standard error of the predictive weights have changed very little from Sample 1 to Sample 2. Therefore, the change in the predictive weights is the major reason that some variables which were significant in Sample 1 were nonsignificant in Sample 2.

Although the number of significant variables decreased from Sample 1 to Sample 2, \( R^2 \) increased for all three dependent variables (refer to Tables XV, XVI, and XVII on page 113). In Sample 1, the explained variance for delinquency was 38.8 percent. In Sample 2, the explained variance for the same set of variables was 43.8 percent. This is an increase of 5 percent.
**Table IX. Changes in predictive weights for delinquency**

<table>
<thead>
<tr>
<th></th>
<th>$\beta_1$ in Sample 1</th>
<th>$\beta_1$ in Sample 2</th>
<th>Change in $\beta_1$ from Sample 1 to Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.52158</td>
<td>1.04601</td>
<td>(-).47557</td>
</tr>
<tr>
<td>Formal sanctioning</td>
<td>.45439</td>
<td>.52553</td>
<td>.07064</td>
</tr>
<tr>
<td>Negative attitudes toward police (Fortune)</td>
<td>.14652</td>
<td>.16402</td>
<td>.01750</td>
</tr>
<tr>
<td>Negative attitudes toward parents</td>
<td>.07134</td>
<td>.05806</td>
<td>(-).01328</td>
</tr>
<tr>
<td>Negative attitudes toward teachers</td>
<td>.05962</td>
<td>.03307*</td>
<td>(-).02655</td>
</tr>
<tr>
<td>Sex</td>
<td>.11513</td>
<td>.11475</td>
<td>(-).00038</td>
</tr>
<tr>
<td>Race</td>
<td>-.18510</td>
<td>.03091*</td>
<td>.15419</td>
</tr>
<tr>
<td>Achievement motivation</td>
<td>.03678</td>
<td>.00146*</td>
<td>(-).09426</td>
</tr>
</tbody>
</table>

* = nonsignificant predictors in Sample 2
Table X. Changes in predictive weights for criminal offenses

<table>
<thead>
<tr>
<th></th>
<th>$B_1$ in Sample 1</th>
<th>$B_1$ in Sample 2</th>
<th>Change in $B_1$ from Sample 1 to Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
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<td>(-).33853</td>
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<td>.03947</td>
</tr>
<tr>
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<td>.09733</td>
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<td>(-).04057</td>
</tr>
<tr>
<td>Sex</td>
<td>.24328</td>
<td>.23740</td>
<td>(-).00588</td>
</tr>
<tr>
<td>Negative attitudes toward police (Fortune)</td>
<td>.13461</td>
<td>.21934</td>
<td>.08473</td>
</tr>
<tr>
<td>Achievement motivation</td>
<td>.04193</td>
<td>.00563*</td>
<td>(-).03630</td>
</tr>
</tbody>
</table>

* = nonsignificant predictors in Sample 2
Table XI. Changes in predictive weights for juvenile offenses

<table>
<thead>
<tr>
<th></th>
<th>$b_1$ in Sample 1</th>
<th>$b_1$ in Sample 2</th>
<th>Change in $b_1$ from Sample 1 to Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td>.79289</td>
<td>(-).17310</td>
</tr>
<tr>
<td>Formal sanctioning</td>
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<td>.48260</td>
<td>.07604</td>
</tr>
<tr>
<td>Negative attitudes toward parents</td>
<td>.10315</td>
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<td>Negative attitudes toward police (Fortune)</td>
<td>.17992</td>
<td>.13736</td>
<td>(-).04256</td>
</tr>
<tr>
<td>Race</td>
<td>.25744</td>
<td>.02603*</td>
<td>(-).23141</td>
</tr>
<tr>
<td>Age</td>
<td>.10187</td>
<td>.04671*</td>
<td>(-).05516</td>
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</table>

* = nonsignificant predictors in Sample 2
Table XII. Changes in standard error of the predictive weights for delinquency

<table>
<thead>
<tr>
<th></th>
<th>Standard Error of $B_1$ in Sample 1</th>
<th>Standard Error of $B_1$ in Sample 2</th>
<th>Change in Standard Error of $B_1$ from Sample 1 to Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal sanctioning</td>
<td>.05761</td>
<td>.05547</td>
<td>(-) .00214</td>
</tr>
<tr>
<td>Negative attitudes toward police (Fortune)</td>
<td>.03406</td>
<td>.03452</td>
<td>.00046</td>
</tr>
<tr>
<td>Negative attitudes toward parents</td>
<td>.01995</td>
<td>.01920</td>
<td>(-) .00075</td>
</tr>
<tr>
<td>Negative attitudes toward teachers</td>
<td>.02122</td>
<td>.02107</td>
<td>(-) .00015</td>
</tr>
<tr>
<td>Sex</td>
<td>.04357</td>
<td>.03987</td>
<td>(-) .00370</td>
</tr>
<tr>
<td>Race</td>
<td>.07768</td>
<td>.06376</td>
<td>(-) .01392</td>
</tr>
<tr>
<td>Achievement motivation</td>
<td>.01558</td>
<td>.01616</td>
<td>.00058</td>
</tr>
</tbody>
</table>
Table XIII. Changes in standard error of the predictive weights for criminal offenses

<table>
<thead>
<tr>
<th></th>
<th>Standard Error of $b_1$ in Sample 1</th>
<th>Standard Error of $b_1$ in Sample 2</th>
<th>Change in Standard Error of $b_1$ from Sample 1 to Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal sanctioning</td>
<td>.07117</td>
<td>.06712</td>
<td>(-) .00405</td>
</tr>
<tr>
<td>Negative attitudes toward teachers</td>
<td>.02573</td>
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<td>(-) .00055</td>
</tr>
<tr>
<td>Sex</td>
<td>.05377</td>
<td>.04865</td>
<td>(-) .00512</td>
</tr>
<tr>
<td>Negative attitudes toward police (Fortune)</td>
<td>.04081</td>
<td>.04019</td>
<td>(-) .00062</td>
</tr>
<tr>
<td>Achievement motivation</td>
<td>.01906</td>
<td>.01939</td>
<td>.00033</td>
</tr>
</tbody>
</table>
Table XIV. Changes in standard error of the predictive weights for juvenile offenses

<table>
<thead>
<tr>
<th></th>
<th>Standard Error of $B_1$ in Sample 1</th>
<th>Standard Error of $B_1$ in Sample 2</th>
<th>Change in Standard Error of $B_1$ from Sample 1 to Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal sanctioning</td>
<td>.06225</td>
<td>.06283</td>
<td>.00058</td>
</tr>
<tr>
<td>Negative attitudes toward parents</td>
<td>.02232</td>
<td>.02158</td>
<td>(-).00074</td>
</tr>
<tr>
<td>Negative attitudes toward police</td>
<td>.03847</td>
<td>.03794</td>
<td>(-).00053</td>
</tr>
<tr>
<td>(Fortune)</td>
<td>.08818</td>
<td>.07252</td>
<td>(-).01566</td>
</tr>
<tr>
<td>Race</td>
<td>.04245</td>
<td>.04059</td>
<td>(=).00177</td>
</tr>
<tr>
<td>Age</td>
<td>.04245</td>
<td>.04059</td>
<td>(=).00177</td>
</tr>
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</table>
Table XV. Changes in multiple correlation and explained variance for delinquency

<table>
<thead>
<tr>
<th></th>
<th>Sample 1</th>
<th>Sample 2</th>
<th>Change from Sample 1 to Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>.62260</td>
<td>.66185</td>
<td>.03925</td>
</tr>
<tr>
<td>R Squared</td>
<td>.38762</td>
<td>.43805</td>
<td>.05043</td>
</tr>
</tbody>
</table>

Table XVI. Changes in multiple correlation and explained variance for criminal offenses

<table>
<thead>
<tr>
<th></th>
<th>Sample 1</th>
<th>Sample 2</th>
<th>Change from Sample 1 to Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>.58632</td>
<td>.64794</td>
<td>.06162</td>
</tr>
<tr>
<td>R Squared</td>
<td>.34378</td>
<td>.41983</td>
<td>.07605</td>
</tr>
</tbody>
</table>

Table XVII. Changes in multiple correlation and explained variance for juvenile offenses

<table>
<thead>
<tr>
<th></th>
<th>Sample 1</th>
<th>Sample 2</th>
<th>Change from Sample 1 to Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple R</td>
<td>.54138</td>
<td>.54462</td>
<td>.00324</td>
</tr>
<tr>
<td>R Squared</td>
<td>.29309</td>
<td>.29661</td>
<td>.00352</td>
</tr>
</tbody>
</table>
The explained variance for only the significant variables in Sample 2 is 41 percent. In other words the three variables which were significant in Sample 1 but nonsignificant in Sample 2 (negative attitudes toward teachers, race and achievement motivation) contributed about 2.8 percent to the explained variance in delinquency in Sample 2. In Sample 1, the explained variance for criminal offenses was 34.4 percent. In Sample 2, the explained variance for the same set of variables was 41.9 percent. This is an increase of 7.6 percent. The explained variance for only the significant variables in Sample 2 is also 41.9 percent. In other words, the one variable which was significant in Sample 1 but nonsignificant in Sample 2 (achievement motivation) made no contribution to the explained variance of criminal offenses in Sample 2.

In Sample 1, the explained variance for juvenile offenses was 29.3 percent. In Sample 2, the explained variance for the same set of variables was 29.7 percent. This is an increase of about four-tenths of a percent. The explained variance for only the significant variables in Sample 2 is 29.4 percent. In other words, the two variables which were significant in Sample 1 but nonsignificant in Sample 2 (age and race) made only three-tenths of a percent contribution to the explained variance of juvenile offenses in Sample 2.

In sum, $R^2$ for the $X_i$'s of Sample 1 increased when applied to Sample 2 for all three dependent variables. This increase existed even after the contribution of the nonsignificant variables (in Sample 2) were eliminated. This finding is the opposite of what was expected; i.e. theoretically, $R^2$ should have decreased from Sample 1 to Sample 2. The degree of
overestimation of $R$ (or $R^2$) in Sample 1 is affected by the ratio of the number of variables to the size of the sample. To prevent overestimation of $R$, Kerlinger and Pedhazur (1973) suggest a ratio of 30 subjects for each independent variable in Sample 1. The actual ratio in Sample 1 was $\frac{394}{29} = 13.8$. Given this ratio, Kerlinger and Pedhazur (1973) and Horst (1968) would have predicted a large shrinkage in $R$ from Sample 1 to Sample 2. As can be observed from Table XVIII (please refer to page 116) the estimated $R^2$ for the shrunken $R^2$ is considerable less than the $R^2$ for Sample 1. The $R^2$ for Sample 2 was expected to be less than the $R^2$ of Sample 1 and it, theoretically, should have approached $R^2$. However, $R^2$ for Sample 2 went in the opposite direction.

The increase in $R^2$ may be due to measurement and sampling errors. The larger the sample, the greater the confidence in the statistics derived from it because the sampling distributions are functions of the number of subjects and the number of variables. Therefore, one potential problem is that the predictive equations were generated on a larger sample than the one used for verification. The correlations are more likely to be significant in the larger sample (394) than in the smaller sample (330). This may account for the loss of several variables from Sample 1 to Sample 2. However, it is more likely that sample representativeness would be a problem. It is very likely that sampling variability accounts for the differences between the $R^2$ and predictive weights of Sample 1 versus Sample 2.
Table XVIII. $\hat{R}^2$, $R^2$ and Shrunken $R^2^*$

<table>
<thead>
<tr>
<th></th>
<th>$\hat{R}^2$</th>
<th>$R^2$ for Sample 1</th>
<th>$R^2$ for Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criminal offenses</td>
<td>.29200</td>
<td>.34378</td>
<td>.41983</td>
</tr>
<tr>
<td>Juvenile offenses</td>
<td>.23690</td>
<td>.29309</td>
<td>.29661</td>
</tr>
<tr>
<td>Delinquency</td>
<td>.33930</td>
<td>.38762</td>
<td>.43805</td>
</tr>
</tbody>
</table>

$\hat{R}^2 = 1 - (1-R^2)\frac{(n-1)}{(n-k-1)}$ where

- $n$ = number of subjects
- $k$ = number of independent variables.
Methodological limitations of this study

The entire argument of cross-validation goes back to probability theory which states that on the average, a sample will be representative of the population if the sample is randomly selected. When splitting samples, probability theory states that on the average each subsample will be representative of the unsplit sample if the split is done on a random basis. This means that if one selected an infinite number of subsamples from a population, then the average of these samples would represent the population. However, to get this average there is necessarily some samples which have statistics which underestimate the parameters of the population and there will be some which will overestimate the parameters of the population. Therefore, the criteria of randomness does not insure representativeness. Nor, can it be assumed that one sample is representative of the population unless one knows the population parameters or unless one takes infinite samples from the population and then takes the average of the sample statistics to calculate the population parameters.

Obviously, it is necessary to make some assumptions about the sampling process: (1) the valid cases are representative of the entire sample; and (2) the subsamples are comparable. When splitting samples, the biases of the parent sample may be included in one or both of the subsamples. Therefore, there are three potential sources of sampling error: (1) the valid cases may not be representative of the population; (2) the subsamples may not be representative of the parent sample; and (3) the parent sample may not be representative of the population. This study's sampling procedure
may place limitations on the validity of the findings in that the samples are not completely independent. Although splitting the sample is an acceptable procedure (Kerlinger and Pedhazur, 1973), completely independent samples would have provided more confidence in the generation and verification process.

Other limitations lie in the measurement instruments. For example, several of the scales have only two items. It can be argued that more items are needed for adequate domain sampling and therefore these scales are less useful. The coding of responses to the projective techniques is a potential source of error. However, the coders were very cautious in interpreting student responses and coder reliability was extremely high (Miller, 1971). Another problem is that the younger subjects may not have understood all the words and concepts presented to them. However, the research team were in the classroom to clarify or define ambiguous concepts.

Another potential source of error lies in the reliability of the scales. Reliability is equal to the ratio of true variance to total variance: $R_{tt} = \frac{V_{true}}{V_{total}}$. The low reliability of some of the scales (please refer to Appendix A) means that there is a lot of variance in those scales but only part is due to true variance, the rest is due to measurement error or error variance. When there is a large proportion of variance then, $R^2$ can be affected.

The reliability may have been reduced or inflated because only the valid cases are used, or, there may be a difference in reliability between the two samples because of the nonrepresentativeness of the samples. Another source of error is inadequate domain sampling in choosing the indi-
ctor for the concepts. This may be the case for those variables which are indicated by two or three item scales. In general, these scales have lower reliability.

The findings of this research can not be stated in cause and effect form because the time order of the variables is indeterminate. Another limitation is that the sample for this study is from one community and one grade level of students. Therefore, this study's findings are applicable to ninth grade students in Lansing, Michigan, and, generalizing beyond this population must be done with extreme caution.

This section has focused on the potential sources of error which may place limitations on the usefulness of this study's findings. The potential sources of error discussed above are characteristic of social science research. The precautions taken (e.g. cross-validation design, coder reliability, and scale reliability) allow the researcher to have confidence in these findings.

In the next section, "Theoretical Interpretation," the findings will be discussed with emphasis on the similarities and differences in the prediction equations for criminal offenses, juvenile offenses, and delinquency.

Theoretical Interpretation

The purpose of this discussion is to specify the similarities and differences in the prediction equations for criminal offenses, juvenile offenses, and delinquency, and to interpret the meanings of these differences. Table XIX (please refer to page 120) presents a summary of the
Table XIX. Summary of significant relationships

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Dependent Variables in Sample 1</th>
<th>Dependent Variables in Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Criminal Juvenile Delinquency</td>
<td>Criminal Juvenile Delinquency</td>
</tr>
<tr>
<td></td>
<td>Offenses</td>
<td>Offenses</td>
</tr>
</tbody>
</table>

| Formal sanctioning     | x*                              | x                                |
|                        |                                  | x                                |
|                       |                                  | x                                |
| Negative attitudes     | x                                | x                                |
| toward police          |                                  | x                                |
| Negative attitudes     | x                                | x                                |
| toward parents         |                                  | x                                |
| Sex                    | x                                | x                                |
| Negative attitudes     | x                                | x                                |
| toward teachers        |                                  | x                                |
| Race                   | x                                | x                                |
| Achievement motivation | x                                | x                                |
| Age                    | x                                |                                  |

*x = a significant relationship.
significant relationships for each dependent variable in Sample 1 and Sample 2.

Labeling theory and compliance theory

The findings of this study clearly support labeling theory, and compliance theory. Labeling theory was measured by formal sanctioning. The most important predictor for all three dependent variables was formal sanctioning (labeling theory). Formal sanctioning can be viewed as a stigmatization and criminalization process in that the individual is identified to society and to himself as being deviant. The process is circular. The formally sanctioned individual is subjected to negative contact with the juvenile justice system, and he is identified to himself and to the community as a deviant. The affects on self-concept can decrease an individual's motivation to achieve prescribed cultural goals and stigmatization by the community can decrease the individual's opportunity to function as a normal member of society. When an individual is blocked from achieving via legitimate means, illegitimate means may be turned to. If an individual is frequently involved in delinquent behavior then it is more likely that he will be observed and/or apprehended; and as apprehension increases, the probability of formal sanctioning increases.

In Sample 2, labeling theory accounts for an additional 16 percent of the variance in criminal offenses, an additional 13.8 percent of the variance in juvenile offenses and an additional 18.6 percent of the variance in delinquency. This is nearly one-half of the variance in criminal offenses explained by all the variables, nearly one-half of the variance in juvenile
offenses explained by all the variables and over 40 percent of the variance in delinquency explained by all the variables.

The support for compliance theory comes from the fact that three of the five cross-validated predictors are attitudinal variables with compliance agents as the attitude object. In Sample 2, compliance theory accounted for an additional 21 percent of the variance in criminal offenses, an additional 16 percent of the variance in juvenile offenses, and an additional 24 percent of the variance in delinquency. This is one-half of the variance in criminal offenses explained by all the variables, over one-half of the variance in juvenile offenses explained by all the variables and over one-half of the variance in delinquency explained by all the variables.

Negative attitudes toward parents was a significant predictor of juvenile offenses in Sample 1 and Sample 2, and negative attitudes toward teachers was a significant predictor of criminal offenses in Sample 1 and Sample 2. Negative attitudes toward police was a significant predictor for all three dependent variables in Sample 1 and Sample 2. In Sample 2, negative attitudes toward police accounted for over 16 percent of the variance in criminal offenses, over 9 percent of the variance in juvenile offenses and 14 percent of the variance in delinquency. This is over one-half of the variance in criminal offenses explained by all the variables, almost one-third of the variance in juvenile offenses explained by all the variables, and nearly one-third of the variance in delinquency explained by all the variables.
The police are the most visible wielders of societal authority and of the legal system. Therefore, if an individual is discontent with the social structure of society or with the practices of the legal system, he is likely to direct his discontent toward the police. Additionally, the police role includes controlling juvenile misconduct and initiating legal action against youth. These situations are characterized by negative interaction between police and juveniles. However, face-to-face contact with the police may not be necessary when the community, the family, and the peer group define and stereotype the police negatively. For example, this study found that negative attitudes was a consistent predictor of criminal offenses, juvenile offenses, and delinquency, but, negative police-juvenile contact was not a significant predictor. Based on this observation, it is possible that negative attitudes toward police are learned from one's reference groups rather than the result of unpleasant experiences with the police.

Criminal offenses, juvenile offenses, and delinquency

Negative attitudes toward police and formal sanctioning were the only significant predictors that were common to criminal offenses and to juvenile offenses. In Sample 1, sex, negative attitudes toward parents, negative attitudes toward teachers, achievement motivation, race, and age were the significant predictors that were not common to criminal offenses and juvenile offenses. Sex, and negative attitudes toward teachers and
achievement motivation were the predictors for criminal offenses. Negative attitudes toward parents, race, and age were the predictors for juvenile offenses. The variables in the prediction model for delinquency were: formal sanctioning, negative attitudes toward police, negative attitudes toward parents, sex, negative attitudes toward teachers, race, and achievement motivation.

Negative attitudes toward police and formal sanctioning were the only significant predictors that were common to criminal offenses and juvenile offenses in Sample 2. Sex, negative attitudes toward teachers, and negative attitudes toward parents were the significant predictors that were not common to criminal offenses and juvenile offenses in Sample 2. Sex and negative attitudes toward teachers were the predictors for criminal offenses. Negative attitudes toward parents was the predictor for juvenile offenses. The variables in the prediction model for delinquency were: formal sanctioning, negative attitudes toward police, negative attitudes toward parents, and sex.

After formal sanctioning and negative attitudes toward police, sex and negative attitudes toward teachers are the best predictors of criminal offenses. Males live in a different social sphere than females. The male role is aggressive, independent, and competitive while the female role is more docile and dependent. The expectations for males are different from the expectations for females. Involvement in criminal offenses is more likely to be an expectation of a male peer group than a female peer group. Males are more autonomous from familial supervision, thereby, providing the opportunity to conform to peer group pressures for involvement in criminal offenses.
Negative attitudes toward teachers may be learned in one's reference groups or they may result from negative experiences with teachers. Teachers who have negative attitudes toward students may generate negative reactions to school and its authorities. In such cases, students may view school as an undesirable but a necessary activity. The focal point of the day may be peer group activities rather than academic learning. The peer group sentiment may be anti-school and criminal offenses against other students may be an expression of this sentiment. Teachers may consciously or unconsciously contribute to this phenomena by defining certain students as academic failures. For example, certain students may be channeled into vocational curriculums, and teachers may stereotype these students as having less ability. According to Polk and Schafer (1972) vocationally oriented youth are defined and stigmatized as trouble-makers by the school authorities. Such an approach can have self-fulfilling consequences.

Model 10 (please refer to page 126) is a model designed to guide future research for criminal offenses. The model includes four predictors of criminal offenses that were significant in Sample 1 and Sample 2: formal sanctioning, negative attitudes toward police, negative attitudes toward teachers, and sex. These variables have survived the tests involved in the cross-validation design. Three other variables are included in Model 10: race, age, and juvenile offenses. Race and age were significant variables in Sample 1. In addition, there are a number of research studies which emphasize the importance of these variables; these studies were discussed in Chapter III. In brief, the factors of social structural blockage, cultural conflict, and discrimination by the criminal justice system, lead this au-
Model 10. Research model for criminal offenses

Formal Sanctioning

Negative Attitudes Toward Police

Negative Attitudes Toward Teachers

Sex

Race

Age

Criminal Offenses

Juvenile Offenses
Theor to believe that nonwhites will be more involved in unofficial delinquency than whites. The offenses for which juveniles are most often arrested are generally those which they most often admit committing (Short and Nye, 1958). Therefore, there is a relationship between unofficial delinquency and official delinquency; and since nonwhites are disproportionately represented in the official rates, it follows that nonwhites will be more involved in unofficial delinquency than whites.

Age related statuses and roles are factors which lead this author to believe that there are different behavioral expectations and different behavioral patterns for different age groups. For example, adolescence is a time when peer groups define behavioral expectations to which the individual must comply in order to be accepted by that group. Adolescence is the time when an individual is most deviant; it is a period of mischief and experimentation (Neumeyer, 1961; Sutherland and Cressey, 1960). Of the adolescent age group, research evidence suggests that older adolescents are more likely to be involved in delinquency (Neumeyer, 1961; Federal Bureau of Investigation, 1970).

Juvenile offenses is included in this model because of the high correlation between juvenile offenses and criminal offenses. The correlation of .59 is significant at the .001 level. This correlation means that juvenile offenses accounts for 36 percent of the variance in criminal offenses. Therefore, in the bivariate case, juvenile offenses is the single best predictor of criminal offenses. Conversely, it may be that criminal offenses is the single best predictor of juvenile offenses. Although this question must be answered by longitudinal research, it is likely that juvenile offenses precedes involvement in criminal offenses.
After formal sanctioning and negative attitudes toward police, negative attitudes toward parents is the best predictor of juvenile offenses because it is significant in Sample 1 and Sample 2. Parent-juvenile relations are especially intense and hostile during the adolescent years. In this situation, a frustrated juvenile may commit acts against authority (juvenile offenses) as an expression of his desire to be autonomous from his parents. Parental control decisions may be judged as unfair by the juvenile. In such cases, juvenile offenses may be a means of retaliating against parental unfairness. Family tension and marital conflict may be additional factors which operate to explain the relationship between negative attitudes toward parents and involvement in juvenile offenses.

Model 11 (please refer to page 129) is a model designed to guide future research for juvenile offenses. The model includes four predictors for juvenile offenses. Three of these predictors were significant in Sample 1 and Sample 2: formal sanctioning, negative attitudes toward police, and negative attitudes toward parents. These variables have survived the tests involved in the cross-validation design. The fourth predictor is age. Age was a significant predictor in Sample 1 but not in Sample 2. This may be due to sampling error, or it may be due to the fact that the age range in this study is limited. The effects of age are more likely to surface if a larger age range is available. Parent-juvenile relations are likely to be most intense during adolescence, and therefore, retaliation against parents via juvenile offenses is more likely during this time period (Trojanowicz, 1973).
Model 11. Research model for juvenile offenses

Formal Sanctioning

Negative Attitudes
Toward Police

Negative Attitudes
Toward Parents

Age

Juvenile Offenses
Model 12 (please refer to page 131) is a model designed to guide future research for delinquency. The model includes four predictors of delinquency that were significant in Sample 1 and Sample 2: formal sanctioning, negative attitudes toward police, negative attitudes toward parents, and sex. These variables have survived the tests involved in the cross-validation design. Three other variables are included in Model 12: negative attitudes toward teachers, race, and age. These variables were included because they were included in the models for juvenile offenses or criminal offenses. Since delinquency was defined as juvenile offenses plus criminal offenses, it follows that the predictors of delinquency should include the predictors of juvenile offenses and the predictors of criminal offenses.

Implications

In reviewing the research models for criminal offenses, juvenile offenses, and delinquency, several observations warrant further discussion. Three theoretical orientations are represented: labeling theory, compliance theory, and differential opportunity theory. The variables from differential opportunity theory are sex, race and age. These variables help to identify those juveniles who are likely to be involved in criminal offenses, juvenile offenses, and delinquency. However, the practical utility of these particular variables from differential opportunity theory is limited because these variables can not be manipulated. With regards to criminal offenses, these variables may be interrelated to one's perceptions of available opportunities. If blockage is perceived, then,
Model 12. Research model for delinquency

- Formal Sanctioning
- Negative Attitudes Toward Police
- Negative Attitudes Toward Parents
- Sex
- Negative Attitudes Toward Teachers
- Race
- Age

These factors contribute to delinquency.
involvement in criminal offenses may be the outcome. Age is the only variable from differential opportunity theory for juvenile offenses. However, future research of juvenile offenses will not be enhanced by the employment of opportunity theory because juvenile offenses are not directly related to perceptions of opportunity. Rather, juvenile statutes are age specific restrictions which are designed to control the behavior of juveniles so as to protect them from harming themselves or society. All persons under the age of majority, as defined by the respective state statutes, are subject to these restrictions.

The present study found that as age increases, violations of the juvenile statutes are more likely to occur. This is consistent with the discussion of adolescence presented earlier in this chapter; i.e. adolescence, especially later adolescence, is a period characterized by increased questioning of traditional authority, increased autonomy from parental control, greater emphasis on peer group expectations, and more frequent confrontations and conflicts with parents. Therefore, future research of juvenile offenses should consider age in relationship to the social changes that an individual experiences during adolescence.

Labeling theory and compliance theory are interrelated explanations of criminal offenses, juvenile offenses and delinquency in that both focus on the interaction between the juvenile and the compliance system. Formal sanctioning is an indicator for labeling theory; the variables from compliance theory are attitudes toward parents, police and teachers. These four variables are potentially manipulatable, and therefore, these variables may be of significance to the social practitioner.
Formal sanctioning (labeling theory) was a significant variable for criminal offenses, juvenile offenses, and delinquency. It appears that formal sanctioning may intensify existing juvenile deviant behavior. This may be due to community stigmatization processes and/or negative experiences during the formal processes of juvenile justice. Those who commit criminal offenses and those who commit juvenile offenses are subjected to the same formal sanctioning processes. Formal sanctioning of youth who commit juvenile offenses can act as a push toward involvement in criminal offenses as a retaliatory mechanism for the harm imposed on the youth by the system.

This implies that system changes are necessary. Those who commit juvenile offenses should not be processed through the same system as those who commit criminal offenses, and those who repetitively commit criminal offenses should somehow be distinguished from first offenders. In other words, the juvenile justice system must become more sensitive to its affects on the life of each youth that passes through its doors and it must become more cognizant of the needs of each juvenile client.

It is startling to learn that juvenile involvement in criminal offenses is increasing four times faster than for adults (Scarpitti, 1974). It is likely that this data reflects the ineffectiveness of internalized control mechanisms and an increased reliance on formal agencies of social control. Under the jurisdiction of these formal agencies, there are some 100,000 children in jails and jail-like institutions throughout this country (Mangel, 1971). Sixty percent of these youth have not committed a criminal offense. They are institutionalized because the present system does not provide meaningful alternatives to the traditional institutions.
Juveniles are amenable to treatment, if the treatment is relevant to their needs. Adams (1967) and Speer (1972), in two separate studies, found that treatment is effective for juveniles but not for adults. The task is to develop treatment programs which are sensitive to juvenile needs, the nature of the offense committed, and the implications of the traditional formal sanctioning ceremonies. This does not imply that formal agencies should be abolished, rather, formal agencies must become more effective.

Legislative action is needed to direct the justice system's processing of juveniles. The emphasis should be on early problem discovery, low profile processing, and treatment approaches which recognize the needs of each individual. The relative cost of such changes in the present system are not nearly as great as the economic and social harm that will be forthcoming by those processed under the current system.

The proposed changes would go a long way toward reducing the intensity of juvenile negativeness toward the compliance system's agents. The present study was not designed to determine the causes of these negative attitudes. However, it is likely that these attitudes reflect deep rooted societal problems. One such problem which is directly related to the compliance system is the general public's attitudes toward the political system and the legal institution which perpetuates the current state of affairs. The inconsistencies and the inequities of criminal justice contribute to the growing disrespect for the legal system. It is conceivable that these attitudes of disrespect are passed on from generation to generation, and that attitudes may be the result of learning from reference groups as often as they are the result of direct contact with the attitude object. This is likely with regards to attitudes toward police which was a significant
predictor for criminal offenses, juvenile offenses, and delinquency. Creating situations where juveniles can have a positive experience with police is one method to change juvenile attitudes toward the police. The emphasis should be on nature of the police role and the nature of police as human beings. Realistically, most police departments are already overburdened and underpaid, and such a juvenile relations effort would not be welcomed. Another approach is to change the legal system so that the images passed on to children are positive and respectful. One possible change would involve the latitude of discretion that police have in juvenile matters. It is unfair and unwise to ask the police to make decisions which affect the future of that juvenile’s life and the future of our society. Not only would this increase the effectiveness of juvenile justice, but, it will improve the image of the justice system because present inconsistencies and inequities would be reduced. Another change involves the reordering of our nation's priorities to reflect a concern for human life. In the case of juveniles, this involves spending money to meet their needs, and it involves tactics other than fear and threats. In most cases, it can be argued that a juveniles misconduct is a cry for help, a warning sign. It is the responsibility of the compliance system to care for youth and to protect them from harming themselves and/or society. As this study has revealed, teachers are viewed with hostility by juveniles who are involved in criminal offenses, and parents are viewed with hostility by juveniles who commit juvenile offenses.
Summary and Conclusions

The purpose of this research was to identify predictors for delinquency and two subtypes of delinquency: criminal offenses and juvenile offenses. The theoretical distinction between criminal offenses and juvenile offenses is an important contribution of this study. The purpose of studying criminal offenses and juvenile offenses was to better understand the similarities and differences of these subtypes of delinquency, thereby, filling a gap in the research literature.

The purposes of this research have been achieved. Prediction equations for delinquency, criminal offenses, and juvenile offenses were generated and verified within the framework of cross-validation. Cross-validation was used in an effort to improve delinquency research's reputation of being inconclusive and inconsistent. Cross-validation focuses on improving the quality of research inferences by approximating the scientific requirement of replication.

The present study found that criminal offenses and juvenile offenses have different predictors. This differentiation is of major theoretical and empirical significance because it focuses attention on the notion that different behaviors must be explained by different factors.

The cross-validated predictors for criminal offenses were formal sanctioning, negative attitudes toward the police, sex, and negative attitudes toward teachers. The cross-validated predictors for juvenile offenses were formal sanctioning, negative attitudes toward police, and negative attitudes toward parents. The cross-validated predictors for delinquency were formal sanctioning, negative attitudes toward police, negative attitudes
toward parents, and sex. In addition to the cross-validated prediction models, this chapter presented research models to guide future investigations.

The practical significance of this investigation is that formal sanctioning and negative attitudes toward police were significant predictors in the prediction models for criminal offenses, juvenile offenses, and delinquency. Practitioners should recognize that formal sanctioning may intensify existing juvenile deviant behavior by subjecting the juvenile to community stigmatization processes and/or negative experiences during the formal processes of juvenile justice. The juvenile justice system must become more sensitive to its affects on each juvenile client.

One method of improving the police image is to contrive situations where juveniles can have a positive and nonsuperficial experience with the police. Another strategy is to socialize the police and other juvenile justice agents; i.e. change their attitudes toward youth and improve their responses in youth related matters. However, it should be recognized that negative attitudes toward police or other authority figures may be learned from parents and peers. Whatever the cause of the attitude, negative attitudes toward the legal system may allow one to violate the law and justify that behavior by referring to the inequities of the legal system. The legal system must devise strategies for improving its image, and in turn, the resultant respect may lead to greater compliance to legal norms.

After considering the affects of formal sanctioning and negative attitudes toward police, the different predictors for criminal offenses verses
juvenile offenses suggests that different types of deviant behavior must be controlled by different methods. The overall significance of compliance theory (as indicated by negative attitudes toward police, teachers, and parents) implies that control strategies should focus on changing the attitudes of juveniles toward compliance agents.

In the case of criminal offenses where negative attitudes toward teachers was a significant predictor, juvenile attitudes may be improved by changing teacher behavior. Teacher behavior can be changed when they are sensitized to the problems and conflicts which youth are experiencing. The teacher's role, in contemporary society, involves a counseling role outside of the classroom. An expressed willingness and a sincere desire to help youth during periods of crisis will serve to improve juvenile attitudes toward teachers, and it may help to prevent more serious problems.

The negative attitudes toward teachers may reflect a process of hostility displacement; i.e., juveniles may be hostile toward the total school environment rather than being hostile toward teachers. However, they may express hostility toward teachers because they are the most visible wielders of school authority.

Treatment of juveniles who commit criminal offenses should focus on interpersonal skills and positive learning experiences. The goal of this treatment would be the acquisition of social and learning skills which are necessary for successful experiences in school and social life.
In the case of juvenile offenses where negative attitudes toward parents was a significant predictor, juvenile attitudes may be improved by changing parent behavior. Although parental behavior may be an underlying cause of juvenile offenses, it is unlikely that practitioners will have the opportunity to direct behavioral changes of parents. Conceivably, volunteer involvement by parents could be arranged, but most likely, the parents who need the help most would not participate.

Treatment of juveniles who commit juvenile offenses should focus on the underlying familial problems which lead the juvenile to express his frustration by violating juvenile statutes. Treatment should be located in the home, if possible, and the emphasis should be on the development of mutual understanding and open communication between parent and child. However, successful intervention into familial matters is unlikely unless the treatment coordinator can attain cooperation from all familial members.
CHAPTER VII: SUMMARY

The present study was stimulated by a trend of increased involvement in criminal behavior by juveniles, the need for a distinction between criminal offenses and juvenile offenses, and the current state of delinquency research and theory. The dependent variables in this study were criminal offenses, juvenile offenses, and delinquency. Criminal offenses was defined as violations of the criminal law; juvenile offenses was defined as violations of juvenile statutes; and delinquency was defined as violations of criminal law or juvenile statutes.

The purpose of this study was to better understand juvenile delinquency and to explore its subtypes, criminal offenses and juvenile offenses. The purpose of studying criminal offenses and juvenile offenses is to better understand the similarities and differences of these subtypes of delinquency, thereby, filling a gap in the research literature.

The investigation of criminal offenses, juvenile offenses, and delinquency is conducted via cross-validational analysis whereby prediction equations are generated in one sample and verified in another sample. The prediction equations are generated from a variable set which includes thirty independent variables from the following theoretical orientations: family environment, differential opportunity, compliance theory, differential association, and labeling theory.

The data for this study was gathered by Dr. Martin Miller in Lansing, Michigan. For the purposes of this study, the original sample from Lansing was divided randomly into two subsamples. In Sample 1, each independent
variable is entered into the prediction equation for each dependent variable via stepwise regression procedures. In Sample 2, the significant variables from Sample 1 were subjected to the multiple regression procedure to determine the predictive utility of the equations which were generated in Sample 1. The prediction equations were evaluated by comparing the predictive weights and the explained variance of Sample 1 to the predictive weights and the explained variance of Sample 2.

In Sample 1, the significant predictors of criminal offenses were formal sanctioning, negative attitudes toward teachers, sex, negative attitudes toward police, and educational orientation. In Sample 2, the significant predictors of criminal offenses were formal sanctioning, negative attitudes toward teachers, sex, and negative attitudes toward police.

In Sample 1, the predictors of juvenile offenses were formal sanctioning, negative attitudes toward parents, negative attitudes toward police, race, and age. In Sample 2, the significant predictors of juvenile offenses were formal sanctioning, negative attitudes toward parents, and negative attitudes toward police.

In Sample 1, the significant predictors of delinquency were formal sanctioning, negative attitudes toward police, negative attitudes toward parents, negative attitudes toward teachers, sex, race, and achievement motivation. In Sample 2, the significant predictors of delinquency were formal sanctioning, negative attitudes toward police, negative attitudes toward parents, and sex.
From the above, it is apparent that certain variables that were significant in Sample 1, were not significant in Sample 2. This is caused by fluctuations in the predictive weights or fluctuations in the standard error of the predictive weights. From a comparison of the predictive weights across Sample 1 and Sample 2, it was concluded that the predictive weights are rather instable. The standard error of the predictive weights were fairly stable. Therefore, the change from significant in Sample 1 to nonsignificant in Sample 2 is probably due to the instability of the predictive weights.

From Sample 1 to Sample 2 the number of significant variables decreased but $R^2$ increased for all three dependent variables. This is contrary to what was expected within the cross-validational design. Three possible reasons for this were given: (1) the ratio of subjects to independent variables was too small; (2) measurement error; and (3) sampling error.

Negative attitudes toward police and formal sanctioning were the only significant predictors that were common to criminal offenses and to juvenile offenses in Sample 1 and in Sample 2. In Sample 1, sex, negative attitudes toward parents, negative attitudes toward teachers, achievement motivation, race and age were the predictors that were not common to criminal offenses and juvenile offenses. Sex, negative attitudes toward teachers, and achievement motivation were the predictors for criminal offenses. Negative attitudes toward parents, race and age were the significant predictors for juvenile offenses.
In Sample 2, sex, negative attitudes toward teachers, and negative attitudes toward parents were the predictors that were not common to criminal offenses and juvenile offenses. Sex and negative attitudes toward teachers were the predictors for criminal offenses, and negative attitudes toward parents was the predictor for juvenile offenses.

The findings of this study support labeling theory and compliance theory. Labeling theory, as measured by formal sanctioning, accounted for 39 percent of the variance in criminal offenses explained by all the variables, nearly one-half of the variance in juvenile offenses explained by all the variables and over 40 percent of the variance in delinquency explained by all the variables.

Three of the five cross-validated predictors were from compliance theory: negative attitudes toward police, negative attitudes toward teachers, and negative attitudes toward parents. Compliance theory accounted for one-half of the variance in criminal offenses explained by all the variables, over one-half of the variance in juvenile offenses explained by all the variables and over one-half of the variance in delinquency explained by all the variables. Negative attitudes toward police was the overall best predictor from compliance theory because it was significant for all three dependent variables and it explained more variance than the other variables from compliance theory.

In all, four models for each dependent variable were presented and discussed in this investigation: theoretical models, empirically generated prediction models, cross-validated prediction models, and research models. The research models were developed from variables that were significant in
the empirically generated prediction models. The variables from the cross-validated prediction models were automatically included in the research models. Those variables which were significant in the empirically prediction models but nonsignificant in the cross-validated prediction models were re-evaluated with regards to their theoretical significance. As a result of this procedure, the following variables were included in the research model for criminal offenses: formal sanctioning, negative attitudes toward police, negative attitudes toward teachers, sex, race, age, and juvenile offenses. Juvenile offenses was included in the research model because of its high correlation with criminal offenses.

The research model for juvenile offenses included the following variables: formal sanctioning, negative attitudes toward police, negative attitudes toward parents, and age. The research model for delinquency included the following variables: formal sanctioning, negative attitudes toward police, negative attitudes toward parents, sex, negative attitudes toward teachers, race, and age.

The variables contained in the research models represent three theoretical orientations: differential opportunity theory, labeling theory, and compliance theory. This investigation provides strong support for labeling theory and compliance theory. The support for differential opportunity theory is somewhat less clear in that only one of the three variables from this orientation was significant across Sample 1 and Sample 2. Furthermore, it can be argued that the three variables from differential opportunity theory may reflect phenomena which is unrelated to the opportunity structure. For example, the significance of age in the prediction of juvenile offenses
may be unrelated to the opportunity structure or perceptions of available opportunities. It may be that age is related to juvenile offenses because adolescence, especially later adolescence, is a period characterized by increased questioning of traditional authority, increased autonomy from parental control, greater emphasis on peer group expectations, and more frequent parent-juvenile conflict. Therefore, future research of juvenile offenses should consider age as it relates to the social changes that an individual experiences during adolescence. In other words, variables which do not have theoretical meaning within one theoretical framework may have theoretical meaning when examined within a different theoretical framework.

The findings of this study clearly support labeling theory and compliance theory. Formal sanctioning, a variable from labeling theory, was significant for all three dependent variables. Formal sanctioning may intensify existing juvenile deviant behavior by subjecting the juvenile to community stigmatization processes and/or negative experiences during the formal processes of juvenile justice.

Negative attitudes toward police, a variable from compliance theory, was a significant predictor for criminal offenses, juvenile offenses, and delinquency. It was suggested that these negative attitudes might be changed by constructing situations where juveniles can have a positive and nonsuperficial experience with the police. Another approach is to change police attitudes and responses to juveniles, thereby, improving the police image from the juvenile's perspective.
No other variables from compliance theory, negative attitudes toward teachers and negative attitudes toward parents, were significant predictors in this study. Negative attitudes toward parents was a significant predictor for juvenile offenses, and negative attitudes toward teachers was a significant predictor for criminal offenses.

In that the predictors for criminal offenses and juvenile offenses are different, it was concluded that different types of deviant behavior should be controlled by different methods. Juveniles who commit juvenile offenses should not be processed through the same system as those who have committed criminal offenses.

In summary, the juvenile justice system must become more aware of how its agents and processes affect each client. The juvenile justice system should accentuate early problem discovery, low profile processing, and treatment strategies which are sensitive to individual differences.
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APPENDIX A

SCALES AND SCALE RELIABILITY

Theoretically, the best estimate of the reliability coefficient is stated in terms of a precise definition of the equivalence of two forms of a test (Kuder and Richardson, 1967:95). The Kuder and Richardson formulas 20 and 21 provide such an estimate for dichotomous items, and coefficient alpha provides an estimate for polychotomous as well as dichotomous items.

Coefficient alpha is a specification of the split-half method which compares random halves of the test and gives an exact coefficient of equivalence for the full test. It is an estimate of the correlation between two random samples of items from a universe of items like those in the test; i.e. it is the mean of all split-half coefficients resulting from different splittings of a test (Cronbach, 1967:132).

Coefficient alpha is an index of common-factor concentration because it estimates, and is a lower bound to the proportion of test variance attributable to common factors among the items (Cronbach, 1967:164). It is a conservative estimate of reliability because it looks at all possible splits of a test and accepts a lower bound as the measure of reliability.

The formula for calculating alpha is: \[ \frac{n}{n-1} \times \frac{\text{inter-item covariance}}{\text{total variance}}. \] The term \[ \frac{n}{n-1} \] allows for the proportion of variance in any item which is due to the same elements as the covariance (Cronbach, 1967:140).
The formula for computing coefficient alpha from the variance covariance matrix is:

\[
\text{Coefficient Alpha} = \frac{n}{n-1} \frac{\sigma^2_y - \sigma^2_i}{\sigma^2_y}
\]

where: \(\sigma^2_y\) = sum of variance of total matrix

\(\sigma^2_i\) = sum of variance of items

The formula for computing standardized coefficient alpha from the correlation matrix is:

\[
\text{Standardized Coefficient Alpha} = \frac{n \bar{\rho}_{ij}}{1 + (n-1)r_{ij}}
\]

where: \(\bar{\rho}_{ij}\) = average interitem correlation

\(r_{ij}\) = interitem correlation

Sentence completion techniques are relatively free from response expectations, therefore there is a great variation in the responses to sentence completion stimuli. The reliability measures for projective instruments will be different than the reliability measures for forced choice instruments. "Like all other projective type techniques, high consistency is difficult to achieve" (Miller, 1971:168). However, this doesn't mean that projective instruments are bad indicators.

Both the test-retest reliability that Miller (1971) used and coefficient alpha which was used in this study are generally low for the sentence completion scales. However, the high coder reliability gives assurance that the instrument did obtain an accurate assessment of attitudes.
To check coder reliability, every fifth questionnaire was recoded by different coders. Coding errors were categorized as major or minor. A major error was defined as coder code-check discrepancies. If a coder coded a sentence stem as an indirect positive (4) and the code-checker coded it as an indirect negative, a major error was recorded. A minor error was defined as coder-code discrepancy in the intensity of the attitude. For example, two coders may agree on attitude direction but not in degree. Coder reliability was 98.4 percent for major errors and 96.1 percent for minor errors.

The following outline presents the items for each scale and the reliability coefficient for each scale. Please refer to the measurement chapter for the response categories for the different scales.

A. Anomia Scale (Srole, 1956)

1. nowadays a person has to live pretty much for today and let tomorrow take care of itself
2. in spite of what some people say, the lot of the average man is getting worse, not better
3. it's hardly fair to bring children into the world with the way things look for the future
4. these days a person doesn't really know whom he can count on
5. there's little use in writing to public officials because often they aren't really interested in the problems of the average man

Alpha = 0.54827

Standardized Alpha = 0.55009
B. Powerlessness Scale (Clark, 1969)

1. many times I feel that it does not do any real good to think about what to do. You might just as well flip a coin
2. the ordinary person has very little control over what a politician does in office
3. I don't see how you can really tell how other people are going to act

C. Attitude Toward Teachers Role Scale (adapted from Preiss and Ehrlich, 1966)

1. prestige of the position
2. influence teachers have in community affairs
3. social position of teachers in the community
4. economic position of teachers in the community

Alpha = 0.56395
Standardized Alpha = 0.56597

D. Attitude Toward Police Role Scale (adapted from Preiss and Ehrlich, 1966)

1. prestige of the position
2. influence policemen have in community affairs
3. social position of policemen in the community
4. economic position of policemen in the community

Alpha = 0.71786
Standardized Alpha = 0.71811

E. Attitudes Toward Parents Scale (modified from Maher and Stein, 1968)

1. a father is.....
2. most parents....

Alpha = 0.35599
Standardized Alpha = 0.36545
F. Attitudes Toward Teachers Scale (modified from Maher and Stein, 1968)

1. most teachers are.....

2. teachers.....

3. in dealing with Negroes, teachers are.....

4. success is mostly a matter of getting good breaks

5. it is nearly impossible for a person to make a go of it in business because of the big corporations and chain outfits

Alpha = 0.55437
Standardized Alpha = 0.55029

G. Future Orientation Scale (modified from Maher and Stein, 1968)

1. the future.....

2. next year.....

Alpha = 0.29407
Standardized Alpha = 0.30655

H. Attitudes Toward School Scale (modified from Maher and Stein, 1968)

1. the school.....

2. in school.....

3. studying.....

Alpha = 0.52988
Standardized Alpha = 0.53253

I. Attitude Toward Legal System Scale (modified from Maher and Stein, 1968)

1. the police department.....

2. the law.................

Alpha = 0.46473
Standardized Alpha = 0.46514
4. dealing with kids, teachers are.....

Alpha = 0.63649
Standardized Alpha = 0.63635

J. Attitude Toward Legal Authorities Scale (Clark and Wenninger, 1964)
1. on the whole, policemen are honest
2. on the whole, judges are honest
3. a person should obey the laws no matter how much one has to
go out of his way to do it
4. in the courts a poor man has the same chance as a rich man
5. laws are made just for the good of a few
6. a person should tell the truth in court, no matter what
7. it is O.K. for a person to break the law if he doesn't get
cought
8. it is O.K. to lie in court in order to protect a friend who
is on trial
9. almost anything can be fixed up in the courts if you have
   enough money
10. people who break the law are nearly always caught and punished
11. just because a person gets himself in a corner is no reason to
   break the law

Alpha = 0.76955
Standardized Alpha = 0.77732

K. Attitude Toward Police Scale (Fortune, 1965)
1. police keep the city good
2. police accuse you of things you didn't do
3. the police are stupid
4. police protect us from harm
5. the police really try to help you when you're in trouble
6. the police are mean
7. the police offer you money to tell on other kids
8. police use clubs on people for no reason at all
9. the police keep peace and order
10. without policemen there would be crime everywhere
11. you can rely on the police in times of distress
12. policemen are dedicated men
13. police try to act big shop
14. the police are always mad at kids
15. police help me to help myself
16. police represent trouble instead of help
17. police are brave men
18. the police are protective of our country
19. police don't even give you a chance to explain
20. police try to get smart with you when you ask a question

\[
\alpha = 0.9263 \\
\text{Standardized } \alpha = 0.92645
\]

I. Attitudes Toward Police Scale (modified from Maher and Stein, 1968)
1. any policemen.....
2. most police are...
3. in dealing with Negroes, police are ....
4. a police juvenile officer....
5. in dealing with kids, police are....
6. in arresting people, police....

\[ \text{Alpha} = 0.69355 \]
\[ \text{Standardized Alpha} = 0.69451 \]

**M. Attitudes Toward Juvenile Court and its Agents Scale (modified from Maher and Stein, 1968)**

1. a judge is....
2. in court......
3. probation officers are....

\[ \text{Alpha} = 0.35147 \]
\[ \text{Standardized Alpha} = 0.35754 \]

**N. Police Juvenile Contact Scale (adapted from Youth Service Corps of the Detroit Police Department, 1966)**

1. how many of your friends are policemen
2. a policeman has roughed me up
3. a policeman has helped me with my problems
4. a policeman was nice to me when I talked with him
5. a policeman has stopped me on the street

\[ \text{Alpha} = -0.39143 \]
\[ \text{Standardized Alpha} = 0.40866 \]

**O. Formal Sanctioning Scale (adapted from Youth Service Corps of the Detroit Police Department, 1966)**

1. a policeman has picked me up
2. a policeman has arrested me

\[ \text{Alpha} = 0.69453 \]

\[ \text{Standardized Alpha} = 0.70179 \]

P. Involvement in Delinquency Scale (Short and Nye, 1958)

1. drive a car without a driver's license or permit
2. skipped school without a legitimate excuse
3. run away from home
4. defied your parents authority (to their face)
5. taken little things (worth less than $2.00) that did not belong to you
6. taken things of medium value (between $2.00 and $50.00)
7. bought or drank beer, wine or liquor
8. purposely damaged or destroyed public or private property

\[ \text{Alpha} = 0.76828 \]

\[ \text{Standardized Alpha} = 0.77351 \]

Q. Involvement in Juvenile Offense Scale (Short and Nye, 1958)

1. skipped school without a legitimate excuse
2. run away from home
3. defied your parents authority (to their face)
4. bought or drank beer, wine or liquor

\[ \text{Alpha} = 0.56783 \]

\[ \text{Standardized Alpha} = 0.58546 \]
R. Involvement in Criminal Offense Scale (Short and Nye, 1958)

1. drive a car without a driver's license or permit
2. taken little things (worth less than $2.00) that did not belong to you
3. taken things of medium value (between $2.00 and $50.00)
4. purposely damaged or destroyed public or private property that did not belong to you

Alpha = 0.70299

Standardized Alpha = 0.72208
APPENDIX B

CODEBOOK

Please refer to Chapter III for a discussion of the different types of scales used in this study. Refer to Appendix A for the specific items in each scale and the scale reliability.

Each of the scales were coded on a positive-negative continuum. The various types of delinquency were expected to be related to the negative end of the continuum. Below is the coding system for each type of scale:

<table>
<thead>
<tr>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Frequency Scale</td>
<td>1 2 3 4</td>
</tr>
<tr>
<td>2. Likert Scale</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3. Sentence Completion Scale</td>
<td>5 4 3 2 1</td>
</tr>
<tr>
<td>4. Rating Scale</td>
<td>6 5 4 3 2 1</td>
</tr>
</tbody>
</table>

The following listing is the codebook for the structural and demographic variables:

1. Are your parents living?
   - Both living
   - Mother only or father only
   - Both deceased
2. Who do you live with?

- Mother and Father 1
- Mother and Stepfather or Father and Stepmother 2
- Mother only or Father only 3

3. Total number of brothers plus total number of sisters; code equals actual number of brothers and sisters

4. What is the marital status of your parents?

- Divorced or separated 1
- Married 2

5. Birth order:

- Only child 1
- Oldest 2
- Youngest 3
- Middle 4

6. Does mother work?

- Full time 1
- Part time 2
- Not working 3

7. What course of study do you plan to take in senior high school?

- Undecided 1
- Vocational 2
Business or general education 3
College preparation 4

8. Do parents own home?
   Own home 1
   Don't 2
   Don't know 3

9. Occupation: father's or substitute mother's
   Lower working 1
   Upper working 2
   Lower middle 3
   Upper middle 4

10. Number of in-school activities: code equals actual number of in-school activities

11. Number of out-school activities: code equals actual number of out-school activities

12. Frequency of church attendance?
   Never 4
   Less than once a month 2
   1 to 3 times a month 2
   Every week 1
13. Sex:
   Male  1
   Female  2

14. Age:
   13  3
   14  4
   15  5
   16 or older  6

15. Race:
   White  1
   Nonwhite  2
APPENDIX C

CORRELATION MATRIX

In Table XX (please refer to pages 184-201), the correlation matrix for the dependent and independent variables is presented. The Table begins with the independent variables ($X_1$ through $X_6$) on the left side of the matrix. All of the independent and dependent variables are across the top of the matrix on pages 184-188. Then, variables $X_7$ through $X_{12}$ replace $X_1$ through $X_6$ on the left side and the independent and dependent variables are presented across the top of the matrix on pages 189-193. This format continues until all correlations are included.

In Table XXI (please refer to pages 202 and 203), the mean, standard deviation, true range and observed range are presented for each independent and dependent variable.
Table XX. Correlation matrix for independent and dependent variables

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