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A Schematic Approach to Understanding Probation Officers' Judgments of Criminals

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212

A SCHEMATIC APPROACH TO UNDERSTANDING PROBATION
OFFICERS' JUDGMENTS OF CRIMINALS

by

Arthur J. Lurigio

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of Loyola University of Chicago in Partial Fulfillment
of the Requirements for the Degree of
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PREFACE

Because the field of probation is likely to be unfamiliar to most readers, I begin with what is admittedly a cursory overview of the area. A broader treatment of the topic of probation can be found in numerous other volumes (e.g., Dressler, 1969; Killinger, Kerper, & Cromwell, 1976; Senna & Siegel, 1981). I then attempt to review the specific nature of probation officers' tasks in Cook County, Illinois. This brief description is drawn from my three years of experience and research as an employee of the County's Adult Probation Department. It is hoped that this Preface will lend greater meaningfulness to the procedures, findings, and practical implications of my studies.

Probation: History, Definitions, Functions

Origin and Growth of Probation

Of the numerous correctional reforms and innovations which emerged in the nineteenth century few were as widely diffused or as readily adopted as probation. Probation is a judicial disposition entailing the conditional release of a convicted offender into the community for a specified time under the supervision of the court and subject to certain conditions. Although it is rooted in such common law practices as the suspension of sentence

(Grinnell, 1941), credit for the first actual implementation of probation is generally attributed to the unofficial and voluntary efforts of an altruistic Boston bootmaker, John Augustus, who between 1841 and 1859 acted as advisor and surety for nearly 2,000 offenders.

Augustus was an early and vociferous proponent of the rehabilitative approach to corrections, declaring that "the object of the law is to reform criminals and to prevent crime and not to punish maliciously, or from a spirit of revenge" (Augustus, 1972, p. 23). Augustus' patently humanitarian and progressive treatment of offenders comprised a set of interventions that were designed to promote healthy changes and personal growth. The "father of probation" assisted criminals by supplying bail for a temporary postponement of their sentence and by performing the dual casework function of counseling and supervision during the period of release. If any of his charges were too poor to pay court costs, Augustus would advance them a loan and extend lodging and subsistence (Smith & Berlin, 1979). Rudiments of selection appear in his method in the form of a brief conversation, a subjective judgment of the accused's "firm resolve" to remain temperate, and a firm determination of whether he was "not yet past all hope of reformation" (Dressler, 1969).

During his time, other concerned citizens mimicked Augustus' efforts by putting up bail and offering

employment to the "less incorrigible" individuals brought before the magistrate. Their success with an appreciable number of these cases greatly impressed the court and was instrumental in inducing Massachusetts to become the forerunner in probation legislation. By virtue of the Probation Act of 1878, the law provided for the appointment of a paid probation officer for the courts of criminal jurisdiction in the city of Boston. The statute prescribed the duties of a probation officer as attendance in court, investigation of cases charged with or convicted of crimes and misdemeanors, recommendation to the court with regard to the advisability of using probation, submission of periodic reports to the chief of police, and rendering "such assistance and encouragement (to probationers) as will tend to prevent their again offending" (Chute & Bell, 1956, p. 65). Thus, while the law did not explicitly create any new judicial power, its enactment was tantamount to placing the state's stamp of approval on a judicial prerogative already in use (Grinnell, 1941).

It is important to note that the drafters of the statute clearly viewed probation as treatment: they included the proviso that those selected be "persons as may reasonably be expected to be reformed without punishment." Of equal significance is the fact that no additional restrictions were expressly stipulated upon eligibility for probation, other than the rehabilitative

criterion. Probation was available to juvenile and adult, male and female, felon and misdemeanor, regardless of the particulars of the offense (Dressler, 1969).

Statewide probation was instituted in Massachusetts in 1890, with a provision still appearing in many modern statutes, that the probation officer should not be an active member of the regular police force. However, this landmark legislation did not specifically grant to the court the power to suspend sentences indefinitely. Missouri in 1897, and Vermont in 1898, remedied this omission, although in Missouri the statute was labeled "An act relating to the parole of prisoners," and used the words "probation" and "parole" interchangeably (Killinger, Kerper, & Cromwell, 1976).

Several other states passed probation laws in the latter part of the nineteenth and in the beginning of the twentieth centuries. The statutes included many variations in applicability and organization. For example, Illinois (1899) and Minnesota (1899) provided only for juvenile probation; Rhode Island (1899) placed restrictions on eligibility, excluding persons convicted of certain offenses (Killinger, Kerper, & Cromwell, 1976). Rhode Island also regulated its probation services under a statewide, state-controlled administration, while Vermont left the administration to individual, autonomously operated counties (Allen, Carlson, & Parks, 1979).

Although 33 states had allowed statutory provision for adult probation by 1915, it was not until 1956 that all states had granted authorization to the courts (President's Commission on Law Enforcement and Administration of Justice, 1967).

Throughout its history, probation has connoted, among other things, a relatively mild form of punishment, a second chance for first offenders, and a manifestation of judicial grace (Vasoli, 1964). Probation as leniency is a viewpoint that is common in the general public and the media. Indeed, many contend that the probation of criminals is the equivalent of unrestricted release into the community. This perspective is primarily a byproduct of two factors (Barkdull, 1976). First, supporters of probation have been unable or unwilling to clearly argue that probation is indeed punishment, that it does reduce the freedom of individuals, and that it exposes them to an increased risk of future incarceration if they do not abide by the minimum standards of behavior. Second, probation has not been augmented by services which persuade the public to conceive of it as the symbolic analogue of incarceration. In this sense, a sentence to probation fails to quell the desires of victims, police, and witnesses for equitable restitution. It should be parenthetically stated that although probation is popularly perceived as leniency, it does represent a curtailment of

liberty, a constraint of several areas of behavior, and a more serious labeling event than other alternatives, notably conditional discharge (Harris, 1982).

Probation Definitions

While there is considerable consensus among criminologists as to what probation should be, the term itself embraces a variety of interpretations. As a legal disposition, probation represents a sentence which permits an offender to retain his/her freedom in the community while under the supervision of a probation agency and subject to conditions imposed by the court. In reality, however, it is usually considered a disposition in lieu of sentencing (Reid, 1981). Basic eligibility for probation is fixed by statute. Generally, restrictions on eligibility prohibit the granting of probation for certain serious offenses (e.g., rape, armed violence, armed robbery) or to offenders with a prior felony conviction (Killinger, Kerper, & Cromwell, 1976). In its Standards Relating to Probation, the American Bar Association speaks of probation as the preferred form of sentencing, unless the court finds the public's safety jeopardized or the defendant in need of institutional treatment. They also recommend that the probation decision be rooted in the facts and circumstances of each case and based upon the availability of institutional and community resources (Carter & Wilkins, 1976).

The Model Penal Code and the National Advisory

Commission on Criminal Justice standards and goals stress the following advantages of probation as an alternative sentence (Kerper, 1979): (a) it maximizes the liberty of the individual while serving the public interest; (b) it promotes the rehabilitation of the offender by continuing normal community contacts; (c) it avoids the negative and stultifying effects of confinement which often severely and unnecessarily complicate the reintegration of the offender into the community; (d) it minimizes the impact of the conviction upon innocent dependents of the offender; and (e) it greatly reduces the financial cost of an effective correctional system.

In selecting probation as a viable sentencing alternative, the judge may also consider a number of additional factors. Some are based upon the recommendations of criminal justice personnel, for example, the probation department's assessment of the defendant's "probationability" or the prosecutor's willingness to plea bargain; while other factors refer to specific characteristics of the offender: his/her age, rehabilitative potential, criminal history, drug/alcohol involvement, and mental health status. In addition, a set of essential questions is usually considered in determining whether probation is granted. Does the defendant's attitude toward the offense indicate genuine remorse? Will being placed on

probation enable the defendant to pay adequate restitution to the victim? Will the granting of probation allow the defendant to provide support and care for his/her family? (Abadinsky, 1982).

The length of probation sentences varies from state to state. The American Bar Association recommends that the term be two years for a misdemeanor conviction and five years for a felony. The Illinois statute delimits a maximum sentence of six months for a petty offense. Generally, states allow for an early termination of probation supervision (i.e., prior to the original, judicially ordered date of termination). This permits the Court some necessary flexibility, since it is often difficult to settle upon an equitable term at the time of sentencing (Abadinsky, 1982).

A number of states authorize early termination without supplying statutory directives that specify when and how it is to be exercised; other jurisdictions provide explicit guidelines for early termination. Essentially, a decision in favor of early release is rendered if it appears that the probationer has made a good adjustment to his/her sentence and that further supervision or enforced compliance with other conditions is no longer necessary (Carter & Wilkins, 1976). At other times, the decision may not be indicative of an offender's readiness to complete his/her sentence, but rather a reflection of

the need to keep caseloads down to manageable levels (Abadinsky, 1982).

Social role. A second definition of probation regards it as a particular social role ascribed to an individual. In this sense, it is the "status of a person convicted of a crime or judged guilty of delinquency during a period of suspension of sentence or corrective treatment in which he/she is given liberty conditional on his/her good behavior and in which the State through its agents by personal supervision attempts to assist him/her during good behavior" (Rummey & Murphy, 1952, p. 6). Hence, for the offender, probation status has implications different from the status of either free citizen or confined prisoner.

Probation vs. parole. The final definition of probation is simply constructed in terms of how it differs from parole, the fundamental distinction being that parole presupposes a term of imprisonment prior to release under supervision while probation does not. At first glance this formulation appears axiomatic; however, its shortcomings grow clear when it is recognized that the probation statutes of a number of jurisdictions permit the sentencing judge to rule that a portion of the probation term be spent in prison or jail. Accordingly, it may be more appropriate to differentiate between parole and probation on the grounds that the former is administered by a parole board while the latter is a function of the Court (Vasoli,

1964).

The Goals of Probation

The three essential aims of adult probation are: (a) the protection of the community, (b) the reintegration of criminal offenders, and (c) the servicing of the Court (Allen, Carlson, & Parks, 1979; Terwillinger & Adams, 1969). The probation officer is the primary agent or vehicle through which each of the above objectives is realized.

Community protection. The process of achieving a secure community implies two basic tasks. First, probation officers must determine the degree to which offenders are likely to recidivate and/or identify which members of their caseloads pose a discernible threat to the public. In making these predictions of risk, officers examine a number of factors, including the criminal's prior record, use of drugs or alcohol, psychiatric history, familial relationships and report demeanor. Second, officers must devise and implement a supervision strategy that permits them to exercise a degree of surveillance and monitoring commensurate with the probationer's assessed dangerousness and likelihood of future criminal activity. It is the officer's duty as a control agent to insure that the conditions of probation (Senna & Siegel, 1981) are fully satisfied, to promptly investigate reports or indications of behavior that may result in the safety of others being jeopardized, and to initiate probation revocation proceedings if indicated, i.e., to remove the offender from the

community if he/she has failed to satisfactorily complete the sentence (Smith & Berlin, 1979).

Reintegration of offenders. Reintegrating offenders into society requires an evaluation of probationer needs, and a diagnosis of major problem areas and deficiencies for the purpose of formulating a treatment plan that will allow offenders to fulfill the probation contract and make a reasonable adjustment to society (Senna & Siegel, 1981). In their efforts to rehabilitate, officers act primarily as counselors/psychotherapists, guiding the probationer through interpersonal difficulties, providing direction, and assisting him/her to acquire insight into past behavior so that more socially acceptable and constructive responses will begin to emerge. Essentially, the probation officer's basic function in this area is to support the criminal in making important transitions: from lawabiding free citizen to convicted offender under supervision, and finally a return to free citizen (Wallace, 1974).

Although the probation officer is usually the principal agent of treatment, he/she is often unable to provide all of the interventions necessary to accomplish the successful reintegration of offenders. Limited departmental facilities and personnel, coupled with large caseloads, demand the use of community resources. It is the task of the probation officer as resource broker to assess the service needs of the probationer, locate the

social service agencies which address those needs as their primary function, refer the probationer to the appropriate program, and follow-up to verify that the probationer actually received the services (Carlson & Parks, 1979). Should the required service not be available in the community, it is the responsibility of the officer to encourage the development of that service.

Servicing the Court

While the two preceding objectives of probation are ultimately in the service of the Court, it is through the preparation of presentence investigations that the probation officer most directly fulfills his/her duty as an agent of the judiciary. The presentence report is intended to provide the sentencing judge with a comprehensive social and psychological portrait of a defendant (Carney, 1979). The report surveys the following vital areas: the defendant's criminal record, educational background, physical and mental health, social history and financial status. Further, it provides a description of the offender's environment and present living conditions, the resources that will be available to assist the offender, and specific recommendations as to sentence, if requested by the court or required by statute. The probation officer may also contribute his/her opinion regarding the motivations and ambitions of the defendant, an assessment of the offender's rendition of the circumstances surrounding

his/her criminal involvement, and an evaluation regarding an appropriate supervision and/or treatment plan.

The presentence investigation serves a number of purposes (Senna & Siegel, 1981):

1. The report aids the court in determining an appropriate sentence. Information contained within the investigation assists the court in deciding whether there is reason to maintain the case in the community, or whether institutionalization is indicated.

2. It supports the supervising officer in his/her development of a treatment program in the event the offender is granted probation. The social and psychological strengths and weaknesses of the offender as revealed in the report may be considered in devising a treatment strategy.

3. It develops a body of knowledge that can aid prison or other institutional officials in the classifying, treating, and releasing functions.

4. It furnishes the parole board with information that may be utilized in planning a proper parole program if and when the imprisoned offender is released.

5. It exists as a source of data for systematic research in criminal justice; for example, researchers using these reports can identify the characteristics of criminals which correlate with or predict probation success or failure.

The format and content of presentence investigations may vary between jurisdictions and also among individual probation officers within the same area. On the one hand, some departments require voluminous reports addressing every aspect of a defendant's life; other departments may direct officers to adhere to basic facts, such as the offender's age, race, sex, and previous criminal record. In addition, different probation officers working within a single department may bring their idiosyncratic styles to bear during the presentence investigations. For example, the "social work" oriented officer might stress psychological data, while the "rule-enforcing" officer may focus on the offender's prior record and predictions of his/her dangerousness (Senna & Siegel, 1981). In short, individual differences among officers combined with variations in interdepartmental standards produce wide disparities in the manner in which presentence investigations are prepared and utilized.

Probation Officers' Roles and Tasks

Officer Role Typologies

As suggested in the above discussion, probation officers are obliged to wear a number of different hats in their efforts to fulfill the three primary goals of probation: (a) community protection, (b) offender reintegration, and (c) court service. Several very similar

typologies describing the various roles of officers have been constructed (Ohlin, 1956; Glaser, 1964; Jordan & Sasfy, 1974; Keve, 1962; Klochkars, 1972; Tomaino, 1975). The roles most often discussed in these typologies include:

1. The punitive or law enforcement officer. The law enforcement officer is basically concerned with the preservation of community safety through the control of probationers and a strict adherence to the stipulations of the sentence. Probation is conceptualized as a privilege, not a right. The probationer is usually perceived as a criminal who should be continually monitored and closely supervised, i.e., a danger from whom society must be sedulously protected. The law enforcer frequently reminds his/her cases that probation will be revoked, without exception, if conditions are violated. This style of supervision emphasizes firmness, legal authority, and rule abidance. Interaction between the rule enforcer and probationers tends to be formal, official, and largely a manifestation of "one upmanship" on the part of the officer. The punitive officer finds satisfaction in upholding the law for its own sake, irrespective of whether the best interests of the probationer have been addressed.

2. The welfare-therapeutic officer or social worker. The second type of officer identified in the literature is essentially the diametric opposite of the rule enforcer. The social worker, who strives to rehabilitate and

reintegrate offenders into the community, regards the conditions of probation as hindering or blocking an offender's progress. The probation period is a time for a diagnosis of problems, an assessment of the probationer's life situation and resources, and a remediation of underlying pathologies and intrapsychic conflicts. The social worker cultivates a personal relationship with offenders in order to formulate a suitable treatment plan which will assist them in avoiding future criminal activity and in making their lives more productive. The officer's overriding motivation is grounded in the assumption that individuals are fundamentally good and will choose appropriate, legal behaviors once they are helped to understand themselves. This self-knowledge will promote growth, foster prosocial attitudes, and culminate in the satisfactory observance of probationary rules. Within this context, an offender is seen as disturbed or troubled, a victim of circumstances, socially disadvantaged or psychologically deprived, rather than an inveterate sociopath or a pariah of society.

3. The passive time saver or civil servant. The probation officer who adopts the role of civil servant exhibits little concern for the welfare of the community or the probationer; his/her job is considered a sinecure, demanding a modicum of effort and personal commitment. The civil servant concentrates on maintaining or advancing

his/her position within the agency and finds no law-enforcing or casework vocation in probation. Instead, this type of officer directs energy toward ascending the probation bureaucracy with the ultimate goal of retirement, pension, or entry into another field such as law or police work. Consistent work attendance, proper and prompt completion of paperwork, and the kind of self-enhancement that results in salary increases are characteristic of the time saver. Their conduct on the job contributes to the smooth flow of office functioning; however, all responsibilities are met minimally and mechanically. Although contact with offenders is regular, it is often conducted via mail-in or telephone reporting. The civil servant's duties, as he/she perceives them, are to instruct and advise probationers concerning failure to conform, apprise the court of the offender's criminal behavior or lack thereof, and to operate as an observer of progress as opposed to an initiator of behavioral change.

4. The protective/synthetic officer. The final role identification of probation officers is distinguished by its recognition of both the treatment and control components of probation. The synthetic officer's supervisory style reflects his/her desire to satisfy the basic orientations of the rule enforcer and social worker. In doing so, he/she is (perhaps unknowingly) coming to grips with the fundamental dilemma of officers, i.e., that of forging

a reconciliation between the conflicting tensions arising from the legal and social service dimensions of probation work. The protective officer seeks to integrate concerns for monitoring and rehabilitation by conducting a separate evaluation of each case to determine which particular strategy will best protect the safety of the community while concurrently meeting the needs of the offender. This type of officer is most likely to develop a working relationship with community resource agencies and local police departments. Thus, he/she recognizes the decided complexity of probationers' common difficulties and acknowledges the inherent limitations of his/her position in working through these problems.

Probation Officer Tasks in Cook County

The officers of the Cook County Adult Probation Department, who served as subjects in the present research, can best be described as "synthetic officers" (see Lurigio, 1981). That is, they perform a number of tasks throughout the probation process that are directed at achieving the dual objectives of community protection and offender rehabilitation. These tasks are both comprised of and based upon a set of discretionary decisions that determine the nature of the officer-offender relationship and the fate of the probationer in the system. There are four essential discretionary decisions which relate to: (a) supervision; (b) treatment; (c) early termination; and

(d) revocation.

Supervision. The supervisory decision, which is central to the surveillance or control aspect of probation, consists of two components. The first component pertains to the actual frequency with which a probationer is directed to report to his/her officer. The frequency of contacts--although delimited by legal statute and specified at the time of sentencing--is commonly modified in accordance with the Court's or officer's assessment of the offender's dangerousness (i.e., risk level) or likelihood of continued criminal behavior (i.e., potential threat to the community). Probationers may report on a monthly (the prescribed and most common frequency), a bimonthly, or a weekly basis. In general, more risky offenders are monitored more often.

The type or mode of supervision is the second component of the decision. The officer may monitor a probationer through office visits, telephone contacts, or mail-in reports. Usually, the offender's assessed level of risk determines the selection of a supervision mode. For example, dangerous or felony probationers are required to make regular visits to the probation office, whereas less serious offenders are allowed mail-in reports. Related to the determination of a supervisory mode is the officer's decision to assume a particular posture with different members of his/her caseload. Changes in posture

involve discernible shifts in a probation officer's attitudes, focus, and emotional tone during contacts with offenders. More specifically, officers' supervisory styles are altered in response to three factors. The offenders': (a) typical report demeanor; (b) genuine willingness to cooperate in the rehabilitation process; and (c) expressed resolution to lead a productive and law abiding existence (e.g., find a job, finish school, refrain from gang-related activity). These factors are referred to generically as the probationer's "attitude." Offenders who are honest in their self-disclosures and willingly accept the conditions of their sentence are viewed as progressing satisfactorily and as possessing a "positive attitude." A "negative attitude," on the other hand, is reflected in a probationer's continued belligerence, indifference, sarcasm, or blatant attempts to patronize or ingratiate an officer. Such behaviors are regarded as indicative of a poor adjustment to probation (Lurigio, 1982).

Generally, positive and negative attitude cases are given differential treatment. Probation officers spend more time monitoring their "negative" cases, are stricter in their interpretation of rules, less willing to accept the veracity of self-reports, and quicker to impose penalties for any infractions. They "lay down the law early," "play by the rules," "accept no excuses," and

often brandish the threat of revocation to intimidate offenders who manifest signs of being a potential problem (i.e., express a negative attitude). In contrast, their "positive attitude" cases experience "softer treatment" as well as priority in terms of extra time on report days, rehabilitative efforts, and resource referrals. Officers explain this difference in case strategies by alluding to the "positive" group's cooperativeness, receptivity to recommendations, and their amenability to change. In short, behavior toward a "positive attitude" offender is clearly more empathic, involved, open, and essentially warm in affect; whereas, an officer's conduct vis-a-vis a "negative attitude" probationer is overwhelmingly suspicious, detached, critical, and cool in its associated affect (Lurigio, 1981).

At any point during the course of the probation period, an officer may decide to make collateral contacts or cultivate relationships with a probationer's spouse, parent, teacher, friends, employer, or representatives of other agencies serving the offender. Primarily, these contacts permit a verification of such information as residence, employment, and the fulfillment of special conditions. They are also an attempt to enlist the aid of significant others in the effort to control, rehabilitate, and reintegrate the offender. Finally, if the officer suspects that a case is currently involved in illegal

activities, he/she may submit requests for state and local bureau of investigation reports which detail any subsequent charges a probationer may have incurred during the period of the sentence.

Treatment. The second discretionary decision consists of an assessment of whether the probationer's needs require the utilization of counseling techniques or extra-departmental resources. This decision consists of a gross evaluation of the offender's mental health status (i.e., diagnosis), and an identification of major problem areas (e.g., emotional, physical, interpersonal, financial). During initial meetings with a probationer, the officer searches for tell-tale signs of drug/alcohol abuse, symptoms of serious psychological disorders (e.g., disorientation, bizarre ideation or behavior), intellectual deficits, and/or a lack of social or vocational skills. Probation officers in Cook County rely largely on their own sensitivity, common sense, and subjective judgments to alert them to probationer needs and to direct them in formulating problem solving strategies. Also, the type of "counseling" offered by Cook County officers follows a didactic, instructional pattern that fits better within a guardian-ward relationship model than within any of the psychotherapeutic models presently in use. Officers are reluctant to render treatment services because of the nature of their educational backgrounds which has not prepared them to conduct

actual psychotherapy sessions (Lurigio, 1981).

Officers are faced with two limitations in selecting an appropriate treatment: (a) the time they may spend counseling or advising an offender is restricted due to large caseloads; and (b) the choice of available referrals is dictated by situations or factors outside the officer's control (e.g., general economic conditions that affect the number of job referrals, a lack of government funds limiting the available openings in a drug treatment program). Hence, officers must be highly selective in choosing probationers who are most in need of treatment, and are most likely to benefit from an intervention program. Offenders who take the initiative in requesting services and/or are younger, have shorter prior records and display a "positive attitude" are generally considered the best candidates for counseling and adjunctive resources.

Early termination. The officer has the option to make a recommendation for the early termination of a case if he/she has concluded that: (a) the offender is no longer a significant risk to the community; (b) the probationer's behavior has been exemplary (i.e., he/she has shown a resolve to take the necessary steps toward becoming a functional member of society); and (c) continuation of the sentence would not facilitate rehabilitative efforts or may disrupt the offender's pursuit of an alternate, noncriminal lifestyle (e.g., early

termination may be recommendation on the basis of an offender's request to leave the state for gainful employment). In contrast, officers have similar power to effect extensions of periods of supervision up to the expiration of the maximum sentence. It should be noted that final authority in this matter rests with the Court. However, because judges are so dependent on the information furnished by probation officers, they generally concur with the officer's request if it appears reasonable (cf., Greenberg & Ruback, 1982).

The prospect of early termination exists as an incentive for "good behavior," and as a demonstration to others that cooperation and compliance with rules are rewarded. A key factor in the decision to recommend early termination is the regularity of the offender's reporting. If a probationer has been consistent in his/her contacts, it increases the likelihood that their case will be reviewed for early termination. Indeed, the "best probationers" are those who routinely report at their scheduled times. If a cancellation is unavoidable, these individuals promptly call their officers to inform them about the extenuating circumstances that prevented their attendance. Probationers who are frequently tardy, periodically skip appointments, and who belatedly call with untenable excuses for failing to report are evaluated very negatively. In fact, when queried about the progress

of a case, officers are likely to respond on the basis of a quick tally of the number of times the particular individual has missed a report day during the preceding six months.

Revocation. The final discretionary task of the probation officer involves the decision to initiate revocation proceedings. In most circumstances, if the offender has perpetrated a crime during the probation term, his/her sentence is automatically revoked. However, if the violation does not entail the commission of a new offense, or if the rule-breaking conduct is not regarded as serious, the officer may evaluate the offender's criminal history, attitude, report behavior, and employment status prior to acting officially by filing a petition to the Court. A probationer who is seen as having potential for healthy change is often "given a pass" for relatively minor transgressions. In essence, the officer performs a powerful screening function on the list of possible violations that are eventually brought to the Court's attention.

Following the filing of a revocation petition, the officer must make a second decision relating to whether he/she will recommend "revocation" and a return to prison or "continuance" on probation in the community. This determination is based upon the same set of factors as the first. On occasion, the officer will suggest a short stay in jail when he/she feels that the probationer has

"promise" but needs to be "jolted" by serving some "hard time." Obviously, the Court does not always act in accordance with the probation officer's recommendations. Nonetheless, as in the case of early termination, the Court abides by the officer's suggested course of action in a very large percentage of cases.

Conclusion

In conclusion, probation stands as a viable alternative to incarceration and is viewed by many experts as having a significant impact on the joint effort to rehabilitate criminals and to reduce recidivism rates (Allen, Carlson, & Parks, 1979). As probation services and caseloads continue to expand, officers are faced with the burden of diagnosing, supervising, and treating an overwhelming number of offenders. To meet this challenge, they often employ subjective categorization strategies designed to classify probationers into groupings that permit both a rapid identification of needs and risk levels, and an efficient formulation of treatment and supervisory plans (Lurigio, 1981). The studies comprising this dissertation examine the nature of these groupings and their effect upon officers' judgments of cases.

VITA

The author, Arthur J. Lurigio, is the son of Arthur and Phyllis (Lupo) Lurigio. He was born on November 28, 1954, in Chicago, Illinois.

He obtained his elementary education in the parochial schools of Chicago. He graduated from St. Joseph's High School, Westchester, Illinois, in 1972.

In August, 1977 he received the degree of Bachelor of Arts, summa cum laude, with a major in psychology from the University of Illinois at Chicago. He was elected a member of Phi Kappa Phi in 1977 and to the University of Illinois Book of Academic Honors in 1978. In September, 1978 he entered the Counseling Psychology program at George Williams College and in June, 1980 received the degree of Master of Science. From June, 1979 to May, 1980 he worked as a psychodiagnostician and psychotherapist at the Greater Lawn Mental Health Center in Chicago.

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TABLE OF CONTENTS

	Page
ACKNOWLEDGMENTS	ii
PREFACE	iv
VITA	xxx
LIST OF TABLES	xxxiii
CONTENTS OF APPENDICES	xxxiv
 Chapter	
I. INTRODUCTION	1
II. REVIEW OF THE LITERATURE	9
Schema Definitions	11
A Brief History of the Schema Concept	13
Schemas Categorize Knowledge and Experience	20
Schema Variables	24
The Structure of Schemas	29
Schematic Processing	31
The Executive Function and Schema Accessibility	34
The Liabilities of Schematic Processing	42
Schema Change	50
The Expert and Novice: Differences in Schema Content and Use	57
A Critical Evaluation of the Schema Concept	68
The Use of Schemas in Diagnosis and Prediction	79
Summary	82
III. METHODS	85
Overview	85
Study 1	86
Participants	86
Procedure	88
Study 2	95
Participants	95
Materials	96
Procedure	98

	Page
Study 3	101
Participants	107
Materials	107
Procedure	111
IV. RESULTS AND DISCUSSION	114
Study 1	114
Types of Schemas	114
Number of Schemas	114
Differences in Schema Types	125
Richness of Schemas	126
Study 2	130
Sorting Strategies	130
Task Accuracy of Probation Officers and Clerical Staff	135
Expert and Novice Probation Officers' Accuracy	140
Sorting Times	146
Cluster Analysis	148
Summary and Conclusions	149
Study 3	154
Confidence, Ease and Typicality Ratings	154
Report Behavior and Prognosis Item Responses	156
Treatment/Supervision Item Response	157
Response Time	158
Summary and Implications	160
V. CONCLUSIONS	164
Schematic Processing	164
Practical Implications	169
Directions for Future Research	170
REFERENCES	173
APPENDIX A	193
APPENDIX B	197
APPENDIX C	201

LIST OF TABLES

Table	Page
1. Interview Content, Domains and Sample Questions	90
2. A Summary of the Five Content Domains Relating to Schema Types	115
3. Number of Expert and Novice Officers Invoking the Schema Types, Mean Information Units, and Efficiency Index	124
4. Stepwise Regression Analysis of the Variables that Affect Schema Richness	129
5. Mean Order of Use for Information Categories .	133
6. Mean Number of Correct Schema Type Matches . .	137
7. Summary of the Newman Keuls' Test for Differences Between the Mean Number of Correct Schema Type Matches	139
8. Mean Number of Correct Schema Type Matches for the Officer Group by Expertise and Assignment	142
9. Summary of the Newman Keuls' Test for Differences Between Mean Number of Correct Schema Type Matches Within the Expert and Novice Officer Groups	144
10. A Description of the Offender Schemas Suggested by the Cluster Analysis	150

CONTENT OF APPENDICES

	Page
APPENDIX A: A Sample of Three Case Histories (Schematic, Mixed, and Real) Used in Study 3	193
I. Schematic Case History	194
II. Mixed Schematic Case History	195
III. Real Case History	196
APPENDIX B: Questions and Judgment Scales Following the Stimulus Cases of Study 3	198
APPENDIX C: Analysis of Variance Tables for Studies 2 and 3	201
I. Two-Way Repeated Measures Analysis of Variance for Group Membership and Schema Type on Number of Correct Schema Type Matches	202
II. Three-Way Repeated Measures Analysis of Variance for Assignment, Expertise, and Schema Type on Number of Correct Schema Type Matches	203
III. One-Way Repeated Measures Analysis of Variance on the Confidence Ratings	204
IV. One-Way Repeated Measures Analysis of Variance on the Difficulty Ratings	205
V. One-Way Repeated Measures Analysis of Variance on the Typicality Ratings	206

CHAPTER I

INTRODUCTION

In social psychology, the research pendulum has swung decidedly toward cognitive methodologies, theories, and models to account for social phenomena. Rather than simply manipulating stimuli, measuring responses, and inferring processes, investigators have profitably turned to looking within the black box of cognition (Fiske, 1981). Arising from this approach is the relatively new area of social cognition which is at the interface of cognitive and social psychology. Social cognition has borrowed concepts, hypotheses, measurement procedures, and paradigms from cognitive psychology to examine and explain how persons cognize their social world and social relationships (Taylor, 1981). Studies in this area have typically attempted to identify the cognitive structures and processes that underlie social perception, judgment, and behavior. Some questions of interest to social cognition researchers include how individuals infer the dispositions of others, how they select, store, and utilize data to form impressions of people (individuals and groups), and how they interpret the social environment according to their needs and attributions. (For examples of the cognitive approach to social psychology, see Carroll & Payne, 1976; Hastie, Ostrom,

Ebbesen, Wyer, Hamilton, & Carlston, 1980; Higgins, Herman, & Zanna, 1981; and Nisbett & Ross, 1980; for historical overviews, see Manis, 1977; Taylor, 1981; and Zajonc, 1980).

As suggested above, research in social cognition draws upon the methods used by cognitive psychologists to study both processing strategies and internal representations of reality. The bulk of social cognition research relies heavily on memory measures to tap the incorporation of social knowledge into generic structures referred to as schemas. Along with other cognitive concepts, the schema notion in particular has interested numerous social investigators and has stimulated a large number of studies on a wide range of research topics (e.g., person perception, self-concept, political information-processing, attitudes, stereotyping).

A schema is an abstract cognitive representation of organized prior knowledge, extracted from experiences with specific instances (Fiske & Linville, 1980). It guides the encoding, storage, and retrieval of information relating to a defined stimulus domain (person, object, or event). A schema contains certain structural properties, including (usually) a label identifying its contents, general knowledge about the domain it represents, an enumeration of the interrelationships among its properties, a set of presumed (or default) values for key

attributes, and a number of specific illustrative exemplars (members of a schema with the most attributes in common with other members of the grouping and the fewest attributes in common with constituents of other contrasting schemas) and instantiations (concrete instances or tangible manifestations of the schema). Hence, schema-based cognition involves the processes of inference, i.e., given the applicability of a particular schema, people infer thematically-related attributes and events that may never be encountered (e.g., Bower, Black, & Turner, 1979; Cantor & Mischel, 1979), and organization, i.e., schemas are people's informal sets of principles or theories about how the world should operate (consistency) and about what goes with what (relevance) (Fiske, 1981). Both aspects of schematic processing emphasize the impact of prior knowledge on new inputs.

The current body of social psychological research on schemas is characterized by a number of substantive and methodological shortcomings (See Fiske & Linville, 1980; Hastie, 1981; Taylor & Crocker, 1981). For example, investigators in the area have concentrated largely on the elicitation of consensual schemas such as prototypes for a librarian (Cohen, 1981), an extravert (Cantor & Mischel, 1979), or an elderly person (Brewer, Dull, & Lui, 1981), and rather little on individual variation in schema availability, content, and use (how a schema is employed in

information processing).

Following theoretical discussions and empirical evidence offered by Fiske and Kinder (1981), one would expect to find important differences in schema construction and application arising from higher levels of experience. That is, experts are likely to have more detailed and complex knowledge structures (schemas) than non-experts, and are more likely to possess the procedural skills to use their schemas to solve problems or complete tasks. This argument finds its parallel in cognitive psychologists' work on expert-novice differences. According to this literature, differences between experienced and nonexperienced subjects in a given domain can be traced to the effects of prolonged practice, or the acquisition of extensive knowledge (e.g., Chase & Simon, 1973).

A second shortcoming of schema research relates to the failure of investigators to study the schemas of subjects in real-world settings using realistic stimulus materials as opposed to one-dimensional verbal descriptors of behaviors and traits (Cohen, 1981). Schemas that are developed through actual experience are probably more complex in structure, and richer and more meaningful in content than those suggested by laboratory studies. Person memory experiments are a good illustration of a procedure with low ecological validity that has failed to provide particularly useful information about how people

are perceived and represented by others. For example, the work of Cantor and Mischel (1979) and Taylor (1981) suggests that subjects form impressions of individuals primarily on the basis of roles rather than traits, but because person memory experiments typically involve learning lists of trait adjectives about a hypothetical target, this paradigm misses the level at which individuals are actually being categorized.

Finally, there have been virtually no attempts to identify the relationship between schemas and interpersonal behaviors, e.g., attention, inference, evaluation, and planning (Fiske & Linville, 1980). Basic research in social cognition has ignored behavior because its central concerns have primarily involved an examination of internal (cognitive) events. Notwithstanding the problematic nature of predicting responses from cognitive judgments (e.g., Schuman & Johnson, 1976), it is obvious that information processing factors mediate much of social behavior and social perception. According to Fiske and Linville (1980), the link between the schematic bases of cognition and behavior is "an untapped gold mine" for social cognition investigators.

The present studies are designed to bridge some of the aforementioned gaps in schema research. Probation officers' judgments of criminals will serve as the arena in which to explore questions of schema content and use

for several reasons. First, probation officers are "experts" whose job requires them to actively acquire and utilize information about probationers for the purpose of rendering decisions regarding treatment and monitoring. These decisions hinge upon officers' prior knowledge of the characteristic behaviors and traits of various criminal types. It appears that this prior knowledge is: (a) highly organized; (b) abstracted from previous experiences with different groups of offenders; and (c) invoked during the judgment of each incoming case (Lurigio, 1981). Thus, officers' assessments of probationers represent a "real world" instance of schematic processing, and provide an interesting opportunity to examine psychologically-meaningful representations of the social world.

Second, my position at the Cook County Adult Probation Department allows ready access to both realistic stimulus materials (criminal cases) and a group of subjects who varied in experience (a central variable in the studies), and provided me with the necessary background to make informed interpretations of results--especially those that demanded a working knowledge of the probation process as well as an understanding of officers' attendant duties and tasks. In sum, the probation department was a convenient place to do the research with few practical restrictions, and a cooperative and accessible pool of subjects.

Third, there was some evidence to support the notion of schema-based cognition among criminal justice experts. For example, Carroll and Wiener (1982) in a study of parole board members and Lurigio (1981) in a survey of probation officers reported that experts categorized offenders into schema-like groupings that contained information about basic types of criminals including the nature of their criminal activity and its causes, social history, psychological profile, prognoses for treatment, and recommendations concerning levels of supervision and the appropriate use of resources. Hence, I had reasonable confidence that the study of probation officers would yield profitable findings.

Finally, probation officers' schemas of criminals seem not only to influence judgments, but are also inextricably related to their activities as service providers and agents of the Court (Lurigio, 1981). In essence, how officers "think about" probationers dictates how they respond to probationers in terms of treatment interventions, control strategies, and referrals to adjunctive agencies. Therefore, the study of offender schemas may suggest how knowledge structures mediate behaviors.

The literature review that follows is designed to present a comprehensive overview of a large and seemingly disconnected body of studies that are based upon or have made reference to the schema concept. A number of topics

are addressed including: (a) the definition of schemas and their constituent components and features; (b) the development of the construct and a summary of prominent areas of research that have examined schematic structures and processing; (c) schema change, and some of the liabilities of schematic processing; (d) a brief review of investigations that compare groups of experts and non-experts on the content and use of schemas in a variety of perceptual and problem solving domains; (e) a critical evaluation of the concept highlighting the problems involved in applying schemas to study social phenomena; and (f) a description of studies that bear directly upon the present research.

CHAPTER II

REVIEW OF THE LITERATURE

In approaching new situations and in forming impressions of others, we bring to bear a wealth of past experiences, beliefs, and feelings about similar situations and the persons within them. This storehouse of information supplies us with a variety of preconceptions or hypotheses concerning the events that are likely to transpire in a given social episode, and shapes our judgments of the behavior and dispositions of the episode's participants. It also actively guides our perceptions and interpretations of a wide range of episode variables (e.g., setting, purpose, outcome), and influences what and how information about the episode is selected and retained in memory in order to: (a) arrive at a coherent, ordered, unified, expectation-confirming, and knowledge-consistent representation of the experience (Alba & Hasher, 1983), and (b) provide a subsequent basis for how the information will be used (cf. Nisbett & Ross, 1979).

The cognitive structures and information processing strategies that are evoked in a particular situation are often a function of the kinds of structures or strategies we frequently or have recently accessed or applied in past episodes (Higgins & King, 1981), the purposes we

have in making judgments within the current situation (Cohen, 1981), and, perhaps most importantly, the characteristics of the individual or individuals being perceived in the immediate situation. Other persons, who usually constitute the primary focus of our attention (Schneider, Hastorf, & Ellsworth, 1979), display certain physical traits, behavior, and/or indicators of group membership which may elicit one or more of our stereotypic notions concerning types of people. These internal categorizations of person-related experiences not only influence the assessments we make about others, but also determine how we respond to them (e.g., Snyder, Tanke, & Berscheid, 1977). Finally, the context (i.e., the external situation itself) provides essential information for the perception of social episodes (Cantor, 1981). Contextual factors include a number of cultural and physical features of the environment which place limits on the latitude of appropriate activities allowed to take place in a given setting, lend fuller meaning to an actor's behaviors and intentions (e.g., Jones & Davis, 1965), and make certain aspects of stimuli particularly salient and likely to receive attention (Taylor & Fiske, 1978).

Our responses to social situations are therefore a product of the complex and dynamic interplay of relatively long-term perceiver variables such as knowledge structures,

capacities and tendencies, and relatively short-term or immediate situational conditions (i.e., characteristics of the actors being perceived and the physical surroundings) as they conspire to shape cognitive activity and social interaction. Such an analysis highlights the interactive construction of the social world--both perceptions and behaviors--as a function of both internal/cognitive and external/contextual components (Neisser, 1976). Of particular importance to the present research are the higher-level cognitive structures that portray portions of a perceiver's social world knowledge; that is, associations between behavior and person-related elements that develop through experience and are stored in semantic memory.

The Nature of Cognitive Schemas

Schema Definitions

Our cognitive conceptualizations of the world are represented in structures which are called schemas. A schema is an abstract or generic cluster of knowledge that specifies the constituent features and defining attributes of a stimulus domain and the network of associations that is believed to hold among those features and attributes (Bobrow & Norman, 1975; Fiske & Linville, 1980 ; Hastie, 1981; Rumelhart & Ortony, 1977; Taylor & Crocker, 1981; Winograd, 1975). A number of studies

have demonstrated that schemas are important in understanding, remembering, and thinking about such complex and diverse concepts as objects, persons, groups, social roles, situations, events, sequences of events, actions, and sequences of actions (Cantor & Mischel, 1979; Markus, 1977; Schank & Abelson, 1977; Thorndyke & Yekovich, 1980). In addition, they contain hypotheses about incoming stimuli, which include plans for interpreting and gathering schema-related information (e.g., Miller, Galanter, & Pribram, 1960; Tesser, 1979). Hence, one of the chief functions of a schema is to provide an answer to the question, "What is it?" (Taylor & Crocker, 1981).

Schemas have been shown useful to perceivers in a variety of tasks such as simple object and pattern recognition (Labov, 1973; Posner & Keele, 1968; Reed, 1972), the making of judgments (Markus, 1977), text comprehension (Anderson, 1977), problem solving (Taylor, Crocker, & D'Agostino, 1978), and impression formation (Hamilton, Katz, & Leirer, 1980). People have and use schemas for perceiving visual arrays, for understanding meaningful prose, for processing information about the natural world, for understanding and perceiving others, and for perceiving and directing their own behavior (Tesser, 1978). They help to organize, structure, and comprehend new facts; they facilitate the encoding, storage, and retrieval of relevant information; they

affect the time it takes to process information, and the speed with which problems can be solved. Schemas are analogous to large filing systems for classifying, retaining, and coordinating incoming sensory data (Taylor & Crocker, 1981). They also fulfill interpretive and inferential functions. That is, if information conveying some relevant attribute is unavailable from the stimulus itself or is ambiguous or is unavailable from memory, schemas allow for the "filling in" of such information (Minsky, 1975; Neisser, 1976; Rumelhart & Ortony, 1977; Schank & Abelson, 1977; Taylor & Crocker, 1981; Tesser, 1978). In short, schemas are cumulative, holistic, and assimilative blends of knowledge (Spiro, 1977) that enable persons to deal effectively and efficiently with the information processing demands of a large and complex world.

A Brief History of the Schema Concept

The term "schema" dates back to Kant (1787), who developed the idea that people's experiences are collected together in memory and that these collections are defined by common elements. Because these common elements comprise categories of experiences, they permit a synthesis of abstract knowledge that represents the category. According to Kant (1787), schemas as higher-order principles can be understood without specific reference to any particular occurrence within a schematic category.

Hence, one identifies experiences of the category by referring to the general schema that describes the category. The neurologist Head (1920) adopted Kant's notion of a schema, and stated that anything entering consciousness is "charged with its relation to something that has gone before." In a similar vein, Woodworth (1938), in his classic text on experimental psychology, theorized that the process of remembering involved the "revival of one's own experiences."

As a theoretical construct, the schema concept has been operative in psychology for more than fifty years. It was originally introduced into psychological research as a reaction to the associationist models of learning and memory (Hastie, 1981). In moving beyond simple experimental tasks, investigators discovered that the more traditional analyses spawned by Ebbinghaus' (1885) work failed to account for what was rapidly becoming a considerable body of empirical evidence. While early association theories predicted a literal representation of a stimuli in memory, researchers were uncovering large differences between the structure and content of a stimulus and its mental reproduction (Tulving & Donaldson, 1972). Indeed, it was shown that subjects in perception and memory experiments imported a considerable amount of prior knowledge that influenced their understanding and retention of novel information (Hastie, 1981).

The use of schemas as explanatory mechanisms emerged in many branches of psychology with similar but slightly different meanings in each. For example, Gestalt psychologists found the concept of an abstract schema useful in describing memory for perceptual information (e.g., Woodworth, 1938). The Gestalt tradition has since produced a large literature demonstrating that verbal materials which are meaningfully or schematically organized are better remembered than nonschematic materials (e.g., Asch & Ebenholtz, 1962; Garner & Whitman, 1965; Katona, 1940; Turving & Pearlstone, 1966). Also, Piaget's (1926) work called upon schemas to explain the cognitive development of children. Finally, early researchers in problem solving (e.g., Betz, 1932; Flach, 1925; Selz, 1913, 1922) viewed schemas as solution methods or plans of operation guiding the problem solver's behavior.

Cognitive schemas found their way into modern psychology primarily through the writings of Bartlett, and it is to him that most workers in the area acknowledge their debt. In 1932, Bartlett completed a book entitled, Remembering: A study in experimental and social psychology which presented a series of experiments involving memory for complex literary material (e.g., brief stories, prose passages, pictures, and American Indian picture writings). His central stimulus for testing the effects

of time on the remembering of prose was the story known as "The War of the Ghosts." Bartlett reported that subjects who had read the narrative and were asked to recall and repeatedly reproduce its contents omitted and/or distorted essential details and introduced new elements to the story. Such errors increased dramatically with the passage of time. Greater delays produced more elaborations, inaccuracies, and truncations of the material. All that appeared to remain of the original version were "isolated but striking details" which seemed to correspond to subjects' preconceptions. Moreover, subsequent reproductions by the same individual revealed that a persistent idiosyncratic outline or form emerged in the recall attempts. Bartlett concluded that subjects were reconstructing the events of the story using a few details and an abstract cognitive schema as an elaboration plan. He summarized his findings as follows (Bartlett, 1932):

Remembering is not the re-excitation of innumerable fixed, lifeless and fragmentary traces. It is an imaginative reconstruction, or construction, built out of organized past reactions or experience, and to a little outstanding detail which commonly appears in image or language form. (p. 213)

Thus, according to Bartlett (1932), schemas represent a mass of active organizations of past reactions or experiences. Any one schema is presumably the collective knowledge of a particular set of stimuli or a specific type of previous experience. Bartlett posited that the

changes he found in subjects' reproductions of prose reflected a dependence on schemas related to the story or onto which the story was mapped. As the retention interval increased, subjects relied increasingly on these general schemas during recall attempts. In other words, schemas provided the basis for reconstruction in memory (Zechmeister & Nyberg, 1982). Bartlett's work has been extremely influential. Indeed, much of the modern research on memory for narrative discourse can be essentially viewed as an extension of Bartlett's theories and methods with an emphasis on accounting for accurate reproduction as well as for errors (e.g., Rumelhart, 1975; Schank & Abelson, 1975).

The current resurgence of interest in cognitive schemas is manifested in three lines of research. The first, conducted in the area of artificial intelligence, has sought to define new data structures for encoding complex descriptions of the world (i.e., situations, events, and concepts) while endeavoring to construct language production and comprehension machines. The result has been a proliferation of higher-order representations that utilize some form of knowledge clustering such as "frames" (Kuipers, 1975; Minsky, 1975; Winograd, 1975), "scripts" (Schank & Abelson, 1975, 1977), "definitions" (Norman & Rumelhart, 1975), or other forms of

schemata (Moore & Newell, 1974; Schmidt, 1976). For example, scripts or event schemas organize and direct the understanding of a sequence of real-world activities. They may pertain to actions involving specific occurrences (e.g., Bob and Carol's wedding), or routine, well practised behavioral scripts (e.g., eating at a restaurant, going to the dentist, attending a funeral) (e.g., Bower, Black, & Turner, 1979; Schank & Abelson, 1977).

The second domain of research in which schemas have received considerable treatment has been that of memory for connected discourse. Principally inspired by Bartlett's seminal studies, several researchers have begun to extend and formalize his ideas by attempting to model the underlying memorial structures that are involved in the processing of prose passages. In particular, these investigators have developed the hypothesis that readers use previously learned schemas to facilitate the encoding, comprehension, and remembering of simple narrative stories (Anderson, Reynolds, Schallert, & Goetz, 1976; Anderson, Spiro, & Anderson, 1977; Dooling & Christiansen, 1977; Kintsch, 1975; Kintsch & van Dijk, 1975, 1978; Mandler, 1978; Mandler & Johnson, 1977; Pichert & Anderson, 1977; Rumelhart, 1975, 1977; Rumelhart & Ortony, 1977; Schank, 1975; Stein & Glenn, 1978; Thorndyke, 1976, 1977, 1978; Thorndyke & Hayes-Roth, 1979; Winograd, 1977).

The field of social cognition, from which the present research arises, is the third and final area that has made extensive use of schemata as descriptive or explanatory concepts. (Refer to the introductory chapter for a discussion of the field.) Two general classes of cognitive schemas are commonly used by social perceivers, and reflect somewhat independent programs of study in social cognition (Taylor & Crocker, 1981). The first is person schemas. A person schema is an integrated cognitive representation or impression of a specific individual (e.g., Hamilton, Katz, & Leirer, 1980; Taylor, Fiske, Etcoff, & Ruderman, 1978). The person portrayed may be a close friend, family member, etc., or someone who is only a transitory or casual acquaintance. Person schemas also include prototypic conceptions like introvert and extravert (Cantor & Mischel, 1977) and self-schemata (Markus, 1977). The second is role schemas, which include schemas for particular occupations; for example, fireman, doctor, college professor, librarian, or politician (e.g., Cohen, 1977, 1981, 1983); schemas for social roles, such as spouse, parent, or child; and generalized conceptions of categories of people such as Blacks or women. Some of this research, growing out of an interest in stereotyping, has been concerned with the cognitive processing biases that can result in and maintain inaccurate representations of social groups. (See Hamilton

[1981] for a review of the literature on the cognitive basis of stereotyping.)

As the above indicates, the schema construct has been used to study a wide range of topic areas in psychological research. Because the concept of a schema as an organizer of human experience is so encompassing, it is perhaps inevitable that various investigators and theoreticians have proposed models that differ in their explications of what a schema is, how it is structured, or how it is applied (Thorndyke & Yekovich, 1980). In spite of differing orientations, several common assumptions underlie the various formulations of the concept. These commonalities include four putative properties of schemas: (a) schemas categorize knowledge and experience, (b) schemas contain variables, (c) schemas are organized, structured entities, and (d) schemas affect the manner in which information is processed (i.e., encoded, stored, and retrieved) (cf. Hastie, 1981; Taylor & Crocker, 1981; Thorndyke & Yekovich, 1980).

Schemas Categorize Knowledge and Experience

Schemas embody conceptual knowledge that is encyclopedic rather than definitional in nature. Although they can be expressed in language and applied toward understanding language, they are not entirely or necessarily linguistic (Rumelhart & Ortony, 1977). The contents of a schema may consist of sensory input or perceptual images (Cantor,

1981), affective components (Fiske, 1981), and well-learned behavioral routines or response strategies (Fiske & Kinder, 1981). Hence, a schema is more than a verbal description, summary, or veridical copy of a phenomenon; it captures the totality of experience associated with the phenomenon, which includes information that is encoded and stored in a non-verbal manner (cf. Neisser, 1976).

Schemas are abstract, symbolic representations of reality that specify the "normal constituent parts" of an object, person, event, etc., and the "relationships that normally hold between them" (Rumelhart & Ortony, 1977). Even when the essential characteristics of a schema are depicted, they are generally portrayed as characteristics that typically or commonly obtain. Hence, schemas are analogous to the "fuzzy" or prototype categories suggested by the work of Rosch and her colleagues (e.g., Rosch, 1975, 1977; Rosch & Lloyd, 1976; Rosch & Mervis, 1975), as opposed to strictly defined sets of classifying schemes. For example, an individual's schema for a CRIMINAL comprises a configuration of correlated features (e.g., menacing appearance, male, Black, uneducated, violent, muscular, law breaking, ex-convict, belligerent, etc.), some of which distinguish the criminal from different person types (e.g., psychotics), and others which are shared in common by a variety of person types (e.g., football players can also be Black, menacing, violent, and belligerent). No actual

criminal would be expected to possess all the characteristics of the schema; however, any subset of its characteristics might describe a real or easily recognizable offender (cf. Cantor, 1981).

It is assumed that each feature of the CRIMINAL schema is assigned a hypothetical weight which indicates its importance or centrality in defining the schema. Features that are considered significant in determining category membership are said to have high cue validity (Rosch & Mervis, 1975). ("Law breaking" obviously has higher cue validity than "muscular.") Also, every feature of the schema will not be associated with all of its members (e.g., the Watergate conspirators were clearly not violent or uneducated, but were nevertheless reputed by many to be criminals). Thus, the constituents of a schema are often quite heterogeneous, resulting in a less than perfect nesting of the schema's features (Cantor, Smith, French, & Mezzich, 1980).

In addition, it is assumed that there exists a specific combination of features which constitutes the exemplar of the schema, i.e., the clearest case of category membership containing maximal cue validity (Rosch, 1978). Instances are matched against (compared to) the exemplar in order to ascertain whether or not they are elements of the category. This comparison does not necessarily involve an analysis of individual features, but instead may be based

upon patterns of features that are not themselves distinguished (Wyer, 1980). The greater the overlap of features, the more quickly, reliably, confidently, and accurately the instance can be classified. Therefore, typical instances (i.e., those that share many features with the schema exemplar) are categorized more efficiently than atypical instances (Cantor et al., 1980). For example, a Black, uneducated, violent male who commits an armed robbery and shows contempt for the Judge at his trial, provides a more definitive case of a CRIMINAL schema match than does a White, male, college graduate who is arrested for pilfering items from a grocery store. Similarly, Rosch (1978) reported that subjects were able to easily classify a robin as a bird, whereas they showed marked disagreement in deciding whether to place a chicken in the same category. Further, categorizing a given instance into a particular schema is simplified if the exemplar of the schema is rich (as measured by the total number of its features) and distinct (as measured by the number of its features that are not shared by rival categories) (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976). In short, the instances of a schema vary in their typicality and ease of categorization. Those that lie at the periphery or borderline of the schema (i.e., instances that share few features with the schema exemplar) are problematic in terms of determining their category membership (Cantor et al., 1980).

Schema Variables

The properties that define the features of a schema are represented as variables or slots that can be filled whenever the schema is used to structure and comprehend incoming information. Schema variables are best thought of as distributions of possible values. That is, a particular variable can take on any of a range of values with the likelihood of a single value being determined by its position or typicality in this distribution. Hence, just as judgments regarding the fit between instances and schemas are not always clear-cut, the values of schema variables are also more or less probable, and rooted in the strength of one's expectations.

Based on Hastie's (1981) notions pertaining to schema-event relatedness and the memorability of information, it is suggested that variable-value relationships can be portrayed on a conditional probability continuum. Variable values that are likely have conditional probabilities closer to 1 [i.e., probability (value/variable) $>.70$], whereas values that are not likely are clustered at the opposite end of the probability dimension [i.e., probability (value/variable) $<.30$]. Values that are unrelated or irrelevant to the variable are found in the middle range of conditional probabilities [i.e., probability (value/variable) = $.50$]. For example, a person's schema for an extravert may contain a variable relating to "party behavior." Likely values for

this variable given the extravert schema (i.e., those with conditional probabilities approximating 1) include garrulous, laughs loudly, sociable, outgoing, rambunctious, center of attention, etc. In contrast, unlikely values (i.e., those with conditional probabilities closer to 0) might consist of soft spoken, reticent, shy, easily embarrassed, does not dance, etc. Variable values falling in the middle range of probabilities (i.e., those that are irrelevant to the variable) comprise events such as drinks coke, smokes cigarettes, wears running shoes, etc. Events or values associated with intermediate conditional probabilities are difficult to specify because of their extreme heterogeneity. (Strictly speaking, events completely removed from the schema's domain of application also fall in the probability range of .50.) Hastie (1981) suggests that the identification of intermediate conditional probability values be restricted to events that are schema pertinent but undiagnostic as illustrated in the preceding example.

When an assignment of values to variables has been made, a schema is said to have been instantiated. Instantiation is the process by which a schema creates a description or representation from observations of a stimulus in its domain, i.e., the process of matching inputs to slots in the schema (Rumelhart & Ortony, 1977). Instantiation is analogous to the formulation of a "token" node in semantic network models (e.g., Anderson & Bower, 1973) to represent

the specific occurrence of an abstract concept. When a schema is instantiated during comprehension, a copy of the general schema is constructed with data from the input stream occupying the variable slots. The process of instantiation permits the organization and encoding of incoming information into a familiar, coherent, conceptual representation (Thorndyke & Yekovich, 1980).

Not every instantiation will match the expected values for schema variables; hence, there are constraints or limits on what values are acceptable (Rumelhart & Norman, 1978). Therefore, the likelihood of a value given a variable shifts as the variable's constraints are modified. Variable values are delimited by a number of elements, including the to-be-comprehended stimulus as well as the set of contextual and situational factors surrounding the stimulus. For example, one might have a schema for PERSONAL CRIME that would comprise three variables: a criminal, a victim, and an offense. On different occasions, the variables in the PERSONAL CRIME schema will assume various values as a function of the stimulus environment which provides referents for a mental representation of the event (Rumelhart & Ortony, 1977).

Although the values of schema variables may vary according to certain defining aspects of the external environment, the interrelationships among the variables within a particular schema remain constant across times

and settings. In other words, because schemas express stereotypic knowledge, they constrain the form in which events can combine, while allowing flexibility in the semantic content of the events themselves (Thorndyke & Yekovich, 1980). Thus, it is the criminal who generally perpetrates the offense against the victim who suffers some sort of loss or injury, irrespective of the identity of the offender or victim or the nature of the crime.

Constraints on schema variables serve two fundamental purposes. First, they indicate what kinds of objects might realistically be associated with each variable, i.e., constraint values determine decisions about what is and what is not an instantiation of the schema. Second, constraints on schema variables allow good guesses to be made about the nature of unspecified variables when insufficient information is provided by current input or memory, or when a stimulus configuration is so complex that the perceiver is unable to encode all its details (Rumelhart & Ortony, 1977; Taylor & Crocker, 1981). These inferred values are called default options (Minsky, 1975; Rumelhart & Ortony, 1977; Rumelhart & Norman, 1978; Schank & Abelson, 1977; Taylor & Crocker, 1981). Default options presumably develop from experiences with instances of a schema and are thus typical qualities of the stimulus domain in question (Taylor & Crocker, 1981).

The use of default options guides the process of

recognizing a particular phenomenon by suggesting what features to look for and where to expect them, and by providing answers to questions for which observations have not yet been made (Kuipers, 1975). The latter application of default values allows a schematic representation to satisfy the "principle of continually available output" (Norman & Bobrow, 1975) which states that a cognitive search process should be able to provide a satisfactory outcome even when its analysis has not yet been completed. A lack of data or processing resources should result in a degradation of the quality of the output, but should not preclude any results from being produced. It should be noted that default options are not always fixed independently of the values of other variables within a schema. Instead, they are usually chosen on a conditional basis, i.e., the designation of a default value may depend upon the values already selected to fill the slots of the remaining variables (Rumelhart & Ortony, 1977). In other words, values of variables that are inferred must be compatible or congruent with values of variables that are known. For example, if one learns that a victim died of stab wounds resulting from an apparent struggle with a would-be robber, and that an alleged murder weapon was found close to the scene of the crime, but is not informed as to the exact composition of the weapon, one is not likely to surmise that it was a hand-gun or garrote.

The Structure of Schemas

The structural organization of schemas is characterized by a hierarchical relationship between a dominating schema and embedded or lower level schemas which may serve as "data" for the higher level schema. That is, more specific lower level schemas are linked with more abstract higher level schemas in subordinate/superordinate relationships (Hamilton, 1981; Tesser, 1978). For example, the schema for a birthday party specifies and elaborates a more general PARTY schema. Although both share many of the same features, the variables of the birthday party schema are more precisely articulated than for the generic party. A party might have "food" as one of its variables, whereas a birthday party schema would specify "cake and ice cream" as its typical culinary delights. Thus, a particular schema's level in the schema hierarchy determines the constraints on its constituent properties (Thorndyke & Yekovich, 1980).

Similarly, data stored within a schema constitute a pyramidal structure with abstract or general information contained at the uppermost levels and specific instances or examples of the schema occupying the lower levels (Hamilton, 1981; Taylor & Crocker, 1981). At the most abstract level is a generic concept (e.g., family) that has central defining features (e.g., parents and siblings), and variables (e.g., sister). At this level of abstraction, the constraint values associated with the variables may accept a

wide range of values (e.g., 1,2,3,4 or more sisters). The most basic or primitive level of a schema consists of a number of specific instances, whereas the middle level contains exemplars of the schema. Generally, the instances that are stored within a schema will be "good examples" of the schema, with instantiations of variables that probably approximate the default values of the schema (e.g., Rosch, 1978). For example, when one's schema for gangster is evoked, the image of Al Capone may become available in memory.

The separate elements of a schema, at any level, are woven together in an associative network or pattern that fashions a web of interconnecting nodes or pathways (cf., Hastie, 1980; Wyer & Carlston, 1979). Each piece of information (i.e., schematic node) is directly linked to the central concept or entry point. In addition, separate schematic nodes can be closely tied to each other. Hence, schemas are also horizontally structured (Hamilton, 1981). The associative linkages between single elements may be a function of their (a) semantic similarity or conceptual overlap (i.e., different features may refer to the same superordinate concept); (b) temporal contiguity (e.g., in a script the elements are related according to an ordered sequence of events); or (c) encoding specificity (e.g., the information may be linked because it was acquired during the same behavioral episode or within the same

social context).

Schemas are not only defined by a web of intraconnections among their individual elements, but they are also related to one another via a rich interassociative network, particularly at the lower levels of greater specificity (Taylor & Crocker, 1981). Therefore, a single instance may be represented in several schemas, with between schema linkages indicating the cross references. Moreover, a schema that is itself a distinct cognitive representation can also serve as a specific illustration or example of one or more different schemas. For example, one's friend John may be included in his/her extravert and psychologist schemas as a concrete instance of each, while at the same time, the individual can possess a separate person schema for John that comprises his traits, physical appearance, characteristics, and attributes as well as a number of behaviors he has engaged in as manifestations of those attributes.

Schematic Processing

Schemas operate according to an underlying cognitive mechanism that processes incoming information. Schematic processing intervenes between the perception of a stimulus and its cognitive representation in such a manner that input is made more systematic and the resultant material which is stored in memory does not directly correspond to the original stimulus (Alba & Hasher, 1983). This

description emphasizes three points.

First, it places the locus of information processing within the perceiver. Schemas constitute a portion of the contents of what is commonly referred to as the "black box." Although we clearly have not yet reached a level of sophistication that permits a precise localization of the neurological substrates that correspond to cognitive structures (i.e., schemas), it is nevertheless assumed that they are existing "bundles" of knowledge that people "carry about in their heads." Positing the cognitive contents of the black box is admittedly an act of theory, the importance of which is in providing a useful device for understanding and describing the relationships among input features (i.e., the nature of information, its source and the context in which it is received) and output variables (e.g., beliefs, judgments, attitudes, behaviors) (Fiske & Linville, 1980).

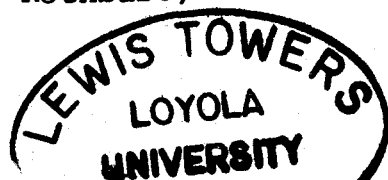
Second, it suggests that schematic processing leads to a greater organization and clarification of information as opposed to greater randomness or uncertainty. Schemas simplify, categorize, and analyze incoming stimuli; they fill in missing components of incomplete stimulus configurations, guide the search for additional data, and in some cases, amplify new information as it is encountered. Thus, schemas actively reconstruct and redefine stimuli in a process that renders them more recognizable and

comprehensible to the perceiver (Rumelhart & Ortony, 1977; Taylor & Crocker, 1981).

Third, it implies that acquired information is modified and/or interpreted in a direction that is consistent with invoked schemas. Material is not represented as a veridical copy of the current environment, but is reshaped to fit pre-existing abstractions of reality. Therefore, schemas function in the service of adaptive efficiency rather than toward the achievement of precise and accurate cognitive reproductions of stimuli (Cantor, 1981).

A collection of independent experiments employing different stimulus materials, dependent measures, and schematic constructs (e.g., person schemas, prototypes, stereotypes, scripts) has yielded a set of similar findings regarding the effects of schema evocation upon information processing. A body of research has demonstrated the ways that schemas can influence, bias, and distort the encoding, representation, and retrieval of schema-relevant information, as well as inferences and judgments about schema-relevant stimuli (see Hastie, 1981; Nisbett & Ross, 1980; and Taylor & Crocker, 1981 for reviews).

In the field of social cognition, for example, converging evidence has revealed that the schematic processing of information (i.e., processing that is guided by expectations or preconceptions) produces: (a) more accurate recall of schema consistent material (e.g., Rothbart,



Evans, & Fulero, 1979); (b) a bias-toward-schema effect leading to errors of commission, distortions in recall, and false recognition (e.g., Cantor & Mischel, 1979; Carlston, 1980; Cohen, 1977; Higgins & Rholes, 1979; Synder & Uranowitz, 1978; Woll & Yopp, 1978); (c) higher recognition confidence of schema-related information (e.g., Tsujimoto, 1978); (d) greater resistance to the disconfirmation of schema-relevant facts (e.g., Markus, 1977); (e) significant clustering in recall (e.g., Hamilton, Katz, & Leirer, 1980); and (f) faster reaction times in problem solving and judgment tasks (e.g., Taylor, Crocker, & D'Agostino, 1978; Ostrom, Lingle, Pryor, & Geva, 1980).

The Executive Function and Schema Accessibility

The entire memory apparatus presumably contains a multitude of schemata, any one of which may be activated in response to environmental stimuli. At any given time, however, only a few of them are relevant to the stimulus and are therefore necessary to fully process information. A method that randomly or haphazardly searches for appropriate knowledge structures would obviously be protracted and unwieldy, and could not possibly result in their efficient selection. The choice of likely schemata must therefore be systematic. What seems to be required is a processing mechanism that is highly sensitive, not only to the immediate input and the context in which it occurs, but also to the content and organization of available knowledge.

Moreover, the mechanism must have the capacity to quickly analyze and weight these components (i.e., input, context, knowledge) in order to lead (more or less directly) to a schema or set of schemas that best matches the impinging information or sufficiently "accounts for the input" (Rumelhart & Ortony, 1977).

Hence, it is proposed that schemas are embedded in a larger information processing system which is guided by an executive function. [For extensive discussions of the executive function in cognitive psychology, see Anderson (1975), Neisser (1966), and Tulving and Donaldson (1972).] The hypothesized tasks of the executive include (cf., Fiske & Linville, 1980): (a) abstracting schemas from specific instances or experiences (i.e., directing the basic processes through which schemas are developed); (b) indexing schemas through concepts or labels to facilitate their organization and identification in memory; and (c) searching for and evoking relevant schemas to process incoming data.

Rumelhart and Ortony (1977) suggest that it is useful to envisage the relationship between the executive function and a specific schema in terms of a computer programming metaphor in which the former is analogous to a master program, and the latter is viewed as a procedure that comprises a number of subroutines. One can think of the activation of a schema (which is controlled by the

master program or executive) as paralleling the invocation of a procedure. Lower-order schemas, which are contained within a superordinate schema, are analogous to subroutines. Hence, the activation of subschemas is like the calling up of subroutines within a procedure. However, unlike ordinary procedure calls in which the flow of control is only from procedure to subroutine, the flow of control in a schema operates in both directions. It is as though a given procedure not only can invoke its own subroutines, but can also be activated by the subroutines themselves. Thus, although the executive-based search for a schema can only proceed in one direction, the evocation process within a particular schema may occur in a reciprocal fashion between different levels.

Schemas may therefore be evoked from the top-down (conceptually driven processing) or from the bottom-up (data or event driven processing). Bobrow and Norman (1975) describe these types of processing as follows: "Conceptually driven processing tends to be top-down, driven by motives and goals and fitting input to expectations; event driven processing tends to be bottom-up, finding structures in which to imbed the input" (p. 140). Hence, bottom-up processing occurs when aspects of the input directly suggest or activate schemas which correspond to them, or when subschemas activate or suggest the superordinate schemas in which they are nested. Top-down

processing, on the other hand, occurs when a sub- or super-ordinate schema generates a search through the input data for instances that confirm schematic expectations or resemble the particular constituents which they subsume.

For example, a probation officer is engaging in a top-down processing of case information when any pertinent data is selected, reviewed, interpreted, and inferred from a standpoint consistent with the officer's preconceived notions about the types of characteristics or behaviors that are associated with a specific category or categories of offenders. In bottom up processing, an offender schema is evoked by the case information itself (e.g., knowing a probationer has been arrested for drug possession may invoke a "drug addict schema"). As each piece of information is encountered, the officer attempts to comprehend its meaning by relating it to knowledge structures that are stored in long-term memory. The evaluation of cases is assumed to involve the simultaneous operation of conceptually driven and data driven processes (cf., Anderson, 1975; Rose, 1981). Thus, an officer's judgments of an offender are determined by both his/her knowledge about crime and criminals, and the actual facts presented in the case.

The readiness with which a schema is utilized in information processing is a function of its relative accessibility (Higgins & King, 1981). Schema accessibility

appears to be influenced by three factors: recency, frequency, and salience (Higgins & King, 1981; Wyer & Srull, 1981). If a schema has been recently accessed and used in making a judgment or evaluation, the likelihood that it will be reactivated and applied as a basis for judgments in the same or a different situation is increased. A study by Higgins, Rholes, and Jones (1977) illustrates this point. They had subjects make judgments about either helpfulness or dishonesty. Later, subjects were exposed to an ambiguous behavior description that could be interpreted as a manifestation of honesty or helpfulness (giving another student the answer to an exam question). Subjects who had previously made helpfulness judgments viewed the behavior positively and rated the target person as more helpful, whereas subjects who had been making dishonesty judgments interpreted the behavior in an unfavorable light and rated the target as dishonest. Thus, exposure to personality trait terms in a priming task increased the accessibility of the construct (i.e., trait schema) designated by the terms, as indicated by subjects' tendency to use the primed construct to later characterize the stimulus person in an impression formation task.¹ Similarly, Carlson (1977) and

¹This research may be compared to the earlier work of Sherif and his colleagues (see Sherif and Hovland, 1961) who were interested in the basic question of how judgments

Lingle and Ostrom (1979) found that subjects who had made judgments of a target person in response to stimulus information were more likely to use the judgments as a basis for later evaluations than to use the original stimulus information.

The frequency with which a schema is activated also affects its accessibility, in part, because a schema that is activated frequently is likely to have been activated recently (Higgins & King, 1981; Srull & Wyer, 1980; Wyer & Srull, 1981). For example, Wyer and Srull (1980) presented subjects in an initial priming study with 6, 12, 24, or 48 behavioral instances of a trait construct and found a positive, generally monotonic relationship between the number of instances presented (the frequency of schema activation) and the extent to which a target person in a subsequent impression formation task was characterized in

are affected by the context in which they are embedded. Sherif and Hovland (1961), for example, found that a person's judgments of attitude statements relating to an issue were a function of his/her initial attitude toward the issue. Statements that were close to a subject's position (i.e., those falling within their latitude of acceptance) were assimilated and judged as more similar than they really were, whereas statements that were discrepant from their initial position (i.e., those falling within their latitude of rejection) were contrasted and judged as less similar than they actually were. Whether assimilation or contrast effects occur was also shown to be influenced by a number of other factors such as the credibility of the source presenting a persuasive message about the issue at hand as well as the person's ego involvement in the issue (Wrightmen & Deaux, 1981).

terms of the construct.

If the repeated activation of a schema is massed over an abbreviated period of time, then its accessibility will be somewhat transitory. If, however, the repeated activation is dispersed over a long period, then the accessibility effects will be relatively prolonged (Higgins, Feldman, & Ruble, 1980). Hence, variations in frequency of activation over time may lead to stable individual differences in the accessibility of schemas for different perceivers. Higgins and King (1981) have shown that differences among people in construct accessibility can be chronic and context independent, and that the constructs which are accessible to a perceiver are a product of the kinds of information the perceiver has retained about others. Along similar lines, Markus and Smith (1981) have argued that the schemas individuals bring to bear in processing information about others are those that are important to their own self concepts. In one study, Markus and Fong (1979) reported that subjects who were schematic with respect to independence for themselves made more extreme judgments about the independence of another person than did subjects who were aschematic with respect to this trait.

Finally, the relative accessibility of a schema is determined by salience. A stimulus that is distinctive may elicit a schema which is relevant to that

distinctiveness. That is, individuals are more likely to categorize themselves and others along dimensions that are more striking or attention grabbing (McArthur, 1981). For example, a black in an otherwise white group is more likely to evoke the "black person" schema than a black in a group of mixed racial composition or in an all black group. Studies by Taylor and her associates (Taylor, Fiske, Etcoff, & Ruderman, 1978; Taylor, Fiske, Close, Anderson, Ruderman, 1975; see Taylor, 1981) exposed subjects to group discussions and found that the salient novel black in an all-white group and the salient novel female or male in a group of the opposite sex were rated as more prominent or influential on a number of measures than the same actors when they were less distinctive by virtue of appearing in racially or sexually balanced groups. The effect of momentary salience on judgments and attributed responses has also been demonstrated in other studies (e.g., Shomer & Centers, 1970). In addition, there is some evidence that salience can cause increases in the accessibility of different aspects of a person's self-schema (McGuire, McGuire, Child, & Fujioka, 1978). McGuire and Padawer-Singer (1976), for example, found that the characteristics elementary school children included in their spontaneous self-descriptions were a function of their distinctiveness within the classroom, with distinctive attributes being more likely to be mentioned (e.g., green eyes, foreign

birthplace).

The Liabilities of Schematic Processing

As illustrated in the preceding section, schemas are thought to play a fundamental role in the processing of information and are invoked during attentional, encoding, retrieval, and higher-order thought processes. However, the use of schemas may result in information being processed selectively; consequently, inevitable biases may occur from their application. While schemas are essential to inputting structure and meaning to everyday perceptions, they can also be dysfunctional to the perceiver by leading to systematic distortions, errors in judgment, and information loss. The liabilities of schematic processing stem from four sources: (a) the use of the wrong schema; (b) an illustory data base; (c) type-1 errors; and (d) illusory correlations (Taylor & Crocker, 1981).

To the extent that schemas guide decisions and behavior, operating with an incorrect schema can produce a number of negative consequences in cognitive processing, the first of which is inefficiency. That is, the time required to assimilate information and solve problems may be increased when an erroneous schema is used to recognize and interpret incoming data. In a study by Taylor, Crocker, and D'Agostino (1978) subjects who employed cues suggested by a wrong schema as the basis for solving a "common attribute" task had slower decision times than did subjects applying

the correct schema relevant cues or no cues (see also Bruner & Potter, 1964).

A second possible consequence of having an incorrect schema is inaccuracy. Individuals may make serious errors of inference by distorting incoming information to be consistent with their schema. Errors may also arise from selectivity in recall, the insertion of default options, and a reinterpretation of ambiguous information (Taylor & Crocker, 1981). Langer and Abelson (1974) reported a seminal piece of research in which a group of clinicians were shown a videotape of a young male who had recently applied for a job and was being interviewed. Half of the subjects were falsely told that the interview was with a psychiatric patient and that their participation was part of a study of patient assessment, whereas the remaining subjects were led to believe that the actor was a job applicant and that they were involved in a study of employment interviewing. It was found that the "patient schema" resulted in the perception of more psychopathology than the "job applicant schema," and that subjects distorted or redefined background data to be congruent with their schema (cf., Bower, 1977; Cohen, 1977; Rosenhan, 1973; Synder & Uranowitz, 1978; Zadny & Gerard, 1974).

A third consequence of processing an incorrect schema is that once it has been misapplied, the perceiver may actually modify reality to conform to the schema. In the

case of mental illness, institutionalization itself may produce "secondary deviance" in which labeling a person as a patient contributes to the formation of a negative self-concept (Schur, 1971), creates or perpetuates imputed states or conditions (Becker, 1967), and sets the stage for enduring self-fulfilling prophecies (Lemert, 1951, 1967). This "self-fulfilling prophecy" effect has been demonstrated in a variety of contexts including the effects of teachers' evaluation reports on student performance (Rosenthal & Jacobson, 1968), the effect of anticipating that another will be hostile or competitive upon subsequent behavior toward that person (Synder & Swann, 1978), the effect of believing that physically attractive people are charming and bright (Synder, Tanke, & Berscheid, 1977), and the effect of stereotyped expectations on interracial interactions (Word, Zanna, & Cooper, 1974).

A second set of liabilities in schematic processing derive from the establishment of an illusory data base. An illusory data base is a collection of assumptions or inferences that do not actually exist in the stimulus information, but rather are contributed by the schema. It may be constructed by the use of default options, making inferences that are later stored as data independent of and in addition to the initial stimulus configuration, and/or an indiscriminate, single-minded application of a schema despite a less than perfect match with an evoking

stimulus (Taylor & Crocker, 1981). In a study demonstrating how prior inferences may be incorporated in a schematic representation, subjects were given a list of traits describing an individual and were then asked to judge how appropriate the individual was for a particular occupation. Later, they were told to list traits they thought would be characteristic of the person.

Results showed that subjects listed the traits judged to be more descriptive of the occupation they had evaluated than the one they had not evaluated, even though all the subjects were presented the same information about the individual (Baumgardner, Leippe, & Ostrom, 1976; see also Geve, Lingle, Ostrom, Leippe, & Baumgardner, 1978; Lingle & Ostrom, 1977). Subjects had apparently convinced themselves that the target person was suitable for the particular occupation and had used the inference to guide their subsequent judgments regarding his/her attributes.

The third liability of schematic processing is the propensity for Type 1 errors (Taylor & Crocker, 1981); that is, the tendency to accept data as consistent with a schema when it is either neutral or inconsistent. Four features of schemas contribute to this bias:

1. The data base stored with a schema comprises consistent or confirming instances. A study by Ross, Lepper, and Hubbard (1975) demonstrates this aspect. In their experiment, subjects were asked to distinguish

between real and bogus suicide notes. One group was falsely told that they had done relatively well on the task, while the others were erroneously informed that they had performed poorly. Afterward, although subjects were debriefed concerning the falsity of the feedback, their impressions of themselves as socially sensitive (or socially insensitive) persons persisted despite their awareness that the performance evaluations were contrived. Subjects were able to maintain these beliefs by drawing on the relevant portion (i.e., data base) of their self-schemas (e.g., sensitive me) and finding supportive examples of the behavior (e.g., me being sensitive) stored with the schemas.

2. The criteria that indicate what is or is not a "match" to a schema are often loosely or broadly defined. For example, the layperson's schema for someone who is mentally ill includes the presumption that the person will behave in an unpredictable fashion (Nunnally, 1961). This makes the schema quite vague about what a mentally ill individual should not do in any particular situation. Hence, it becomes difficult or impossible to identify instances that clearly dispute the schema; information that is irrelevant or inconsistent with the schema is easily incorporated.

3. Encountering schema inconsistent or incongruent information frequently results in a greater differentiation

of the schema rather than a complete revision or rejection of the structure. Evidence that person schemas consist of overarching general categories which encompass a number of more specific subcategories supports this prediction (Cantor & Mischel, 1979; Brewer, Dull, & Lui, 1981). Also, Taylor (1981) has suggested that when stereotypes are disconfirmed, persons do not discard or adjust the stereotype on some dimension; instead, they create a subcategory for the anomalous entity. For example, though a man may contend that women are basically dependent, passive, and fatuous, meeting an obviously intelligent, aggressive, and successful woman may compel him to develop a new classification such as "castrating female," "bitchy broad," or "career woman," a variant to his general stereotype. Disconfirmations of a schema simply provide a basis for forming a new schema subtype, not revising the existing schema.

Generally, when information is incongruent with a schema, the information may be repudiated as "bad data" and the instance stored with the schema will remain unchanged. For example, when an individual who exemplifies a person schema acts in a manner that is contrary to the schema, the behavior may be attributed to situational or unstable causes (Crocker, Hannah, & Weber, 1983; Deaux & Emswiller, 1974; Feldman-Summers & Kiesler, 1974; Heydan & Mischel, 1976; Kulik, in press). Thus, the incongruent

behavior may have minimal impact on either the representation of the individual (Crocker, Hannah, & Weber, 1983) or more abstract levels of the schema.

4. A single schema is typically evoked in the course of evaluating incoming stimuli; equally plausible or applicable schemas are not tested for their possible fit to the data. This point is aptly illustrated by what Ross (1977) calls the fundamental attribution error, i.e., inputting the cause of an act to the actor while underestimating or ignoring the potential situational determinants of the behavior. For example, Ross, Amabile, and Steinmetz (1977) told subjects to devise difficult questions to ask a contestant in a general knowledge quiz. Although the questioner applied his/her own idiosyncratic knowledge to develop the questions, thus placing the contestant in a hindered position, the questioner, the contestant, and an observer all believed that the questioner was more knowledgeable than the contestant, ignoring the obvious advantage of the questioner. In effect, perceivers dismissed the role of external forces, in this case the social power of the questioner to define the nature of the interaction (see also Jones & Harris, 1967; Taylor & Crocker, 1978).

The final liability of schematic processing stems from illusory correlations, i.e., systematic errors in judgments of the degree of covariation between two kinds

of events. A series of several studies has shown that psychiatrists and college students tend to overestimate correlations they expect to be present on projective tests (e.g., large eyes and paranoia), while underestimating or failing to report correlations that are present but unexpected (Chapman, 1967; Chapman & Chapman, 1967, 1969). Illusory correlations persist even when there is actually a strong negative relationship between two associatively connected events (Chapman & Chapman, 1969), when subjects are offered a reward (\$20) for being accurate (Chapman & Chapman, 1967), and when subjects are given training and feedback to improve their relationship estimates (Golding & Rorer, 1972). This phenomenon has been demonstrated with three types of psychodiagnostic tests (Chapman & Chapman, 1967, 1969; Starr & Katkin, 1969) as well as a number of other kinds of judgments (e.g., Jennings, Amabile, & Ross, 1980), and has been shown to be a basis of stereotypic conceptions of social groups (Hamilton, 1976; Hamilton & Rose, 1980; McArthur & Friedman, 1980; Rothbart, Evans, & Fulero, 1979). Schemas produce illusory correlations by directing the search for evidence that is utilized in assessing covariation, and by making certain categories of evidence more available (i.e., easier to recall). Both processes lead to an overrepresentation of this evidence in judgments (see Crocker & Taylor, 1978).

Schema Change

The preceding discussion recounted how schemas typically resist change, and the consequences of this resistance for social perceivers. The "unalterable" nature of schemas is both a blessing and a curse. As previously noted, some of the liabilities of schematic processing include misperceptions and distortions as well as bias and inaccuracy in making judgments. Nevertheless, a schema that remains stable contributes a sense of order and coherence to stimuli that would otherwise be complex, unpredictable, and often overwhelming. This order and predictability would be lost if cognitive structures shifted in response to every piece of impinging information (Crocker, Fiske, & Taylor, in press). On the other hand, it is clear that schemas would be highly dysfunctional if they failed to change despite inconsistency with reality or inefficiency in processing. There is evidence to suggest that schemas can be modified on the basis of actual experience (Neisser, 1976; Rumelhart & Norman, 1978; Rumelhart & Ortony, 1977).

Schema change can basically occur in two ways (cf., Anderson, Kline, & Beasley, 1979). First, schemas develop with continued exposure to a variety of different instances which represent a specific phenomenon. A maturing schema evolves by assimilating the relevant features of the increasingly complex array of stimuli which it encounters

over time (Flavell, 1963; Inhelder & Piaget, 1964). This is change by accretion: adding new data structures to the existing data base of memory, following the organization already present (Rumelhart & Norman, 1978). The second form of change is accomplished through the process of accommodation which involves restructuring the schema to account for incongruent information, i.e., information that is improbable given the schema (Hastie, 1981). Incongruency produces change by forcing the perceiver to alter his/her previous knowledge in the face of evidence that is contrary to prior expectations. For example, if the schema portraying my best friend Bill centers around his honesty and integrity, and I recently discover he has stolen my wallet, then it is probable that I will modify my existing representation of Bill in order to adjust to this new and inconsistent input. (Unless I attribute his action to situational instead of dispositional causes, in which case, the episode would have a minimal effect on my impression).

The likelihood that incongruent information will lead to schema change is determined by three sets of factors (See Crocker, Fiske, & Taylor, in press). The first set of factors relates to features of the information itself. Various studies indicate that incongruent information produces a greater impact on schema content and structure if it is: (a) processed without placing great demands on the perceiver's memory load; (b) moderately discrepant rather

than mildly or highly discrepant with the schema; (c) unambiguous, i.e., clear in its meaning or implications; (d) dispersed over a number of instances as opposed to concentrated in a few; and (e) judged to be highly relevant to the schema.²

The second set of factors concerns characteristics of knowledge structures that lead to or resist change. In general, schemas that are least responsive to incongruent information are: (a) well developed (i.e., contain large quantities of schema congruent information); (b) compactly organized (i.e., comprised of numerous links among separate schema components); (c) difficult to access or activate (it is obvious that information cannot modify a schema that has not been evoked); and (d) logically or practically undisconfirmable. A logically undisconfirmable schema is one that fails to specify what types of instances or

²Theories of information integration suggest that a number of similar factors affect the relative weight attached to a piece of information in impression formation. These include: (a) the order of the information, i.e., information presented earlier in the judgment process is given greater weight than later information; (b) the relevancy of the information to the particular judgment being made, i.e., pertinent information is assigned more weight than unrelated information; (c) redundancy of the information, i.e., information that is repetitive is given less weight than information that goes beyond the facts already presented; and (d) the source of the information, i.e., information emanating from a credible source is generally given greater emphasis than information from a less respected or discredited source.

occurrences should not occur when the schema is invoked; a practically undisconfirmable schema cannot be invalidated because there is little opportunity for perceivers to obtain information that is inconsistent with the schema (cf., Reeder & Brewer, 1979).

The last set of factors that affects the impact of incongruency on schema change is associated with the perceiver. Differences in a person's receptivity to incongruent information is primarily a function of the amount of experience he/she has had in a given domain. (A discussion of expert-novice differences in schema content and use is presented in the following section of this review.) Experts' schemas are more extensive, integrated, rapidly retrieved, and cohesive than the schemas of novices (Fiske & Kinder, 1981). Despite the vast store of information available to them, they are able to utilize and organize it efficiently. Specifically, a tighter organization of information implies that experts can retain more in short-term memory. Therefore, in encountering incongruent input the experienced perceiver possesses both the on-line capacity to process the inconsistent data--which is more difficult and time-consuming to process than congruent information (Brewer, Dull, & Lui, 1981)--and the knowledge to make efficient use of the data in moderating judgments (Fiske, Kinder, & Larter, in press). Hence, it would seem that experts' schemas are more likely to be influenced by

incongruency than nonexperts' schemas. On the other hand, as stated earlier, the highly organized nature of experts' schemas may also make them less amenable to change. Clearly, further studies are needed to clarify the relationship between expertise and schema modification.

Finally, for incongruent information to instigate schema change, the perceiver's motivation or goals must promote accuracy over the maintenance of existing knowledge structures. Although little research has addressed what conditions might give rise to an accuracy orientation, one likely condition is outcome dependency (i.e., when one's outcomes are directly dependent upon one's inferences, one may be highly motivated to be accurate). Indeed, preliminary evidence suggests that outcome dependency does encourage the processing of incongruent information (Erber, Fiske, & Swann, 1983).

Schema change can be initiated at one or more levels including: the variables themselves (e.g., variables may be inserted/dropped from the schema, or the strength of association between a variable and a schema may increase/decrease); the default options of a particular variable (e.g., attributes of the option may be altered or it may be completely replaced by a different option); the constraints that define a variable's limits (e.g., the variable's range of values may increase in latitude or become more restrictive; in the extreme, the variable may

be replaced by a constant term); and the horizontal or vertical structures of the schema (e.g., a schema may change by acquiring a more hierarchical structure or more levels of abstraction, or subcategories may be added or dropped at any specific level of abstraction).

Three theoretical models have been proposed to explicate the process of schema change: the bookkeeping, conversion, and subtype models. The first two were originally formulated by Rothbart (1981) to explain stereotype change; however, they also provide a useful account of change in other types of social schemas. The third model, which is equally useful and also discussed in the context of stereotype change, was offered by Taylor (1981).

The bookkeeping model suggests that people implicitly monitor and compare the number or relative proportion of schema consistent and inconsistent instances. Change results when the balance is gradually tipped in favor of disconfirming events (i.e., those that deviate systematically from the schema). In this view, schema revision is an incremental process of piece-meal adjustments or "fine-tuning" in response to each new piece of pertinent information (See also Rumelhart & Norman, 1978). The conversion model proposes that schema change occurs in all-or-none fashion, and is produced by a few critical and highly salient disconfirming instances. That is, information which strongly contradicts the schema elicits sudden and

dramatic changes in the schema. The third model, called subtyping, involves the development of separate lower-level categories. According to this approach, schema change can be described as a means toward specification in which encompassing or overarching concepts become more differentiated. Disconfirming instances, which cannot be easily assimilated into the larger schema are regarded as unrepresentative of the overall grouping. New subcategories emerge to portray these members, who may still possess the defining features of the schema, but who are also characterized by a set of contradictory attributes which distinguish the subcategory from other schema constituents.

Weber and Crocker (in press) performed a series of experiments comparing the three models. In their studies, subjects were presented with information about two stereotypic groups (librarians and lawyers). Individuals in the groups were described by three behaviors, one-third of which were incongruent with the schema. In some conditions, the inconsistent information was dispersed so that each individual performed one inconsistent behavior, in other conditions the inconsistent information was concentrated among a few individuals such that one-third of the individuals completely disconfirmed the schema and two-thirds completely confirmed it. Results generally supported the subtyping model of change when incongruent behaviors described only a few members of the group, whereas the

bookkeeping model of change explained the findings when many members of the group were described by incongruent behaviors.

The Expert and Novice: Differences in Schema Content and Use

The mechanisms of schema change imply that repeated exposure to the various instances of a stimulus domain lead to the development and modification of the cognitive structures that depict them. Whether change occurs through assimilation or accommodation, or whether one accounts for change by bookkeeping, conversion, or subtyping, the basic and underlying factor in schema revision appears to be the perceiver's experience. For example, in the bookkeeping model, schema alteration hinges upon the accumulation of disconfirming evidence; similarly, the subtyping approach presumes contact with different members of a category. Both processes involve making a schema more elaborate and differentiated through encounters with a growing number of schematic instances. Hence, one would expect that experts, who by definition have amassed considerable experience with a given object or activity, would possess a more extensive schematic representation of the phenomenon.

Indeed, a wealth of empirical evidence collected in a number of diverse domains such as chess (e.g., Chase, 1978; Simon, 1973b), bridge (e.g., Engle & Bukstel, 1978), go (e.g., Reitman, 1976), computer programming

(e.g., Adelson, 1981), physics (e.g., Simon & Simon, 1980), algebra (e.g., Chiesi, Spilich, & Voss, 1979), politics (e.g., Fiske & Kinder, 1981), and social cognition (e.g., Markus & Smith, 1981) consistently reveals that the knowledge structures (i.e., schemas) of experts and novices differ in both declarative knowledge (descriptions of attributes) and procedural knowledge (rules or strategies for the use of that knowledge). Experts' knowledge structures are vaster, more organized, and more interconnected than the structures of novices. Also, experts use their schemas more effectively and efficiently in comprehending information and in solving problems (Fiske & Dyer, 1982).

Perceptual Domains. A review of the visual-spatial skills literature demonstrates the superior capacity of experts to encode and retrieve perceptual patterns including chess board configurations, bridge hands, and computer programs. Pioneering work on perception in chess was done by deGroot and his colleagues (deGroot, 1965, 1966; Jongman, 1968). The basic procedure utilized in their studies was to present subjects with a chess position and ask them to ascertain the best move while they were thinking aloud about their strategy. In his attempt to identify aspects of chess skill that differentiated master from weaker players, deGroot (1965) was unable to find any gross dissimilarities in thought processes between the two groups (e.g., search

heuristics and depth of search). Contrary to a widely accepted misconception, master players typically explored a smaller number of possible moves than less accomplished players; however, they were adept at selecting the "right" moves quickly, whereas weaker players spent inordinate time analyzing the consequences of "bad" moves. In addition, deGroot (1965) reported an intriguing difference between masters and novices. Master players showed an ability to reconstruct chess positions after viewing the board for very brief intervals (5 to 10 seconds). This result could not be accounted for by the superior visual short-term memory capacity of the expert because, when random patterns of chess pieces were placed on the board, recall was equally poor for master and weaker players. The finding suggested that chess masters retain a store of meaningful constellations of pieces or familiar board patterns that are structured and labeled in memory and therefore readily retrieved during recall.

A series of experiments by Chase and Simon (1973a, 1973b) involving memory and perception, isolated and defined the chunks into which chess information was coded by experts and novices. Pauses in recall were adopted by Chase and Simon (1973a) as indicators of the boundaries of the chunks. They utilized two techniques in their study: a perception task requiring players to reconstruct a position while it remained in full view behind a partition,

and a memory task, similar to deGroot's (1965) task, requiring players to remember a position after a short exposure. Results revealed that skilled players grouped chess pieces into highly stereotyped chunks or patterns. These patterns consisted of circumscribed clusters of pieces in very localized regions of the chess board. The pieces within in a pattern were organized on the basis of both the visual (color, proximity) and functional (attack, defense) features of chess play. Further, masters exhibited superior recall of board positions, demonstrated an ability to perceive familiar patterns more quickly, retained more information in memory, and retrieved successive chunks of information from long-term memory significantly faster and in larger patterns compared to less experienced players.

Chase and Simon (1973b) concluded that skilled chess performance can be explained by the master's large cognitive repertoire of hierarchically organized chess board patterns (i.e., schemas) that are constructed through hours of practice and stored in long-term memory. Thus, it is the contents of the expert's mental representations of the game, not the components of his/her thought strategies while the game is being played that is critical in determining the quality of outcome. It seems clear that chess expertise resides in the rapid "perceptual" recognition processes that tap the master's long-term knowledge base. The findings of Chase and Simon (1973a, 1973b) have been

replicated in a number of other studies (Charness, 1976; Chi, 1978; Ellis, 1973; Frey & Adesman, 1976; Goldin, 1978, 1979; Lane & Robertson, 1979).

Engle and Bukstel (1978) studied mnemonic and perceptual ability among bridge players of differing levels of expertise (expert, life master, average player, and novice). The findings of four tournament-simulation tasks essentially confirmed the results of the chess experiments. Subjects with more experience were able to recall and reconstruct meaningful hands with greater accuracy and deftness than those with less experience in the game; performance with unstructured stimuli showed little difference across level of expertise. Moreover, bridge experts displayed superior memory for hands they had played, and were able to plan hands and generate bids faster and more accurately. It was argued that accomplished bridge players with "supranormal" memory are able to utilize their prior experience to configure and chunk information in more efficient ways than players of less expertise. Similarly, Charness (1979) reported that bridge expertise, like chess, also depends upon long-term knowledge and fast-access pattern recognition which are associated with winning strategies and correct lines of play. Finally, Eisenstadt and Kareev (1975) and Reitman (1976) studied master and beginner players of the oriental games of go and gomoku and found that, once again, experts had superior memory for meaningful

game board patterns.

A more recent study examined how expert and novice computer programmers represent and use programming concepts (Adelson, 1981). Subjects were presented with 16 lines of computer statements that could be organized in accordance with procedure (i.e., the 16 lines could form three distinct programs) or by syntax (i.e., each of the lines could be grouped into one of five categories). Findings suggested that: (a) the chunk size recalled by experts was larger than that of novices, resulting in more lines being recalled by the former; (b) there was greater similarity of recall order among the experts than among the novices; and (c) novices utilized a syntax-based organization, whereas the experts employed a more hierarchical organization based on procedural principles. In short, the computer experts showed greater memory capacity for the task, performed more rapidly, and retained knowledge in more abstract categories than novices. In a similar investigation, McKeithen, Reitman, Rueter, & Hirtle (1981) compared the knowledge structures of beginner, intermediate, and expert computer programmers, and reported that increases in the level of expertise were accompanied by changes in recall performance and knowledge organization. Experts correctly recalled a greater number of meaningful program lines than did intermediates, who performed better than beginners. Differences in the organization of the recalled material were also

uncovered: beginning programmers' organizations were grounded in a rich variety of common-language associations to programming concepts; intermediate programmers manifested mixtures of programming and common-language associations; experts evinced highly similar organizations based clearly on programming knowledge (cf., Egan & Schwartz, 1979, in a study of electronic technicians).

Problem-solving and non-perceptual domains. The ability to solve physics problems has also been explored with regard to level of expertise. Simon and Simon (1978) studied the performance of an expert and a novice subject on a kinematic problem by comparing their verbal protocols under think aloud instructions. Examination of the protocols indicated differences in problem-solving strategies and facility. The expert applied what Simon and Simon (1978) referred to as "physical intuition" (the capacity of the expert physicist to rapidly solve problems without a great deal of conscious deliberation, analogous to the nonanalytic nature of the chess master's perceptual ability to select appropriate moves); that is, he initially translated the English prose of the problem statements into physical representations, then used those representations to select and instantiate the proper equations. In other words, the expert subject accessed a schema that contained the essential elements of the problem as well as the formulas and steps corresponding to its satisfactory solution.

By doing so, the expert appeared to proceed more systematically and efficiently enroute to the solution, and completed the problem in less than one-quarter of the time, while making fewer errors (cf., Larkin, McDermott, Simon, & Simon, 1980).

Using a categorization task, Chi and Glaser (1979) demonstrated that expert physicists rapidly classified physics problems according to underlying central principles (e.g., Newton's second law), whereas novices grouped problems on the basis of the physical entities contained in the problem (e.g., an incline plane problem). The ability to categorize problems quickly (45 seconds per problem, including reading time) suggests the existence of problem-type schemas. Once a relevant schema has been activated in response to the cues in the problem statements, the expert physicist can proceed to systematically work top-down within the invoked schema to search for the correct procedure in solving the particular problem (see Chi, Feltovich, & Glaser, 1979 for a fuller description of the expert physicist's schematic processing of physics problems).

Comparable findings were reported in studies of experts' comprehension and solution of algebra word problems (Hinsley, Hayes, & Simon, 1977). Results indicated that experts organized their knowledge of algebra problems in a number of categories (e.g., a triangle schema, a distance-rate schema, a scale conversion schema) which contained

special heuristics used in formulating problems, selecting useful algebraic equations and diagrams, and making judgments about the relative importance of presented problem information. Hence, subject's schematic representations of the algebra problems directed what aspects of the problems they attended to, what information they expected and regarded as central to the problems, and what types of processing strategies they adopted in solving the problems.

The notion of relative expertise has been applied in testing the effects of involvement on political cognition. Research has shown that subjects at a high level of political sophistication possess schemas about governments that are more complicated and elaborate than those presented by subjects with little or no experience in the political arena (Fiske & Kinder, 1981). Variations in political involvement also were correlated with different strategies for processing information. For example, in a study by Fiske, Kinder, and Larter (in press) political novices and experts read a description of a previously unknown third world country under the expectation (prior schema set) that it was communist, democratic, or unspecified.

Results indicated that political novices relied heavily on consensual schemas in making judgments about the country, organized information mechanically (i.e., by consistency), and made strong schema-relevant inferences. In contrast, political experts focused on the complexities and

ambiguities of the description; experts tempered their inferences in response to salient schema-based inconsistencies in the material. Correlational data revealed that for experts, but not for novices, the moderation of inferences was mediated by their organization of recall in terms of inconsistency. Expert/novice differences in schema use suggest that more cognitively involved persons can be more sensitive to the complexities of presented information. Experts in the Fiske, Kinder, and Larter (in press) study appeared to be highly cognizant of the actual data they encountered. In dealing with new information, the expert has a compact prior knowledge structure containing congruent information that can be utilized efficiently with minimum strain on his/her processing capacity. Thus, there is enough capacity remaining to effectively process incongruent information.

The differential use of high-level knowledge structures or schemas among experienced and non-experienced persons has also been found in the domain of baseball. Chiesi, Spilich, and Voss (1979) reported differences between experts and novices in the recall of baseball events. Although high-and-low baseball knowledge individuals recalled an equivalent number of isolated sentences of domain-relevant information, experts performed better than nonexperts in the recall of event sequences. This difference was attributed to the experts' ability to relate the

events to the game's hierarchical goal structure of winning, scoring runs, and advancing runners.

Finally, in the area of social cognition, the work of Markus and her associates (Markus, 1977; Markus, Crane, Bernstein, & Siladi, 1982; Markus, Crane, & Siladi, 1978; Markus, Sentis, & Hamill, 1979) has demonstrated that the existence of self-schemata (i.e., experience-based individual differences in self-knowledge) influences the processing of information about the self with respect to personality traits, sex-roles, physical appearance, and creativity. In brief, these studies revealed that persons with self-schemata in a particular domain when compared to aschematics (individuals who were sans schemata in the domain) were able to readily: (a) evaluate new information with respect to its relevance to the domain; (b) process information about the self in the given domain (e.g., make judgments and decisions); (c) retrieve behavioral evidence in these areas; (d) predict future behavior in the domain; and (e) resist information that is contrary to the prevailing schema.

Summary. Research examining differences between experts and novices in schematic content and processing clearly suggests that the schemas of experts are better formulated, more detailed, and complex, and contain a tightly organized network of information that is built from practice and/or

experience within a specific domain. It is likely that experts' schemas contain more concepts, larger chunks of knowledge, and more linkage among the concepts. These differences in the structure of experts' schemas are related to differences in strategies for the use of schematic content. Experts group and reduce incoming information in a manner that allows for rapid and efficient retrieval by relating the information to a long-term knowledge base. Instead of perceiving and remembering individual pieces of information, they process meaningful chunks of information, making their perception more efficient and their recall performance much higher. Further, their superior ability to solve problems is a function of schema-based heuristics and sophisticated abstract categorization strategies. In comparison to novices, experts are less diverted by superficial characteristics, and can more easily identify the fundamental elements of a problem.

A Critical Evaluation of the Schema Concept

The foregoing review of the extant literature reveals that a considerable portion of the results of current research in human memory and cognition either has been predicted or explained by the schema concept. Schema theory has prompted investigators to consider a number of issues concerning the parameters of memory and comprehension, and has provided a powerful framework in which to interpret a collection of findings emerging from different areas of

psychology (e.g., perception, memory, social, cognitive). In short, the notion of a cognitive schema truly revitalized theory and experimentation regarding how knowledge is structured and information is processed.

Schema theory proposes that perception, understanding, and memory are a joint product of the interaction of new information with stored knowledge. The basic assumption of the theory is that an individual's prior experience, expectations, and goals will influence how he/she encodes, stores, and remembers incoming data. Hence, the existence of schemas is predicated upon the operation of five fundamental underlying processes: (a) selection (schemas direct the encoding of information, i.e., what is stored in memory is a highly selected subset of what is encountered in reality, only information that is relevant to a presently activated schema will be encoded); (b) abstraction (memory is not a verbatim record, rather, the central aspects or core meaning of a stimulus are given priority during encoding while the non-essential features of the stimulus are lost); (c) integration (incoming information is combined with previously acquired schema-based information which is invoked during the encoding episode); (d) interpretation (schemas guide any inferences that are made about missing information; they also elaborate and distort information in a schema-consistent direction; and (e) reconstruction (memories are reproduced or recreated by combining the accessible

details of a stimulus representation with domain-related prior knowledge).

Empirical evidence which clearly supported the existence of these five processes would argue strongly for a schematic model of memory. Nevertheless, even if one were to accept the actuality of such findings, one could still insist that ultimately the cognitive approach upon which schema theory is grounded, must be integrated with--even superceded by--a physiological one. That is, if schemas are ever to become a "proven" (i.e., reified) component of memory/cognition, they will eventually have to be understood in terms of additional levels of analyses. Identifying the neurological localization and arrangement of schemas (i.e., discovering their embodiment in the anatomy of the brain) would certainly elucidate many of the unanswered questions researchers have relating to cognitive structures and mechanisms.

Despite an impressive array of results that is consistent with the schema model and its predictions, the best one may conclude is that traditional theories of cognition and memory fail to fully explicate experimental findings. Essentially, none of the research has incontrovertibly established schemas as the foundational structures of processing or storage. Until recently it has merely generated results that cannot be adequately explained by common sense analyses or alternate perspectives (e.g., simple

associationist models or purely perceptual theories) (Anderson, 1980; Smith, 1980). However, a timely review of the literature by Alba and Hasher (1983) suggests that different theoretical models and available empirical evidence may account for or refute findings previously interpreted in a schematic framework. They report a series of studies which indicates that the recall of complex stimuli is not dependent upon or closely tied to the activation of prior knowledge, and that memory for complex stimuli is far richer and detailed than schematic processing would allow.

In their review, Alba and Hasher (1983) also proffered a recently developed model of memory which they advanced as an alternative to schema theory. The model, formulated by Johnson and Raye (1981), posits that information retained in memory consists of both exogenous (derived from the perceptual episode) and endogenous (created by reasoning, imagination, and thought) traces. The process through which an individual differentiates between the two types is called reality monitoring. Each trace consists of a number of attributes (e.g., spatial, contextual, sensory, semantic) that define typical classes of internally--and externally--generated memories. The comparative amount of these attributes serves as the basis for distinguishing memory traces. When a trace is retrieved, the information that identifies its source (person-produced or stimulus-produced) is used to determine whether the trace was part of the original stimulus. Generally, the distinction between internally--

and externally--derived traces is clear. However, on some occasions, differences may be ambiguous, or the criterial discriminative attribute information may become inaccessible. In either situation, a person would be unable to correctly ascertain the trace's source-of-origin (i.e., he/she would confuse internally generated memory traces with traces resulting from the encoding of the external stimulus array). The reality monitoring model is able to explain a variety of mnemonic errors which are predicted by schema theory, including: reconstructive errors, inference errors, and false recognition errors.

Conceptual clarity. The schema concept and its attendant research may also be attacked on substantive and methodological grounds. For example, attempts to formulate general schema theories of memory are plagued by a number of shortcomings. Although the schema model is quite successful as a descriptive theory--for example, it provides both a vocabulary and conceptual framework for the representation of knowledge (Thorndyke & Yekovich, 1980)--it is surrounded by fuzzy conceptual boundaries. Definitions of the concept and its variants (prototypes, frames, scripts) are often so vague that it is not clear what, if anything, they exclude (Martin, 1982). Their usage by theoreticians and experimenters is highly individualistic, and has thus precluded the establishment of a common core of basic meaning that permits a differentiation of both

related and incompatible conceptions (see Taylor & Crocker, 1981). Consequently, schema research suffers from a lack of consensual operationalization (i.e., the link between the conceptual definition of schemas and their operational specification is tenuous (Fiske & Linville, 1980).

Testability. The second area of theoretical weakness in the schema model is its lack of specification of detailed processes for manipulating and instantiating schemata: How can an experimenter be certain that a schema is truly being activated, and if so, whether it is the schema of interest? It has not been determined what schemas will be evoked or precisely how they are evoked. Similarly, little is currently known about the mechanisms that direct the application of particular schemas in particular situations: Is schema activation controlled by cues that are predominant in the stimulus configuration or by the schema's availability in the mind of the perceiver, or both? In addition, researchers have yet to identify the schematic mechanisms that affect variables such as recall and reaction time, and to define the elements or limits of schematic functioning: Are different dependent measures mediated by the same or independent schematic processes? What are subjects doing when they are not reasoning schematically? What happens in memory when a schema is invoked repeatedly? Does repetitious use of a schema facilitate or interfere with its effectiveness as a memory organizer? Finally, a major

deficit of schema theory is the absence of a clear articulation of how schemas develop and change: What is the precise nature of the processes through which schemas are abstracted from reality? How does experience result in greater schema complexity?

Predictability. The lack of a coherent theoretical analysis of schematic processing has rendered the schema concept untestable and unfalsefiable. The current state of "schema theory" provides the basis for nothing more than demonstration studies rather than the more sophisticated approach of competitive model testing. The schema concept is presently loose enough to incorporate contradictory hypothesis and patterns of empirical evidence. Also, researchers are guilty of glibly offering explanations of results without a priori or firmly grounded theoretical predictions, and of constructing elaborate cognitive frameworks that can account for any finding. Thus, although the schema model does entail some structural and process assumptions, it is so vaguely specified that it is able to explain post hoc virtually any set of available data. Whereas many results are consistent with the notion of schema-based processing, it is difficult to unearth any findings that are inconsistent with it (Thorndyke & Yekovich, 1980; Fiske & Linville, 1980). In short, the absence of formal constraints on schema theory leads to an absence of systematic operating assumptions across empirical

investigations, thereby building in an ability to remain impervious to disconfirmation and an inability to yield precise predictability in studies.

For example, schema theory posits, and investigators have found that schema-consistent material is better recalled than schema-inconsistent material (e.g., Cohen, 1977; Hamilton et al., 1980; Rothbart et al., 1979; Synder & Cantor, 1979; Synder & Uranowitz, 1978). Inasmuch as schemas guide the search for information, stimuli that constitute a good match to a schema are more likely to be encoded than schema-incongruent stimuli. Moreover, if the incongruent material is encoded, it will probably be more difficult to retrieve than schema-consistent material because of the purported role of schemas in the organization of information and in memory search at recall. Conversely, schema theory and research also predicts and supports the hypothesis that inconsistent information will be more salient and memorable due to its distinctiveness vis-a-vis the schema (e.g., Hamilton & Gilford, 1976; Hastie & Kumar, 1979; Hastie & Mazur, 1978; Srull, 1981). Such information requires additional cognitive work to be incorporated into the schema, and is therefore said to be deeply processed and available for recall (Hastie, 1981).

Similarly, contradictory predictions exist regarding the issue of whether schematic processing is more or less rapid than aschematic processing. It is argued that

schematic processing will be faster because of the well organized and more easily accessible content of a schema (Markus, 1977); alternately, it is suggested that schematic processing is slower because both the input and data base (i.e., schema) that has been evoked must be processed (e.g., Rogers, Kuper, & Kirker, 1977). In light of these inconsistent predictions and results, investigators must be called upon to identify the varying conditions under which "conflicting" findings are to be expected. More specifically, it appears that interactions may be operating to produce seemingly contradictory evidence. However, researchers have done little to specify the nature of these possible interactions. This would necessitate a delineation of both the factors involved and the pattern of anticipated outcomes.

The failure of schema theory to satisfy the criteria of testability and prediction seems to be due principally to a lack of theoretical development in two areas which suggest directions for future research: (a) a specification of the domains of knowledge for which schemas exist and are used, and (b) an elucidation of the complex cognitive processes that operate on and utilize the schemas (i.e., a precise description of how schemas are activated and used during the comprehension, storage, and retrieval of information [Thorndyke & Yekovich, 1980; Fiske & Linville, 1980]).

Constraining the number and types of schemas involves an explication of the conditions under which they are developed and discriminated. It is currently unclear how minute in specificity schemas can be. For example, it is assumed that persons have a schema for "going to a restaurant" (Schank & Abelson, 1977; Bower et al., 1979). Do individuals also possess schemas for "attending a play" or "buying a pretzel on the street corner in New York City?" Perhaps as Rumelhart and Ortony (1977) suggest, when a perceiver is faced with a novel situation that does not precisely match any available schema, the situation is comprehended through the process of schema generalization in which the variable constraints of an available schema are modified to provide a representation of the newly encountered stimulus. Basically, instead of creating an entirely new schema to interpret every novel input, an existing, higher-level schema which appears relevant to the input is invoked and modified to fit the data. More theorizing and research is clearly needed to explicate this process (i.e., to explain when and how schema generalization occurs).

The second area of limited theoretical development is in the specification of detailed mechanisms for manipulating and instantiating schemas. If veritabably thousands of schemas reside in memory, then it is plausible that many of them may be applicable in comprehending and encoding events in a particular situation (cf., Anderson &

Pichert, 1978; Baker, 1978; Thorndyke, 1979). As previously discussed, the question of schema selection has been addressed by positing the so-called executive function. However, elaborations of this function and investigations designed to infer its existence and operation have been conspicuously absent from recent models of schematic processing.

In sum, until schema theory is formulated in a falsifiable form, its validity will remain in question. What is required is the development of an overall cognitive or general process model that generates precise and testable predictions concerning the effect of schemata on the components of information processing. More theoretical and empirical attention should be given to the specification of criteria for identifying a "package of facts" in long-term memory as a schema. Such an analysis will undoubtedly serve to make schema-related propositions more researchable. By itself, the schema concept is much less useful than when it is embedded in a well-specified theory of process. The notion of a schematic representation per se yields ambiguous or contradictory hypotheses concerning schematic functioning. However, when it is nested in a larger cognitive framework, it provides fertile ground for the construction and testing of predictive theories about the organization and functioning of human judgment and memory.

The Use of Schemas in Diagnosis and Prediction

Despite the limitations discussed above, the schema construct still has great value for the current studies in that it provides a structural mechanism which represents prior experience and creates high-level units that are evoked by experts during assessment and decision-making. A number of studies that are directly relevant to the present research indicate that schemas are a useful theoretical tool for investigations of how experts place people into diagnostic categories and how they make predictions about future behavior. For example, Cantor et al. (1980) proposed that psychiatrists classify patients by sorting them into "fuzzy categories" on the basis of their resemblance to the exemplar of the category. In order to test this hypothesis, trained psychiatrists were presented with actual, unedited case histories of psychotics and were asked to make a diagnosis for each of the patients. They found that psychiatrists were highly reliable, confident, and accurate in their diagnosis of patients who shared many features in common with the prototype (i.e., the most typical or representative number of a group) for a diagnostic category. The psychiatrists were considerably less reliable, confident, and accurate in their judgments about non-prototypical patients. On the basis of this evidence, Cantor et al. (1980) argued that the schema approach best captures the way clinicians think about and

use diagnostic groupings.

Research by Carroll and his associates provides some evidence supporting the activation and use of schemas among expert parole decision-makers. In a pilot study by Carroll and Wiener (1982) parole board members were asked to construct cases on the basis of 16 critical variables (e.g., criminal record, current offense, prison sentence, alcohol/drug abuse, employment history). Details pertaining to each of the variables were written as prose statements using the narrative style of actual parole cases and placed onto small cards which were organized in separate piles according to information categories. Subjects were instructed to create a description of realistic inmates using the 16 information categories. Five discernible schema types emerged: (a) the impulsive auto thief, (b) the armed robber, (c) the drug dealer, (d) the passion murderer, and (e) the fraudulent credit card user.

In a related study, Carroll, Galegher, and Wiener (1982) analyzed parole board members' judgments of the causes of crime in a sample of over 200 parole interviews. Results demonstrated that experts' assessments of the etiology of crime were organized according to categories that contained hypotheses about criminal involvement, and recommendations concerning treatment and expected prognosis. Five causal categorizations and their constituent subgroupings were found: (a) person (lack of control,

easily influenced, immature, mental problems, acting "smart," poor attitude, aggressive), (b) money (monetary gain, get money, family needs, no job), (c) drugs, (d) alcohol, and (e) environment (victim precipitated, influence of associates, domestic problems, environment). This schematic classification of cases was significantly related to release recommendations, prognosis for supervision, and assessments of the risk of future crime. Similar to clinicians who diagnose patients by placing them into "fuzzy categories" (Cantor et al., 1980), parole decision makers seem to identify criminals as "types." These types not only appear to contain information that is central to the decision to grant parole, but they also comprise information describing different patterns of criminal and social behavior, causes for this behavior, and treatments to remedy these causes (Carroll et al., 1982).

Converging on the findings of Carroll et al. (1982) are results indicating the existence of schemas among probation officers. In a series of interviews aimed at explicating officers' evaluations of offenders for risk classification and treatment, Lurigio (1981) reported that probation officers described such factors as drug use, unemployment, influence of associates, absence of family ties, and immaturity as causes of criminals' failure to satisfactorily complete probation. For example, the "drug offender" was offered as a type of probationer who

is highly unlikely to finish his/her sentence. The "drug offender" category included information (suppositions) about the probationer's potential for future criminal behavior, his/her interpersonal relationships, the kinds of crimes likely to be on the record, reasons why the offender has committed crimes, explanations regarding the individual's preoccupation with drugs, and a prognosis for rehabilitation.

Summary

In summary, notwithstanding a number of conceptual, theoretical, and empirical deficiencies, the schema construct has been usefully applied as a descriptive and explanatory mechanism across a wide range of psychological research (perceptual, cognitive, social). A schema is defined as a hierarchically organized, abstract cognitive structure that represents an individual's accumulated knowledge, beliefs, and expectations regarding a defined stimulus domain (person, object, or event). Schemas specify the central features and relevant attributes (i.e., variables) comprising a phenomenon and the interrelations among those attributes. In addition, they lend meaning to experience, guide the encoding, storage, and retrieval of information, and allow a perceiver to make inferences about data that are missing from a stimulus configuration. The evocation of any schema in a specific situation is controlled by the executive function, and is determined

by that schema's relative accessibility.

Although schematic processing can be advantageous to a perceiver, it may also result in information loss as well as a number of perceptual, interpretative, and judgmental errors. However, a schema that is sensitive to the features of incoming stimuli (i.e., one that changes or adapts in response to incoming stimuli) is less likely to lead to error. Essentially, schema change occurs through the processes of assimilation and accommodation. In the former, schemas incorporate information by adding details to an existing base of knowledge; whereas, in the latter, the actual structure of a schema is modified to account for inconsistent data. Both processes are influenced by the type and degree of experiences a person has in a given area of knowledge. Hence, perceivers vary in the extent to which they have well-developed schemas for particular stimulus domains. For example, the schemas of experts are generally more detailed, organized, and complex than those of nonexperts. Consequently, experts are better able to invoke and use schemas to remember information and solve problems in a variety of tasks. Further, it has been demonstrated that the schemas of experts have a significant impact upon the manner in which they make assessments and predictions about others. The work of this dissertation explores whether probation officers qua "experts" in the criminal justice system organize their knowledge of offenders into

schematic groupings, and if so, how these schemas affect the judgments of criminal cases.

CHAPTER III

METHODS

Overview

The present investigations were designed to examine the nature of offender schemas among probation officers and to assess how these schemas influence the judgment of criminal cases. The first study explored the existence and content of schemas through interviews with officers concerning the composition of their caseloads. Officers with different assignments (Criminal and Municipal) and levels of experience (expert and novice) were compared on schema detail and number. The purposes of the second investigation were to validate the findings of Study 1 and to uncover any additional schemas of probationers. In this study, officers and clerical personnel were asked to sort index cards--each of which contained one piece of information from one of seven different information categories (e.g., crime type, demographics, prior record). The information categories portrayed eight of the schematic cases that emerged from the initial investigation. Subjects arranged the cards on an information board in order to recreate the eight cases. It was predicted that officers would be able to accurately complete the task, whereas nonofficers would fail to reproduce the schema types of Study 1. As in the first study,

comparisons were made between expert-novice and criminal-municipal officers. The third study tested the effect of schematic cases on information processing. Subjects were presented with schematic and nonschematic cases and were instructed to judge the cases on a number of dimensions (e.g., report behavior, propensity for future criminal activity). It was hypothesized that schematic cases would be judged faster, and with greater confidence and ease when compared to nonschematic cases.

Study 1

The first investigation was essentially a pilot study to clarify probation officers' schemas of criminal offenders. The primary purpose of the research was fourfold: (a) to provide evidence concerning the existence of schemas and their contents; (b) to suggest how officers may utilize schemas in making supervisory and treatment decisions about probationers; (c) to explore intergroup differences in schema availability, content, richness, and use (Of paramount interest was the comparison between expert and non-expert officers); and (d) to collect data that could be used in the construction of materials for subsequent studies.

Participants

Forty probation officers of the Cook County Adult Probation Department of Illinois served as respondents in the study. Officers were selected on the basis of their

schedule availability and willingness to cooperate in the research. The sample was divided into equal proportions according to their sex, race (White, Black, Hispanic), and experience. Experience was dichotomized by a median split of the number of years employed as a probation officer in the respondent sample. Those with less than three years of duty were defined as "novices" and those with three years or more were considered "experienced." The mean age of the participants was 30, with a range of 23 to 39.

Additionally, the sample consisted of an equal number of criminal and municipal division officers. Each division grouping was composed of an equivalent proportion of experts and novices. The criminal-municipal distinction is one of geographic location, caseload composition, and officers' court activities. Basically, municipal officers supervise offenders who have committed crimes in the surrounding suburbs of Chicago. Their cases, which are assigned to them according to the geographic residence of probationers, characteristically comprise first-time misdemeanants, white-collar criminals, petty thieves, and shoplifters. In contrast, criminal division officers receive cases on the basis of permanent courtroom assignments. Criminal caseloads are more likely to contain felons, hard-core inner city criminals, recidivists, gang affiliates, and members of minority groups. Unlike municipal officers, criminal division probation officers generally follow a

case from its inception to its termination and are individually responsible for the full range of courtroom functions.

Procedure

The method of inquiry consisted of a semistructured interview organized around standard questions but individualized by the interviewer to each participant. Subjects were informed that the investigation was an exploration of the kinds of categories or groupings officers utilize in differentiating among their cases. It was made explicit that the study focused on officers' subjective assessments or perceptions of probationers as opposed to any systematic strategies they may employ in classifying their cases for supervision. Respondents were then presented with a short description of how stereotypes and preconceived notions of persons can affect an individual's impressions and judgments of others. Two examples of probationer "types" suggested by an earlier study (i.e., the drug offender and the high risk probationer) were offered as illustrations (see Lurigio, 1981). The schema concept and its relevance to the present research were also briefly explained. Finally, participants were asked to discuss the various groupings (schemas) of probationers that characterize their caseloads. Fiske, Kinder, and Larter (1979) have successfully used such a procedure to elicit consensual schemas by asking subjects to name various types of political systems and to provide a distinctive set of attributes for each. It should be noted

that a concerted effort was made to uncover schemas via a systematic and unbiased process. Throughout the interview, officers were assured of the anonymity of their responses and were reminded to answer all questions with candor and thoroughness. All interview protocols were recorded as field notes.

Interview topic areas. Topic areas were developed from a conceptual analysis of probation officers' tasks. It seemed reasonable to expect that if probation officers actually possessed schematic categorizations of offenders, these would contain information drawn from the contents of case files, the nature of officers' duties as well as their immediate objectives and ultimate goals as agents of the Court. For each schema mentioned, five topic areas or content domains were tapped: (a) criterial attributes, (b) report demeanor, (c) supervision/treatment, (d) attributions of crime causality, and (e) prognosis. Table 1 provides sample questions for the five content domains.

Schema definitions. A set of criteria was established to assess whether a given depiction of an offender type was an exemplification of "true" schema evocation. First, a schema was defined as an abstract cognitive representation of a probationer which was reported with a degree of detail, specificity, and meaningfulness roughly corresponding to Rosch's (1977) basic level of categorization. Descriptions that were obviously applicable to a single or small number of

Table 1

Interview Content Domains and Sample Questions

<u>Content Domain</u>	<u>Questions</u>
1. Criterial Attributes	What are the basic or core elements of the schema type? What traits differentiate the schema type from other categories which are closely related?
2. Report Demeanor	Is the offender regular in his reporting? On report days, is the probationer respectful, discourteous, cooperative, etc.?
3. Supervision	How often is the offender type required to report? What kinds of extra-departmental services are recommended in the treatment of the probationer?
4. Attributions	Why do you think this particular type of probationer became involved in criminal activity? Is the cause of criminal behavior temporary or permanent?
5. Prognosis ³	Is the offender likely to become involved in future criminal activity? What's the probability the probationer will violate the conditions of his/her sentence?

³Attributions are inferences regarding the causes of events or the properties of people or things that have causal efficacy. Attribution theory is concerned with the efforts of individuals to acquire a knowledge of the characteristics, intentions, or internal states of others from their overt responses. A person making an attribution asks such questions, "Who is responsible?," "How responsible is he?," "What is it about the person that impelled him to act this way?."

Weiner's (1974) model of attributions in achievement

Table 1 (continued)

settings may be applied toward understanding attributions about crime and criminals. Weiner's model posits three dimensions or aspects upon which attributions vary: (a) whether the cause of the event is internal (i.e., something about the actor) or external (i.e., something about the actor's environment); (b) whether the cause is stable and enduring over time or relatively unstable and transient; and (c) whether the cause is intended by the actor or relatively unintentional. For each evoked schema type, respondents were asked to speculate upon the etiology of criminal behavior by arranging the cause or causes on the above attributional dimensions.

criminals were not interpreted as evidence of schematic processing. Such examples were likely to reflect unique, idiosyncratic instances rather than instantiations of a category. (These are not to be confused with descriptions of offenders that were expressly presented as exemplars of a schema type.) At the other extreme were elaborations that embodied a large portion of an officer's caseload. These were also discarded because they referred to overly-broad, nebulous representations of probationers as opposed to discrete subtypes or categories (i.e., in Rosch's terms, the commonality among elements within the category was minimal).

Second, a specification of a probationer type was recorded as a schema if it provided a unified and internally consistent portrait of an offender (i.e., the depiction was logically and temporally ordered, and unfolded in a smooth flowing, story-like fashion). Further, schematic groupings were those in which the officer responded clearly and sufficiently to the set of questions relating to the five content domains. If a probation officer was unable to fully address one or more of the topic areas, his/her data were dropped from consideration (e.g., a category label that was offered without additional information or elaboration was not coded as a schema). Essentially, probationer schemas closely resembled realistic case histories of offenders and can be aptly described as neatly packaged "bundles" of knowledge tied together by a common thread or organizing theme

(cf., Wyer & Srull, 1980). In short, loosely constructed, incongruous or incomplete portrayals were not regarded as schematic instances.

Third, four respondents discussed typologies that seemed to be grounded in textbook, theoretical, or actuarial approaches to the classification of offenders. These were also excluded from the analyses inasmuch as they basically involved the application of empirically derived and objectively scored scales that placed probationers into groups according to risk assessments and/or treatment recommendations. (In any event, these categorizations would not have been recorded because of their lack of general agreement or consensus.) In addition, categories that were based upon Court Judges' directives were not eligible for coding. Hence, for purposes of the present research, schema types were restricted to subjective groupings fashioned primarily from officers' experience with and active supervision of probationers.

Schema matching and labeling. Probation officers' typologies were matched for commonality by comparing their responses to the content domains of each category elicited.⁴ The initial step in the matching procedure involved an

⁴All data coding and analyses were performed by the investigator.

examination of the 179 schema types mentioned by the participants to ascertain whether there was any consensus on the criterial attribute domain. Common responses were grouped together and a further inspection of the remaining topic areas was conducted. Commonality was determined on the basis of whether the central elements or gist of officers' replies to the content domain questions were consistent. Schemas were considered equivalent if their separate descriptions agreed on the criterial attribute domain plus at least two of the other four topic areas. Schema labels were provided by the investigator and are intended to capture the essential qualities of the offender categories.⁵

Content coding. A coding scheme was designed to analyze the contents of the 40 interview protocols. Participants' replies were differentiated and tallied according to units of information. An information unit was defined as a single statement or idea (e.g., "This type of probationer gets into crime because he has some real psychological problems," "A burglar is different from a

⁵The labels are considered important because it is assumed that type names or "category concepts" play a central role in the encoding, storage, and retrieval of schematic information. Future studies could be usefully directed at ascertaining whether probation officers concur with these designations and, more generally, at identifying the type names that officers spontaneously employ to describe criminal offenders.

thief in his degree of professionalism"). Repetitious responses conveying the same underlying semantic meaning were not counted as separate information units. Each schema from each subject was scored for the number of information units it contained.

Study 2

The findings of Study 1 clearly suggested the existence of shared offender schemas. A shortcoming inherent in the method, however, was that it relied on the interviewer to be neutral in eliciting and interpreting data (i.e., it contained none of the requisite controls for reliability or validity). For example, the coding of interview protocols was based heavily on subjective criteria and was not conducted by a coder who was blind to the hypotheses/purposes of the research. Hence, it was possible that demand characteristics and experimenter effects produced an apparently meaningful description that may have been overly biased. The second study addressed this issue by employing a card sort paradigm similar to that of Carroll and Wiener (1982) which provides a more precise and rigorous methodology for detecting schemas. Study 2 served primarily to validate the results of Study 1, and secondarily to identify additional schemas of probationers.

Participants

Subjects were 20 officers of the Cook County Adult

Probation Department. Participation was voluntary, and was restricted to individuals who were not respondents in Study 1. As in the previous study, officers were divided into expert and novice groups according to their number of years employed as a probation officer, and into criminal and municipal groups on the basis of their assignments. There were an equal number of experts and novices in both the criminal and municipal groups. The median age of the sample was 32; 65% were male, 50% Caucasian, 40% Black, and 10% Hispanic.

A non-equivalent control group comprising 20 members of the Department's clerical personnel was also recruited. These workers perform a number of duties including filing, typing, answering telephones, scheduling revocation hearings, and logging in-coming cases. The performance of their jobs does not require direct contact with probationers nor are they responsible for supervising and evaluating cases. Although the clerical staff obviously has more knowledge regarding the procedural and legal aspects of probation than the general population, there is no apparent reason to expect that the group should possess elaborate or organized schemas of offenders--at least not to the same degree or extent as probation officers.

Materials

A sample of 10 probation officers who had participated in Study 1 were asked to provide one or two actual

cases that were highly representative of the schema types they discussed in the interview. For example, if the respondent had a schema for burglars, he/she was instructed to identify one or more cases from his/her caseload that best exemplified the category. The files of selected cases were examined for material such as PSI reports, criminal histories, record sheets chronicling report behavior, termination status summaries, and synopses of offenders' use of resources. Thirty-six cases were reviewed. In general, the information contained in real cases corresponded to officers' schematic descriptions; however, in some instances their characterizations of prototypic offenders did not precisely match the details in actual files.⁶ Nevertheless, the 10 core schemas of Study 1, as a group, bore a strong and unmistakable resemblance to authentic probation cases.

Information was extracted from files and combined with the results of the interview for the purpose of creating 10 realistic schematic cases representing the offender types found in Study 1. Schematic cases contained information about each of the following categories: (a)

⁶Schemas of offenders are by definition categories that are abstracted from experiences, and represent exemplars or composites of "real" criminal types. Therefore, a one-to-one correspondence between the features of the constructed schematic cases and actual probation cases was not expected.

crime (the offense for which the probationer was sentenced); (b) prior record (a list of crimes likely to have been committed by the offender and a description of the range of his/her past criminal involvement); (c) demographics (age, race, and sex); (d) social/psychological profile (evaluations of the probationer's mental status, interpersonal-familial relationships and social milieu, as well as attributions about the cause(s) of the offender's criminal behavior); (e) report behavior (a summary of the probationer's typical demeanor during contacts with his/her officer); (f) treatment (recommendations concerning levels of supervision and the use of counseling and resources); and (g) prognoses (a prediction of the offender's success or failure while on probation and the likelihood of his/her continued criminal involvement).

Procedure

The procedure used in this study is similar to the approach that Carroll and Wiener (1982) adopted in their investigation of expert parole decision makers. Each item of information about each of the seven categories was typed on a 3 x 5 index card and stacked in separate piles according to information type. The information was written as prose statements using the style and examples of real probation files. The subject's task was to select one card from each pile in order to recreate eight realistic cases.⁷ It was assumed that officers would arrange the cards in a

manner which reflected their underlying schematic representations of offenders (i.e., schemas would emerge as the organizing principle for constructing the cases); whereas clerical subjects' reconstructions would be essentially a random combination of the cards or based upon popular conceptions of criminal types. On each trial, the order of information cards within the seven piles and the sequential ordering of categories between piles were randomized. The cases were formed by sorting the information cards on a board approximately five feet in length and three feet in height. The numbers 1-8 were placed across the top of the board (eight columns corresponding to the eight cases) and the numbers 1-7 were placed down the left side (seven rows corresponding to the seven information categories). Fifty-

⁷A pretest with a small sample of officers ($n = 8$) revealed that the use of 10 cases (70 information cards) presented an unmanageable and time consuming task for subjects to accomplish. Decreasing the number of cases to eight by removing the two least detailed schema types of Study 1 ("Conman" and "Violent Macho Man") made the task more workable, both in terms of the time that was required to complete the procedure and in the ease and efficiency with which the information cards were handled and organized. The pretest also recommended the adoption of the information board. Subjects reported that the ability to view cards already placed in completed cases was very helpful in constructing later cases, and in rearranging cards between cases. In addition, the pretest suggested that the semantic relations between statements may have acted as cues in matching the information cards within a category. To avoid this problem, all words or phrases with high associative connections were either modified or removed from the cards.

six evenly spaced hooks served as holders for the information cards. Subjects were informed that the purpose of the study was to examine how they organize their caseloads into different types of probationers. Participants were scheduled individually and were read the following instructions:

In front of you are piles of index cards. Each pile consists of a set of cards that contain information relating to a case variable. Each card has a separate piece of information written on it. Your task is to put together the cards to form eight different criminal cases which have been constructed from interviews with probation officers, actual case files, and presentence investigations. Every case you assemble should consist of seven cards--one from each of the information piles. Start with any pile you wish and choose from the piles in any order you desire. You may change the arrangement of the cards as you go along. Remember, there is no actual right or wrong way to do it. Rely on your subjective judgments. Familiarize yourself with all of the cards before you begin. There is no time limit.

Subjects were unobtrusively timed and observed while performing the task. At the conclusion of the procedure, the participants were asked a series of questions relating to: (a) their reactions to the task; (b) the components of the organizing strategy they employed to compose cases; (c) the kinds of labels or category designations they believed would capture the essential nature of their eight constructed cases; (d) explanations of why certain pieces of information "naturally" fit together in some cases and not in others; and (e) a more in-depth discussion of the constructed offender types, including an estimate of the

prevalence of each in the Department's caseload, and an elaboration of the five content domains of Study 1. Upon completing the task, subjects were debriefed. During the debriefing, they received an explanation of the purpose of the investigation and were thanked for their participation.

Study 3

Taken together, Studies 1 and 2 strongly supported the notion that probation officers organize their knowledge about crime and criminals into consensual schemas of offenders. The final study explored the extent to which schemas influence how officers handle case information in making judgments concerning probationers. More specifically, the third investigation tested for any differences in the processing of schematic and nonschematic cases. The literature suggests three possible processing effects: speed, ease, and confidence.

Speed and ease. A number of experiments in cognitive psychology consistently show that, if a perceiver has a schema for a particular stimulus domain, information relevant to that domain will be processed more quickly than irrelevant information or information for which a schema has not been developed (Taylor & Crocker, 1981). This effect has also been demonstrated in the area of social cognition. For example, in a study of self-schemata,

Markus (1977) identified two groups of subjects who had schemas about themselves for the traits of dependence or independence, and a third group of subjects who were aschematic on those traits. Subjects were instructed to read words portraying a mixture of schema relevant and neutral adjectives and to press a button indicating whether the adjectives were self-descriptive. It was reported that subjects with self schemas (either for dependence or independence) responded significantly faster to schema relevant words than did aschematics. There were no differences, however, among the three groups in the processing time for schema neutral adjectives. Similarly, Markus and Smith (1981) compared subjects who had masculine self schemas with those who did not (i.e., aschematics) and obtained the same results. (See also Keenan & Baillert [1980] and Kuiper & Rogers [1979].)

Comparable effects were also revealed in a problem-solving experiment by Taylor, Crocker, and D'Agostino (1978). Subjects were presented with problems that contained schema-relevant cues, schema-irrelevant cues, or no cues (control). Problems with schema-relevant cues were solved faster than control problems, and control problems were solved faster than problems with schema-irrelevant cues. Finally, Lingle and Ostrom (1979) conducted a series of investigations showing that subjects who had formed a schema about a target person based on an

earlier judgment (e.g., the suitability of the target for a designated occupation) took significantly less time to make a second similar judgment than a second dissimilar judgment.

Whereas the above findings indicate that schema relevant information is processed faster, other data suggest that attending to schema-relevant material may result in longer processing times than attending to schema irrelevant material. For example, Markus (1977) reported that schematics spent more time processing information when confronted with false feedback on a schema-relevant attribute than did aschematics. Also, Markus, Sentis, and Hammill (1978) found that subjects with "weight schemas" (i.e., obese subjects) took longer to process schema-relevant material than subjects who did not possess a self-schema relating to that dimension. In a conceptually similar study, Rogers, Kuiper, and Kirker (1977) had subjects make a series of ratings on a list of adjectives. For some adjectives they made self-reference ratings (i.e., "Does this word describe you?"); for others they made structural, phonemic, and semantic ratings. Rogers et al. (1977) reported that subjects who rated the adjectives in terms of self-reference were significantly slower in identifying information in a recall task than were subjects who rated the material for its structural, phonemic, or semantic characteristics. Taylor and Crocker (1981) summarized the schematic processing

time literature by concluding that, in general, information which is central, redundant, or evaluatively consistent to a schema will be processed more rapidly than information which is peripheral, novel, or evaluatively mixed.

Evidence that schemas influence the ease of information processing comes primarily from the work of Rosch and her associates on the cognitive representation of semantic categories. For example, it was found that subjects rated prototypic instances of categories as significantly easier to recognize and classify than nonprototypic instances (see Rosch & Lloyd, 1978).

Confidence. Some studies suggest that schema-based processing may also affect the confidence with which persons make judgments. A study by Cantor et al. (1980), which was discussed earlier, revealed that psychiatrists' diagnoses of patients who resembled the prototype for a diagnostic category were made with significantly greater confidence than the diagnoses of nonprototypic patients. Markus and Smith (1981) presented groups of masculine schematic and aschematic subjects with a film depicting a male college student in his dorm. The actor's behaviors consisted of both stereotypic masculine (e.g., crushing a beer can, reading Playboy) and neutral activities (e.g., eating an apple, doing homework). Later subjects were asked to judge whether a list of schema consistent, inconsistent, and irrelevant adjectives were descriptive or

nondescriptive of the actor. Findings demonstrated that schematic subjects were significantly more confident in making "not him" judgments to all types of words than were aschematics indicating that having a schema on one dimension (masculinity) allowed subjects to develop a clearer image of the actor in general and to reject a variety of possible attributes with high conviction. Further, Cohen (1983) reported that subjects were significantly more confident when rating the representativeness of attributes that were highly consistent or inconsistent with an occupation prototype (e.g., waitress) as compared to attributes that were neutral to the prototype. Finally, in a recent study, Ferguson, Rule, and Carlson (1983) found that subjects were more confident of the accuracy of their performance on a word recognition task when they had previously rated the words on their self-descriptiveness (i.e., when the words evoked their self schemas) than when the words had been rated for their descriptiveness of other persons.

As shown in Studies 1 and 2, officers' schemas of offenders represent extensive and structured knowledge about probationers that comprises inferences relating to treatment/supervision strategies and report behavior as well as prognoses regarding future criminal activity. The argument underlying the main hypotheses of the third study was that when an officer has to make judgments about a probationer who "matches" a specific schema, then these judgments

are made easily and quickly because the information required for the judgment is highly organized and readily retrieved. Judgments concerning nonschematic cases, on the other hand, necessitate more cognitive work which entails a thorough search through memory for case-related information, an integration of this information, and a determination of its relevance to the current assessment.

In accordance with the preceding argument and the aforementioned findings, it was predicted that subjects would process schematic cases with greater rapidity, ease, and confidence than nonschematic cases. Schematic processing was examined by asking expert officers to evaluate schematic and nonschematic cases on four schema-relevant dimensions, and to rate the confidence and ease with which these evaluations were made. Also, the time subjects spent in judging the cases was recorded.

It should be noted that Study 3 focused on a property of the stimulus material whereas the main thrust of Studies 1 and 2 was the comparison between expert and novice judges. An implicit assumption of the third investigation was that cognitive representations of offenders are available to experienced officers and therefore they were able to distinguish between the schematic and nonschematic cases presented in the experimental task. Presumably, it is this distinction that produces differences in how information is processed. In other words, because schematic cases

evoke knowledge structures (and nonschematic cases do not) they influence officers' assessments of probationers in a direction consistent with the hypothesized effects.

Participants

Twenty expert probation officers, one-half of whom are assigned to the criminal division and one-half to the municipal division, were selected for the third investigation. The sample was also evenly divided between men and women, and Blacks and Whites. Officers who were subjects in Study 2 were not asked to participate, inasmuch as their experience in the Study and their knowledge of the Study's findings, may have alerted them to the purpose of the third investigation and therefore biased their responses. Data from three of the original respondents were discarded after it was discovered they had been participants in the second study. Additional officers were recruited to replace them.

Materials

On the basis of actual probation files and the findings of Studies 1 and 2, a set of four schematic cases were constructed: "Burglar," "Drug Addict," "Female Welfare Fraud," and "White Collar." These offender types were chosen because they exhibited: (a) a relatively high level of detail in the interview as measured by mean information units; (b) the highest number of correct schema type matches in the card sort task; and (c) the highest degree of cohesiveness on the cluster analysis. Information was

drawn from the schematic descriptions of Study 1, the responses to the post-task questions of Study 2, as well as the files of the "representative" cases that were utilized in developing the stimulus materials for Study 2, in order to create realistic case histories depicting each of the four schema types. The case histories comprised data that were based upon the four "case information items" of Study 2 (demographics, crime type, prior record, social/psychological profile) and were written in a narrative style patterned after actual P.S.I. reports. Hence, cases were prepared in a format intended to enhance their apparent authenticity, thereby increasing subjects' involvement in the experimental task.

To more precisely assess the effect that schematic cases may have upon information processing and officer judgments, two additional sets of comparison cases were created: mixed schematic and real cases. The mixed schematic cases were formed by combining the case histories of the "Suburb Kid" and "Gangbanger" types, and the "Uncle Tom" and "Con Man" schemas.⁸ (Each of these cases were developed in the same manner as the schematic case

⁸Mixed schematic versions were designed to provide a set of comparison cases that were decidedly nonschematic. The cases chosen for mixing were selected on the basis of whether they would yield plausible case histories when combined.

histories.) For example, the demographic and crime type data of the "Suburb Kid" were matched with the prior record and social/psychological profile of the "Gangbanger" to produce the first version of the mixed schema set. The second version of this type was created by combining the first two categories of the "Gangbanger" description (demographics, crime type) with the second two categories of the "Suburb Kid" description (prior record, social/psychological profile). This procedure was repeated with the "Uncle Tom" and "Con Man" schemas to yield a total of four mixed cases. In addition, 20 P.S.I. reports were selected from a sample of approximately 200 that were written during the years 1979-1981.⁹ The files of these 20 P.S.I. cases were then checked for other pertinent materials (e.g., prior record summaries, verifications of employment or education, psychiatric reports, previous probation records). From these sources, 20 real cases were prepared in the same format as the four schematic and four mixed schematic cases.

During the construction of the 28 case histories (four schematic, four mixed, twenty real), an attempt was made to equate the descriptions on such factors as overall length

⁹The sample of P.S.I. reports were copies of actual files that were made available to me during earlier studies which I conducted for the purpose of identifying risk factors among Cook County probationers.

(determined by the total number of words per case), mean sentence length and sentence complexity, level of vocabulary use, and reading time. To provide a more objective confirmation of case comparability, five judges were each asked to evaluate a series of the four schematic, the four mixed, and four different real cases on the aforementioned variables.¹⁰ Their suggestions led to the modification of the structure and wording of nine cases. (It should be noted that any changes that were made did not affect the essential nature or content of the cases.)

Two of the judges were also instructed to: (a) record the reading times for each of the 28 cases, and (b) rate the cases on their verisimilitude (i.e., a judgment of how closely the constructed cases resembled actual probation cases) using a seven-point scale ranging from not at all similar to highly similar, and on their internal consistency (i.e., a judgment of whether the information both within and between the four "case information" categories was plausibly or sensibly organized). A seven-point scale was also used for this rating, ranging from not at all consistent to highly consistent. The range and

¹⁰The judges were employees of the Cook County Adult Probation Department whose job requires them to routinely read through and process case files.

variance of reading times, which were combined for the two judges, were both minimal, suggesting that the lengths of the cases were basically equivalent. Further, the cases were rated highly on realism ($M = 5.85$) and consistency ($M = 5.47$). Analyses of variance yielded no differences between the three types of cases on reading time, consistency, or verisimilitude (all p 's $> .10$). The interjudge agreement as measured by correlations on the ratings was .85 for verisimilitude and .79 for consistency.

Procedure

Each subject was presented with four cases: two schematic, one mixed schematic and one real case. The six combinations of schematic case pairs were randomly combined with pairs of mixed schematic and real cases (which were also randomly matched), such that each schematic case was presented ten times, each mixed schematic case five times, and each real case one time. Twenty sets of four cases were formed. The order of cases within each of the sets was randomized. Prior to each trial, a set was randomly chosen without replacement.

Subjects were told that their task was to carefully read and evaluate four actual criminal cases for the purpose of making a number of judgments that are comparable to the assessments they make in their day-to-day activities as probation officers. The judgments consisted of four questions relating to the "treatment-inference" items of

Study 2 (report behavior, treatment/supervision, prognosis). Also, a question asking the subject to rate the typicality of a case (i.e., how closely the offender resembled other members of his/her caseload) on a seven-point scale, ranging from not at all similar to highly similar, was included as a check on the case manipulation.

Report behavior judgments were measured by rating the offender on both his/her cooperativeness during contacts, and his/her regularity in reporting on assigned days. An assessment of a case's prognosis was made by rating the probationer's likelihood of successfully completing his/her sentence. All ratings were done on a seven-point scale. The item referring to treatment/supervision was presented as an open-ended question that asked the respondent to provide a list of recommended extra-departmental referrals for the case, and to discuss the nature of the counseling and monitoring strategies he/she would employ with the offender, including the frequency and mode of contact. Following each of the inference items were two questions relating to the confidence (a determination of how certain or sure subjects felt their response was accurate or valid), and difficulty (the relative ease with which subjects responded to an item) which subjects experienced in making the case judgments. Confidence ratings were collected on a seven-point scale ranging from not at all confident to highly confident; the rating of judgment

difficulty was also on a seven-point scale that ranged from not at all difficult to extremely difficult. The total time subjects spent in completing the inferential items was recorded for each case. Reading time was not included in this measure. Before respondents evaluated the four cases, they were presented with a practice case to familiarize them with the materials and procedure, and to avoid the possible impact that the novelty of the task may have had on the response time of initial cases.

After completing the four cases, subjects were debriefed about the true nature of the study. In postexperimental interviews, no subjects expressed suspicions about the actual purpose of the investigation or admitted to having any prior knowledge about it. Officers also stated that they were unaware that their response times were being measured. Respondents were thanked for their participation, and asked not to discuss the study with fellow officers until it was finalized. (See Appendices A and B for a sample of the presented case histories of Study 3 and a copy of the case assessment questions and judgment scales.)

CHAPTER IV

RESULTS AND DISCUSSION

Study 1

Types of Schemas

An inspection of interview protocols revealed a set of 10 core schemas, each reported by 13 or more of the 40 participants. These are displayed in Table 2 with an identifying label for each and a synopsis of the data relating to the five content domains. No a priori standard was adopted to delimit a cut-off point for core schemas. However, an obvious break in the number of officers discussing each of the various types appeared at 13, inasmuch as the remaining schemas were provided by 7 or fewer of the respondents. Findings indicated that among the ten core types, "Burglar" (mean information units = 11.85) was the most data-rich category, whereas the "Con Man" (mean information units = 4.8) schema was the least detailed. Secondary schemas (i.e., those described by less than 20% of the respondents) accounted for 17% of the total number of evoked categories.

Number of Schemas

Analyses of results by race, sex, and officer

Table 2

A Summary of the Five Content Domains
Relating to Schema Types

SCHEMA TYPE - BURGLAR

Criteria Attributes - Highly professional; commits only burglaries; criminal habits well learned - performed with confidence and skill; relatively intelligent; small in physical stature.

Report Demeanor - Consistent in reporting; makes an effort to give the officer the impression he is not engaged in criminal activities; changes address often.

Supervision - Close supervision, frequent B. of I. checks, "hard-nosed" treatment during report days; verification of employment/residence at every stated change.

Attributions - Internal - stable - intentional (adoption of criminal lifestyle).

Prognosis - Poor - likely to continue in criminal profession (this is all he knows and he is relatively successful at it).

SCHEMA TYPE - DRUG ADDICT

Criteria Attributes - Noticeably psychologically disturbed; devoid of social, interpersonal skills; the use of drugs permeates his entire existence; very dependent on others (uses people like drugs); physically emaciated, disheveled.

Table 2

DRUG ADDICT (continued)

Report Demeanor - Inconsistent in reporting; frequently late for appointments; lies about drug use.

Supervision - Drug treatment is essential, officer works closely with drug rehab personnel, physical tests for the presence of drugs are mandatory.

Attributions - Internal - stable - intentional (low self-esteem).

Prognosis - Guarded - If drug habit is corrected, criminal behavior will cease.

SCHEMA TYPE - GANGBANGER

Criterion Attributes - Typical juvenile delinquent, a tough kid, usually Latin; membership in street gang gives meaning to life, a sense of self-worth; dress and distinguishing markings reflect gang affiliation.

Report Demeanor - Fairly consistent in reporting but does not always cooperate; important to project a tough guy image; not receptive to recommendations for behavior change.

Supervision - Regular supervision (once per month in-person reporting); confrontation during sessions is important, frequent challenging of gang involvement; resources offered -- GED, employment services.

Table 2

GANGBANGER (continued)

Attributions - External - unstable - unintentional (gang affiliation).

Prognosis - Guarded - Is not likely to become involved in future crime if he ends his gang affiliation.

SCHEMA TYPE - UNCLE TOM

Criterion Attributes - Older Black male, uneducated, generally respects the law but sees crime as the only means of support; has done some prison time; family is important; periodically employed as a menial laborer.

Report Demeanor - Very consistent in reporting, takes direction well, willing to participate in the rehabilitative process.

Supervision - After six months, phone-in, mail-in reporting is allowed; report accommodations are made to insure that the offender's employment is not disrupted.

Attributions - External - stable - unintentional (environmental factors).

Prognosis - Excellent - Is afraid to return to prison.

SCHEMA TYPE - FEMALE WELFARE FRAUD

Criterion Attributes - Young Black woman, willingly manipulated/controlled by men; has children out of wedlock by different fathers; likely to have turned tricks for

Table 2

FEMALE WELFARE FRAUD (continued)

money; a survivor at any cost.

Report Demeanor - Changes address often, generally late on report days, uses the care of children as an excuse for non-reporting.

Supervision - Regular supervision (once per month in-person reporting); restitution payments must be stringently enforced.

Attributions - External - unstable - unintentional (forced by male partners).

Prognosis - Guarded - If she can disengage herself from destructive relationships progress toward rehabilitation may ensue (has capability to live alternate lifestyle).

SCHEMA TYPE - CAREER/CON MAN

Criterial Attributes - A true criminal, amoral, asocial; owns big car, expensive clothes, stable of women; often a pimp; an opportunist, fast talker with plenty of street smarts; long and varied prior record; knows how to work the system, always on the con.

Report Demeanor - Fairly consistent in reporting; extremely deceptive, falsely cooperative, frequently dishonest about his residence; looks for ways to "get around" conditions.

Table 2

CAREER/CON MAN (continued)

Supervision - Close supervision, bi-monthly state and local B of I checks, monthly verification of employment/residence; no reporting accommodations are made; officer vigorously exercises authority, threats of violation are frequent.

Attributions - Internal - stable - intentional (lack of moral development).

Prognosis - Extremely Poor - continued criminal activity and an extended prison sentence are inevitable.

SCHEMA TYPE - VIOLENT/MACHO MAN

Criterion Attributes - Extremely low tolerance for stress, highly prone to violence, a literal powder keg; usually a Latin with alcohol problems; a married man with highly traditional attitudes about family, religion, sex, etc.; believes difficulties can be solved through force.

Report Demeanor - Consistent in reporting; the least manageable on report days; often openly confronts the officer, blatantly verbally aggressive, disrespectful in tone, speech, demeanor.

Supervision - Regular supervision (once per month in-person reporting); resources offered -- alcohol treatment.

Attributions - Internal - stable - intentional (low tolerance for stress).

Table 2

VIOLENT/MACHO MAN (continued)

Prognosis - Guarded - Quite labile, easily instigated to aggress.

SCHEMA TYPE - SUBURB KID

Criterion Attributes - White, young male residing in affluent areas surrounding the city; intelligent, usually attending college or has plans for higher education; lacks responsibility, does crime for kicks; parents rescue him from difficulties.

Report Demeanor - Haphazard report behavior initially, becomes consistent later; parents frequently accompany him to sessions and often call to inquire about progress or to complain about his behavior.

Supervision - Regular supervision (once per month in-person reporting); frequent contacts with family are made; after first year phone-ins are allowed; rules must be explicitly set and enforced; resources offered -- family therapy, psychological counseling.

Attributions - External - unstable - unintentional (peer pressures).

Prognosis - Good - Closely involved with family; has learned lesson.

Table 2

SCHEMA TYPE - DUMB HILLBILLY

Criteria Attributes - Appalachian White male, borderline mental retardate; Southern in dress, speech, demeanor; commits a variety of petty crimes; usually his entire family (e.g., parents, siblings, spouse) becomes involved in criminal activity as a way of life.

Report Demeanor - Report behavior is inconsistent, does not purposely miss sessions but simply forgets appointment times; makes an effort to comply with the conditions of his sentence; demonstrates a desire to please the officer, but often finds it difficult to comprehend his/her directives.

Supervision - Close supervision; a high degree of structuring is indicated; offender requires guidance and direction at each meeting; officer must communicate with the offender at an understandable level.

Attributions - Internal - stable - unintentional (lacks intellect, good judgment).

Prognosis - Poor - Does not have intellectual capacity to avoid destructive behavior.

SCHEMA TYPE - WHITE COLLAR

Criteria Attributes - White, male, mid-30's; genuinely middle-class, an upstanding member of the community, the man-next-door type; an educated, successful person

Table 2

WHITE COLLAR (continued)

with a stable family and employment history; no prior record.

Report Demeanor - Very consistent in reporting; condescending toward the officer, indignant at times, feels he is above the system; expects special privileges.

Supervision - Very loose supervision; officer is careful to protect the confidentiality of the offender; reporting is scheduled to work around the probationer's employment responsibilities.

Attributions - External - unstable - intentional (viewed circumstance as opportunity for easy money).

Prognosis - Excellent - Criminal activity is too costly (may lose family/job, etc.).

assignment showed no differences in the mean number of schemas (all F 's, $p > .20$) and no differences among separate comparisons of the number of subjects describing the 10 schema types (all χ^2 's, $p > .25$). However, a significant difference did emerge between the mean number of schemas presented by expert ($M = 4.1$) and novice ($M = 4.8$) officers, $t(38) = 2.08$, $p < .05$. In addition, there were differences in the percentage of expert versus nonexpert subjects elaborating specific schema types (see Table 3).

A tenable explanation for the greater number of schemas offered by novices may derive from a tendency to relate categories that are more nascent and/or speculative in nature. That is borne out by the fact that 85% of the least reported schemas (i.e., those discussed by less than 20% of the respondents) were provided by nonexperts. These groupings were also the most loosely constructed and comprised the fewest units of information. Experienced officers seem to restrict their conceptualizations of officers to cognitive representations that are more clearly formed, salient, and central to their caseloads. The smaller number of schemas for experts suggests that this group has settled upon a more efficient and parsimonious strategy for organizing probationers and that they may be less inclined to individuate the constituents of their caseloads. The shared superficial characteristics of cases seem not to influence experts as much as nonexperts.

Table 3

Number of Expert and Novice Officers Invoking the Schema Types,
Mean Information Units, and Efficiency Index

Schema Type ^a	Probation Officers		Probation Officers		Efficiency Index ^b
	Expert	Novice	Expert	Novice	
Burglar	$\frac{n}{14}$	$\frac{n}{6^*}$	14.3	9.4	.66
Drug Addict	10	10	12.8	4.7	.37
Gangbanger	12	4*	12.7	8.3	.65
Uncle Tom	10	4	11.7	9.9	.85
Female Welfare Fraud	9	5	9.9	5.7	.58
Career/Con Man	5	9	5.3	4.3	.81
Violent/Macho Man	4	10	6.2	4.2	.68
Suburb Kid	3	11*	8.9	5.1	.57
Dumb Hillbilly	3	11*	9.9	6.1	.62
White Collar	8	5	10.8	11.3	1.05

^aChi-square tests with 1 degree of freedom were performed to determine whether there was a significant difference between the number of expert and novice officers discussing each of the schema types.

^bEfficiency Index = Novice Mean/Expert Mean

*p < .05

Indeed, the schemas mentioned by a proportionately greater number of experienced respondents may be those that have more practical significance in terms of both the frequency with which a "type of offender" is assigned to an officer, and whether or not the categorization contributes to more effective treatment and supervision.

Differences in Schema Types

Differences in the number of separate schema types, as shown in Table 3, may be partially a function of the non-random respondent selection process. The sample of novices consisted of a disproportionate percentage of officers who work in geographic districts in which the "Suburb Kid" and "Dumb Hillbilly" are more likely to be found due to the socioeconomic status and ethnic composition of neighborhoods.

The apparent ease with which experts invoke the "Gangbanger" schema seems to emerge from their learned ability to recognize the subtle trappings and characteristic demeanor of gang members. Gang affiliates, who frequently strive to conceal their group activities from officers, commit a variety of petty crimes which may or may not be related to their membership. Thus, distinguishing the "Gangbanger" from a common misdemeanant is often difficult for the novice officer. Only 25% of the non-experts, compared to 80% of the experienced officers, were able to detail the identifying markings, speech, dress,

etc. of a typical gang member. A similar circumstance obtains for the burglary schema. Initially, burglars as a group appear to be a heterogeneous collection of criminals whose only point of similarity is the offense for which they were sentenced. Data suggest that increased contact with these probationers has led experts to identify essential underlying threads of commonality which synthesize a loose collection of offenders into a discrete, verifiable category.

Richness of Schemas

Examination of subjects' responses demonstrated further differences between novice and expert officers. Results indicated that experts presented a significantly greater number of mean information units ($\bar{M} = 10.94$) than did nonexperts ($\bar{M} = 6.22$), $t(38) = 5.68$, $p < .01$. This finding suggests greater schema complexity and richness among more experienced probation officers when compared to a group with less than three years of service. A simple "efficiency index" was created in order to yield direct comparisons between experienced and novice officers on each of the schema types. It was computed by the following formula:

$$EI = \frac{NE}{E}$$

where NE equals the mean information units of the nonexperts and E equals the mean information units of the

expert group.

Inspecting the results of this analysis in Table 3, it can be seen that in 9 out of 10 instances, novices provided a less complete description of the probationer schemas. Further, among the experienced group there was a strong positive relationship ($\underline{r}(8) = .81, \underline{p} < .01$) between the number of respondents invoking a schema type and the mean number of information units corresponding to the type. The correlation in the novice group was also significant but in the negative direction ($\underline{r}(8) = -.79, \underline{p} < .01$). This result is consistent with the earlier finding that novices tend to discuss schemas that are less fully developed or firmly constructed. In addition, it may indicate that nonexperts were more sensitive to the demand characteristics of the investigative procedure as reflected by their apparent concern with providing the interviewer with as many categories as possible irrespective of whether the groupings were sufficiently detailed. Moreover, the schemas evoked most frequently among the novice group (i.e., "Dumb Hillbilly", "Suburb Kid") are those that represent relatively recent additions to caseloads. (This is substantiated by officers' reports and department statistics.) Intuitively, one would expect these schemas to be the least elaborate. Perhaps these categories were also available to experts, but they were unwilling to discuss them because of their lack of richness.

A stepwise multiple regression analysis of information clearly supports the above conclusions. The results given in Table 4 show that response position, expertise, and schema type emerge as significant predictors of mean information units. These three variables explain more than 60% of the variance in schema length ($R = .78$, $F(11,29) = 19.91$, $p < .001$). Again, officers with greater experience provided more elaborate schemas. It was also revealed that the ten core schema types differed significantly in richness. Moreover, there is strong evidence suggesting a serial position effect on schema density. That is, schemas that were evoked early in the order of presentation contained much greater detail than those elicited at later stages in the interview. It is important to note that after controlling for schema type and serial position, experienced officers still give significantly richer schemas than novices ($F(1,29) = 39.13$, $p < .001$).

To summarize, novice respondents presented schema types that were relatively simple and impoverished. In contrast, the schemas of experienced probation officers may be described as a rich, interrelated network of information relating probationer traits and supervision strategies. Moreover, the details of expert schemas were organized in a systematic fashion. Hence, it appears that experienced officers not only possess greater knowledge of prototypical offenders, but they also make more

Table 4
 Stepwise Regression Analysis of the Variables
 That Affect Schema Richness

<u>Variable in order of insertion into regression equation</u>	<u>Multiple R</u>	<u>Beta</u>	<u>F</u>
Schema Type ^a	.56	a	7.40**
Response Position	.71	-.516	70.96**
Years Employed (Expertise)	.78	.355	39.13**

^aSchema type was entered as a set of nine dummy variables preceding the inclusion of the other variables.

**p < .001

connections between separate pieces of schematic data. It was my impression that novices related probationer characteristics to treatment in a very simple-minded manner, whereas officers with expertise did so with a high degree of sophistication and facility, indicating both a fundamental difference in schema use and the greater descriptive utility of experienced respondents' categorizations.

Experts' schemas were more clearly articulated, higher in differentiation and vividness, elaborated with increased certainty, and were volunteered more readily and spontaneously (i.e., fewer probes were required to elicit details and less time was spent in evoking schemas) suggesting greater cognitive availability. Further, experienced probation officers provided more concrete examples of present and/or past members of their caseloads who instantiated the schema types. Nearly twice as many experts mentioned actual schematic cases when compared to nonexperts, ($\chi^2(1, N = 40) = 10.25, p < .01$).

Study 2

Sorting Strategies

All subjects treated the task as meaningful, and reported that the information presented in the study realistically portrayed the types of probation cases found in Cook County. Moreover, officers indicated that the task called upon many facets of actual probation work. For

example, when assigned a new case, their objective is to make predictions about future risk and potential for rehabilitation by evaluating essentially the same set of case variables contained in the cards (demographics, crime type, prior record, etc.). It was the investigator's impression that probation officers approached the task more systematically and studiously than did clerical personnel; the latter appeared to handle the information with less confidence, control, and deliberation. Officers' apparent "ego involvement" in the procedure stemmed from a common concern that their performance would somehow reflect their competence. In fact, many officers quipped that the study was a "disguised test" of their abilities.

Officers began constructing a large number of cases with current offense, and followed with demographics and prior record, respectively. Of the 160 "offender schemas" composed by probation officers, offense was used first in 93%, while 60% contained the offense-demographics-prior record sequence as the first three information items. Table 5 shows the median order of use for the seven information categories. Officers in Cook County focus primarily on the monitoring and control of cases. Hence, the triad of offense, record, and demographics is highly informative (i.e., salient) because these variables are deemed fundamental in making assessments of future criminality (Lurigio, 1981). In addition, the above three factors

were often mentioned as critical elements in the criterial attribute domain of Study 1; therefore, they frequently represent the central or defining pieces of information in an offender schema. Offense and prior record were also shown to be essential items in a similar study by Carroll and Wiener (1982). In their investigation, parole decision makers constructed cases in a card sorting task by generally beginning with current offense, and then adding criminal record and sentence. In contrast, as reported in Table 5, no consistent trend in the ordering of information was found in an analysis of the clerical staffs' sequences of card placements.

There was a basic difference in the kind of strategy that the officer and clerical groups employed in constructing the cases. Seventy-five percent of the officers sorted the cards in a vertical orientation, i.e., by completing one column before moving to the next; whereas eighty percent of the clerical staff members organized the information horizontally, i.e., by placing the cards from left to right in sequential rows. (It should be noted that the five officers who adopted a horizontal strategy were novices.) This finding suggests that probation officers may have had a clear or well-developed conceptualization of a case and its components before placing the cards on the board. When questioned about their card sorting approaches, a large percentage of officers (80%) reported that they

Table 5

Median Order of Use for Information Categories

<u>Information Category</u>	<u>Officer</u>	<u>Clerical</u>
Crime Type (Offense)	1.03	4.17
Demographics	2.33	3.44
Prior Record	3.13	4.88
Social/Psychological Profile	4.41	3.38
Treatment	5.48	4.67
Report Behavior	5.75	3.87
Prognoses	6.95	4.28

formed the categories case-by-case, as opposed to making a series of separate or independent matches between any two or more of the information cards. To illustrate, consider these statements by one of the officers:

I was able to see the entire version of a case before I put it together. It was like I had a picture of these cases in my head and the cards were the different parts of the pictures. All of them fit together into a complete whole for each case. I didn't feel like I was just stringing together a bunch of facts. (Subject 017)

In contrast, clerical personnel, and half of the novice officers ($N = 5$), built their cases on a piecemeal basis by organizing the cards in a seemingly hierarchical fashion. That is, they distributed all seven items from one category across offenders and proceeded to the next category. The differential sorting strategies of officers and clerical workers may indicate that the former processed the information in a top-down or conceptually-driven manner (i.e., they were guided by a superordinate description or abstract category). In other words, officers imposed their knowledge structures (schemas) on the data in order to ascertain how the case variables were related in the different offender groupings. Their high-level knowledge determined their interpretation of the low-level perceptual units (information cards). The strategy of the clerical subjects and novice officers, on the other hand, was controlled by data-driven or bottom-up processing (i.e., the information cards served as the foundation upon which their

categories were constructed). In sum, officers' typologies were a reflection of their preexisting schemas, whereas clerical categorizations were foremost a function of the presented information, and emerged after the cases were formed.

Task Accuracy of Probation Officers and Clerical Staff

For each subject, the number of correct schema type matches (i.e., accuracy) was computed for each of the eight schematic cases. This was done by comparing the cases constructed by the participants (i.e., obtained sorting patterns) with those that were created to portray the schema types found in Study 1 (i.e., a priori categorizations). In addition, a set of 40 "random subjects," which provided accuracy scores analogous to actual subjects' scores (i.e., each random subject produced a "number of correct matches" score for each schema type), was obtained via a computer program that generated random combinations of the 56 information cards such that each random subject's cases had one card from each information category. Random subjects' scores were compared to actual subjects' scores to test whether the groups (officer and clerical) performed significantly better than chance.

A two-way repeated measures analysis of variance (ANOVA: Group Membership [officer vs. clerical] x Schema type [burglar vs. drug addict, etc.] was performed on the accuracy scores. As expected, the effect of group

membership was highly significant, $F(1,38) = 59.02$, $p < .001$, indicating that, overall, officers ($M = 4.8$) were more accurate than non-officers ($M = 3.1$) in completing the task. This finding demonstrates that the effort to remove any inherent connections between different information card statements was generally successful. That is, it appears that subjects were unable to construct the cases solely on the basis of any logical or lexical associations between the cards. Further, the finding confirms the validity of schemas and clearly suggests that officers' categorizations represent more than a common-sensical organizing of separate pieces of case information.

A significant main effect of schema type, $F(7,266) = 15.70$, $p < .01$ was also found. This main effect, however, was qualified by a significant Group Membership x Schema Type interaction, $F(7,266) = 5.07$, $p < .01$. Simple main effects tests were conducted to examine the nature of this interaction (Winer, 1971). As shown in Table 6, the analysis revealed that officers were significantly more accurate than clerical workers in reproducing six of the eight schematic cases, and were slightly more accurate on the other two. Also, both officers, $F(1,38) = 167.22$, $p < .001$, and clerical staff persons, $F(1,38) = 33.40$, $p < .01$ constructed the cases more successfully than a random combination of the cards. Finally, there were reliable differences among the eight schema types within both the officer,

Table 6

Mean Number of Correct Schema Type Matches

<u>SCHEMA TYPE</u>	<u>GROUP</u>	
	<u>Officers</u>	<u>Clerical</u>
Burglar	5.35	3.65**
Drug Addict	5.65	3.05**
Gangbanger	4.05	3.30
Uncle Tom	3.50	2.75
Female Welfare Fraud	5.80	3.70**
Suburb Kid	4.70	2.95**
Dumb Hillbilly	3.40	2.50*
White Collar	5.95	3.30**

NOTE. Simple effects tests were performed to compare the officer and clerical groups. See Winer (1971) for an explanation of the procedures for pooling heterogeneous sources of variance and estimating degrees of freedom in simple effects tests following significant interactions in a repeated measures ANOVA.

* $p < .05$

** $p < .01$

$F(7,222) = 21.63$, $p < .01$, and clerical, $F(7,266) = 2.90$, $p < .01$ groups. Tests on the differences between all possible pairs of means were done by the Newman-Keuls procedure (Winer, 1971), and are reported in Table 7. Officers seem to be most skillful at recreating cases that are either highly salient because of their distinctiveness or low prevalence ("White Collar," "Female Welfare Fraud") or highly problematic, i.e., require close surveillance or intensive treatment ("Burglar," "Drug Addict"). Moreover, two of the four schema types with the greatest number of correct matches, "White Collar" ($M = 5.95$) and "Burglar" ($M = 5.35$) were also the two most detailed schemas evoked in Study 1.

An examination of the mean accuracy scores displayed in Table 6 reveals that "Female Welfare Fraud" ($M = 3.70$), "Burglar" ($M = 3.65$), and "White Collar" ($M = 3.30$) are also the categories of probationers most correctly reproduced in the clerical group. A possible explanation of this finding is that these offenders bear a strong resemblance to popular conceptions of various "criminal types" as depicted in the media. Indeed, 70% of the clerical participants mentioned that television, newspapers and/or movies were the primary source(s) of their criminal stereotypes. For example, the "White Collar" probationer is typically described as a middle-class, educated White who opportunistically commits a first-time offense, cooperatively completes

Table 7

Summary of the Newman Keuls' Test for Differences Between
the Mean Number of Correct Schema Type Matches

SCHEMA TYPE	SCHEMA TYPE							
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1. Dumb Hillbilly	-	ns	ns	**	**	**	**	**
2. Uncle Tom		-	ns	**	**	**	**	**
3. Gangbanger			-	ns	**	**	**	**
4. Suburb Kid				-	ns	**	**	**
5. Burglar					-	ns	**	**
6. Drug Addict						-	ns	**
7. Female Welfare Fraud							-	ns
8. White Collar								-

NOTE. Only those differences found in the officer groups are presented. Within the clerical group, "Dumb Hillbilly" differed from "Female Welfare Fraud" and "Burglar" at the .05 level.

**p < .01

his sentence and is no longer a threat to society. In contrast, the "Burglar" epitomizes the consensual notion of a hardened criminal, i.e., he is a young, Black male, the product of an impoverished environment, who has a lengthy criminal record and no respect for authority, dispassionately views illegal activity as a profession, and who will likely spend the majority of his life incarcerated. The "Female Welfare Fraud" type is a clear example of the dependent, Black ghetto mother who struggles to fend for her children while falling prey to an unscrupulous and manipulating man. A majority of clerical subjects (75%), who were able to provide a label for their constructed cases, described one or more of the above groupings.

Expert and Novice Probation Officers' Accuracy

Probation Officers' accuracy scores were further analyzed with a 2 x 2 x 8 repeated measures analysis of variance with Expertise (expert vs. novice) and Assignment (criminal vs. municipal) as between-subjects factors and schema type (burglar vs. drug addict, etc.) as a within-subjects factor. Results failed to demonstrate a main effect of assignment ($F < 1$) or a significant Expertise x Assignment interaction ($F < 1$). These findings are consistent with the evidence of Study 1 which showed no differences between municipal and criminal officers on schema richness or number. However, the analysis did yield a significant main effect of expertise, $F(1,16) = 8.84$, $p <$

.01, indicating that experienced officers ($\underline{M} = 5.26$, $\underline{SD} = 2.11$) were able to reproduce the cases with greater accuracy than novice officers ($\underline{M} = 4.33$, $\underline{SD} = 4.83$). Additionally, a significant main effect of schema type emerged, $\underline{F}(7,112) = 16.51$, $\underline{p} < .01$; however, it was qualified by two significant interactions: Assignment x Schema Type, $\underline{F}(7,112) = 3.29$, $\underline{p} < .01$ and Expertise x Schema Type, $\underline{F}(7,112) = 2.11$, $\underline{p} < .05$. The three-way interaction of Assignment x Expertise x Schema Type did not approach significance ($\underline{F} < 1$).

Simple effect comparisons were performed to examine the two-way interactions. As can be seen in Table 8, municipal and criminal division officers differed in accuracy on two of the eight schematic groupings: "Gang-banger" and "Suburb Kid." These differences can be accounted for by the differential occurrence of offender types in caseloads. Simply stated, criminal division officers are more likely to supervise "inner city Hispanics" and "housing project Blacks"--two groups that tend to become involved in gang membership and activity. Municipal division officers, on the other hand, are assigned a comparatively larger number of suburban offenders and are therefore more likely to encounter probationers whose criminal and social backgrounds are comparable to the "Suburb Kid" type (i.e., middle class, White, educated). An obvious conclusion is that officers develop stronger

Table 8

Mean Number of Correct Schema Type Matches for the
Officer Group by Expertise and Assignment

<u>SCHEMA TYPE</u>	<u>Experience</u>		<u>Assignment</u>	
	<u>Expert</u>	<u>Novice</u>	<u>Criminal</u>	<u>Municipal</u>
Burglar	6.1	4.6*	5.3	5.4
Drug Addict	6.4	4.9*	6.0	5.3
Gangbanger	3.9	4.2	5.0	3.1**
Uncle Tom	4.2	2.8*	3.5	3.5
Female Welfare Fraud	6.3	5.3	6.0	5.6
Suburb Kid	4.6	4.8	4.1	5.3*
Dumb Hillbilly	4.0	2.8*	3.2	3.6
White Collar	6.6	5.3*	5.7	6.2

* $p < .05$

** $p < .01$

schemas for offenders with whom they have direct contact and experience during assessment, monitoring, and treatment. In addition, experts appear to be more accurate in identifying categories of probationers that are less recognizable as discrete groupings ("Burglar," "Drug Addict," "Uncle Tom," and "Dumb Hillbilly") (see Table 8). Similar findings emerged in Study 1, where it was shown that experienced officers evinced a superior ability to pool together a loose collection of cases in forming integrated schemas of offenders. Finally, there were significant differences between schema types within both the expert and novice groups. These differences were analyzed with the Newman-Keuls procedure and are presented in Table 9.

The analysis of officers' accuracy scores was completed by comparing the number of errors made by experts and novices on each of the seven information categories. Initially, the categories were dichotomized into two sets. The first consisted of "case information items" that basically identify who the offender is (demographics, crime type, social/psychological profile and past record); the second comprised "treatment-inference items" that either predict offenders' receptivity to officers' rehabilitative efforts (report behavior and prognoses) or recommend appropriate supervision levels and treatment interventions for the different criminal types (treatment). Although all

Table 9

Summary of the Newman Keuls' Test for Differences Between Mean Number of Correct Schema Type Matches Within the Expert and Novice Officer Groups

<u>SCHEMA TYPE</u>	<u>EXPERTS</u>							
	<u>Schema Type</u>							
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1. Gangbanger	-	ns	ns	ns	**	**	**	**
2. Dumb Hillbilly		-	ns	ns	**	**	**	**
3. Uncle Tom			-	ns	**	**	**	**
4. Suburb Kid				-	**	**	**	**
5. Burglar					-	ns	ns	ns
6. Female Welfare Fraud						-	ns	ns
7. Drug Addict							-	ns
8. White Collar								-

<u>SCHEMA TYPE</u>	<u>NOVICES</u>							
	<u>Schema Type</u>							
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>
1. Uncle Tom	-	ns	**	**	**	**	**	**
2. Dumb Hillbilly		-	**	**	**	**	**	**
3. Gangbanger			-	ns	ns	ns	*	*
4. Burglar				-	ns	ns	ns	ns
5. Suburb Kid					-	ns	ns	ns
6. Drug Addict						-	ns	ns
7. Female Welfare Fraud							-	ns
8. White Collar								-

*p < .05

**p < .01

the components of an offender schema are presumably developed and modified through officer experience, the information represented by the "treatment-inference items" is based more directly upon the actual supervision of probationers than the information contained in the case information categories. Hence, it was predicted that experts would be more accurate than non-experts in matching the "treatment-inference items" because of their extensive contacts with a greater number and variety of offenders.

To test this hypothesis, it was necessary to be relatively certain that a schema had been invoked before making a determination of comparative accuracy. Therefore, only those schemas in which officers' had matched three or all of the "case information items" were included in the analyses.¹¹ In order to account for overall levels of accuracy, separate t-tests were conducted on subjects' "treatment-inference item" scores for schemas that contained three "case information item" matches and for schemas that contained four "case information item" matches.

¹¹"Case information items" represent the central or defining elements of an offender category in a manner analogous to the criterial attribute domain of Study 1. Hence, one may reasonably conclude that officers who have matched those items for a particular case are actually invoking the same schema. This provided a reference point for comparing the accuracy of expert and novice officers on the "treatment inference items."

Consistent with the prediction, experts were more accurate than novices in placing "treatment-inference items" in the correct case for both the three, $t(18) = 2.71, p < .05$ and four, $t(18) = 5.25, p < .001$ "case information item" schemas.

An additional analysis was performed to test for a difference in the accuracy of expert and novice officers in matching "case information items." The number of constructed cases that contained three or four correctly placed "case information items" was recorded for each officer. The results of a t -test comparing the mean number of these cases did not yield a significant difference between the expert ($M = 5.15$) and novice ($M = 4.97$) groups, $t(18) = 1.35, ns$. This finding supports the above conclusion that the superior performance of experienced officers derives from their differentially greater skill to accurately identify "treatment-inference item" matches and not "case information item" matches.

Sorting Times

The length of time in minutes that subjects spent completing the task was analyzed by t -tests. Results revealed that officers ($M = 36.5$ min., $SD = 4.47$) took more time in sorting the cards than non-officers ($M = 21.65$ min., $SD = 5.38$), $t(38) = 6.15, p < .01$. Also, it was found that novice officers ($M = 29.10$ min., $SD = 4.15$) performed significantly faster than expert officers ($M = 43.50$ min.,

$SD = 4.77$), $t(18) = 5.21$, $p < .01$. Perhaps, these data lend further credence to the notion that probation officers (especially those with more experience) were invoking schemas of offenders while sorting the cards, whereas clerical personnel were combining the facts by haphazardly matching the information categories, or on the basis of more general or popular conceptions of criminals. Accordingly, officers' completion times were increased because both the input (case variables) and their data base of experience (schemas) required processing (cf., Markus, 1974). In line with the findings of Study 1, it is presumed that novices' schematic representations are less extensive than experts', and therefore their processing time was also less lengthy than experienced officers.

One could alternately argue, however, that schema evocation should have resulted in faster sorting times. Indeed, a number of studies suggest such an outcome (see Taylor & Crocker, 1981). The card sorting procedure presented subjects with a novel challenge which has no parallel in their regular duties. Hence, they searched their memories for pertinent information and strategies that might have assisted them in structuring and completing the task. Officers (especially experts) had more knowledge to explore, more options to consider, and more relevant experiences to examine when compared to clerical staff members. If the task had required subjects to recognize

or differentiate between types of cases or to make familiar judgments about offenders, then it would be more likely that possessing schemas would lead to quicker responses. Finally, officers' longer completion times may simply have been a function of greater evaluation apprehension (i.e., because officers had more ego-involvement in the task they took longer to complete it).

Cluster Analysis

Subject-generated card sortings were also subjected to a categorical cluster analysis that organized constructed cases into similar groupings--with each subject providing one case per grouping (SAS Manual, 1982). Results revealed that officers' response patterns optimally clustered into nine offender configurations (schemas) that evidenced a significant degree of associative cohesiveness within clusters and a small degree of similarity between clusters (cubic clustering criterion (CCC) = 21.21, $R^2 = .35$). In contrast, the analysis yielded negative CCC scores for clerical subjects' data, suggesting poor or "loose" groupings of cases (i.e., there was high within cluster variance and low between cluster variance) (SAS Manual, p. 420).

An attempt was made to identify the underlying schemas embodied in the resultant nine clusters of offender types by (a) comparing the cases contained in each of the groupings with the set of schematic cases that were created

from probation files; and (b) examining officers' responses to the post-task questions which asked them to label and describe their categorizations. As shown in Table 10, three new schema types were found: "Project Black," "Barroom Brawler," and "Shoplifter." In addition, four of the core schemas uncovered in Study 1 were validated: "White Collar," "Female Welfare Fraud," "Drug Addict," and "Burglar." I was unable to clearly define the two remaining clusters.

Summary and Conclusions

The results of the second study clearly demonstrate that the schemas of offenders found in the first investigation were not merely an artifact of the methods employed to collect and interpret the data. Officers' apparent facility at reconstructing the cases, coupled with the strong groupings that emerged from the clustering procedure, suggest that stereotypic, consensual categories of probationers may serve as a framework for the assessment and treatment of caseloads in Cook County. The validity of these categories was given further support by the "control group's" inability to assemble the types as accurately as officers, and by the failure of the group's constructions to form any discernible clusters. Hence, there is a firm basis to conclude that probation officers' schemas represent more than simple interfeature associations (i.e.,

Table 10

A Description of the Offender Schemas Suggested
by the Cluster Analysis

SCHEMA TYPE - BARROOM BRAWLER

Criterion Attributes - Ethnic White; blue collar conservative; hates members of minority groups; concerned with preserving the "purity" of his neighborhood; has a drinking problem that leads to assaultive behavior; married with children (may be abusive).

Report Demeanor - Consistent in reporting; generally cooperative but may be boisterous and aggressive.

Supervision - Regular supervision (once per month in-person reporting); discussion of alcohol abuse; resources offered -- alcohol treatment, family therapy.

Attributions - Internal - stable - intentional (drinking caused by low self-esteem; proving of masculinity is important).

Prognosis - Fair - If alcoholism is recognized and treated the offender will not become involved in future incidents.

SCHEMA TYPE - PROJECT BLACK

Criterion Attributes - Young, Black male, resides in housing project; "cocky" attitude, uneducated; involved in gang activity, "hates police"; can be very dangerous;

Table 10

PROJECT BLACK (continued)

extensive juvenile record; has spent time in jail.

Report Demeanor - Very inconsistent; likely to be violated for nonreporting; arrogant and challenging.

Supervision - Close supervision; monthly local B of I checks; officer must set strict rules/limits throughout the sentence; offender should be ordered to appear before the Judge if uncooperative.

Attributions - External - stable - intentional (victim of society, product of fatherless home and "ghetto mentality").

Prognosis - Extremely poor - Crime is his only means of survival; gang influence is powerful.

SCHEMA TYPE - SHOPLIFTER

Criteria Attributes - Female mid-thirties; unemployed, drifter; has been involved with drugs and prostitution, lengthy criminal record; unkempt.

Report Demeanor - Consistent in reporting, manipulating; changes address often; emotionally labile, histrionic.

Supervision - Regular supervision (once per month in-person reporting); if noticeably improved or employed after 6 months-1 year, may report by mail for remainder of sentence; resources offered--employment service.

Table 10

SHOPLIFTER (continued)

Attributions - Internal - stable - intentional (emotional problems, immaturity, unable to delay gratification, impulsive).

Prognosis - Fair - If a steady job has been secured and a trusting relationship has been established with the officer, she will not readily resort to criminal behavior.

semantic connections) or common-sensical combinations of separate pieces of case information.

Additional evidence that confirms the validity of schemas (although admittedly highly inferential) comes from the different strategies that subjects adopted to organize the information cards. It appears that officers approached the task by imposing their knowledge structures on the materials in a manner which may be analogous to the cognitive activity that takes place during the evaluation of offenders for referral and supervision. That is, when officers are assigned a new case, they process the information contained therein by starting with conceptualizations of what may be present and continuing with a close examination of the case for data consistent with those conceptualizations. Officers' preexisting schemas of probationers guide the search for data until the particular characteristics of the case invoke one of their available categories. It is assumed that if a category is not readily found, a new one is developed or an old one is modified (See Taylor, 1981 for a discussion of how stereotypes change).

Consistent with the findings of Study 1, it was revealed that experienced officers were significantly more accurate than novices in recreating five of the eight schematic cases. This differential accuracy was primarily a function of the expert's ability to match the "treatment-

inference" variables (report behavior, treatment and prognoses). Officers' knowledge of these areas derives from two sources: (a) experience in supervising cases through the entire range of an offender's sentence, and (b) practice with making decisions and receiving feedback about the appropriateness of monitoring levels and treatment interventions. As novice officers follow an increasing number of cases from inception to termination (i.e., gain experience), they begin to form more "complete" and elaborate schemas that contain information regarding case outcomes as well as probationer behavior and future criminality. Also, it was shown that officer assignment (criminal vs. municipal) can affect the type of offender categories that are developed. In other words, officers are more likely to possess schemas for criminals who occupy their caseloads (i.e., those with whom they have had direct contact).

In summary, the results of Studies 1 and 2 provide convergent support for the existence of probationer schemas. The next and final stage in this series of investigations examined the effect of offender schemas on information processing and case judgments.

Study 3

Confidence, Ease, and Typicality Ratings

Each subject's confidence and difficulty ratings were summed across the four judgments for each case, and

analyzed with one-way repeated measures analyses of variance. Consistent with the predicted result, officers' ratings of confidence were significantly higher when judging schematic cases ($\underline{M} = 6.44$) than when judging mixed schematic ($\underline{M} = 5.04$) or real ($\underline{M} = 4.85$) cases, $\underline{F}(2,38) = 32.41$, $p < .01$. Post-hoc tests using the Newman-Keuls procedure revealed no differences between the mixed and real cases. However, officers' ratings of confidence for both the mixed and real cases were significantly lower than their ratings of the schematic cases. The pattern of findings for the difficulty ratings was similar. Officers rated schematic cases ($\underline{M} = 1.59$) significantly easier to judge than both mixed cases ($\underline{M} = 2.30$) and real cases ($\underline{M} = 1.94$), $\underline{F}(2,38) = 7.98$, $p < .01$. Post-hoc tests indicated that there was no difference between schematic and real cases; the mixed cases, however, were rated significantly more difficult to judge than both schematic and real cases. Additional analyses were performed to test for differences in confidence and difficulty ratings among the four schematic and mixed cases. No significant differences were found (all $\underline{F}s < 1$, ns.).

Perhaps the mixed schematic cases led to more problematic judgments because they portrayed more novel or complicated histories and/or contained information that may have been less expected or less consistent than the information presented in schematic cases (which by

definition contain information that "typifies" a particular type of probationer) or in real cases (which basically comprised a sample of ordinary or common offenders). Results revealed that officers rated the schematic cases ($\underline{M} = 6.45$) as being significantly more typical than either the mixed cases ($\underline{M} = 4.65$) or the real cases ($\underline{M} = 4.85$), $F(2,38) = 27.35$, $p < .01$. Post-hoc comparisons of these means yielded significant differences between the schematic cases and both the mixed schematic and real cases; however, there was no statistically detectable difference between mixed and real cases. Finally, as expected, ratings of difficulty and confidence were negatively correlated for each of the three types of cases (all p 's $< .05$).

Report Behavior and Prognosis Item Responses

Studies 1 and 2 revealed that officers' schemas of probationers contain inferences regarding report behavior and prognoses. If subjects were activating these schemas during the judgment task, it seems reasonable to expect that the ratings of schematic cases would be more consistent than the ratings of mixed schematic cases inasmuch as the former were guided by shared pre-existing cognitive structures whereas the latter were essentially a product of officers' idiosyncratic responses to relatively unfamiliar offender histories. To test this hypothesis, each subject's summed ratings of the two report behavior items and the single rating of the prognosis item were recorded

for each of the four schematic and four mixed schematic cases. The variances of the ratings were computed across subjects for each case and were then pooled within each of the two sets (Hays, 1973). F-tests were performed to determine whether the variances in the ratings of schematic and mixed schematic cases were different. Results indicated that judgments of report behavior for schematic cases were significantly less variable ($\sigma^2 = 3.21$) than judgments of report behavior for mixed schematic cases ($\sigma^2 = 7.41$), $F(16, 36) = 3.21$, $p < .05$. A significant difference in the variances of the prognosis judgments was also found. Again, the ratings of schematic cases evidenced significantly less variability ($\sigma^2 = 2.89$) than the ratings of mixed schematic cases ($\sigma^2 = 6.47$), $F(16, 36) = 2.24$, $p < .05$. These data suggest that officers rated schematic cases by drawing upon a common knowledge base which represents particular types of offenders.

Treatment/Supervision Item Responses

Subject's written responses to the treatment/supervision item were examined by computing the mean number of information units for each type of case. An information unit was defined in the same manner as in Study 1. It was hypothesized that the assessments given for schematic cases would be more elaborate (i.e., contain more information units) than those given for nonschematic cases. As suggested in Study 1, officers have developed a well-

articulated treatment plan as a central and highly accessible component of an offender schema. Hence, treatment inferences relating to schematic cases are presumably derived from a storehouse of knowledge and prior expectations regarding appropriate intervention strategies for particular categories of probationers, whereas the inferences made concerning mixed schematic and real cases would be formulated primarily or solely on the basis of the information presented in the case itself, and therefore would be less complete or extensive. Results failed to confirm this prediction. There were no differences in the mean number of information units between schematic ($\underline{M} = 6.55$), mixed schematic ($\underline{M} = 6.25$), and real cases ($\underline{M} = 6.70$), $\underline{F}(2,38) < 1$. This finding may be a reflection of subjects' attempts to respond to each case as fully as possible. Again, officers may have viewed the task (cf., Study 2) as an occasion to test or demonstrate their "expertise"; hence, they made a deliberate effort to be thorough on the treatment/supervision item for every case.

Response Time

Response time for each case was defined as the interval between the presentation of the judgment items and the subject's signal that he/she had completed the items. Time was recorded to the nearest minute. The data strongly supported the hypothesis that schematic cases ($\underline{M} = 3.80$ min.) would be processed more quickly than mixed schematic ($M = 6.90$ min.) and real cases ($\underline{M} = 5.20$ min.), $\underline{F}(2,38) = 34.68$,

$p < .01$. Follow-up comparisons showed that schematic cases were processed more rapidly than both mixed schematic and real cases, and that real cases were processed more rapidly than mixed cases. As previously discussed, it appears that mixed schematic cases were viewed as more problematic than either schematic or real cases. This is consistent with the earlier finding which revealed that subjects rated the mixed schematic cases as more difficult to judge than both of the other two types of offender histories.

Pearson product-moment correlations were computed between response times and subjects' ratings of difficulty and confidence. A significant positive relationship was found between response times and ratings of difficulty for each of the three types of cases (all p 's $< .05$). Further, results indicated that officers were more confident when they responded more rapidly to schematic cases, $r(38) = -.24$, ns, whereas for nonschematic cases they were more confident when they took longer to make judgments, $r(38) = .61$, $p < .05$. These correlations are significantly different, $z = 2.00$, $p < .05$. This difference is explicable under the following assumptions: If officers have previously stored inferences regarding schematic cases, judgments that are related to those inferences could be made quickly and confidently (cf., Pachella, 1974). In contrast, because officers presumably have not formed assessments about nonschematic cases, they may have first searched

their memory for judgment-related information for the decisions at hand. The time required for this process is a positive function of the extensiveness of the information search. If this is true, and if subjects report greater confidence in judgments that are based on a more thorough search of stored information and thus require more time to complete (cf., Sternberg, 1969), then the positive correlation between confidence and response time for nonschematic cases would be expected.

Summary and Implications

In summary, the evidence reported in Study 3 suggests that schemas of probationers not only function to organize and structure knowledge, but they also affect the processing and assessment of cases. A schema-based model of offender judgments is grounded in the principles of cognitive economy and efficiency. Along with descriptive information about criminals, schemas carry information relating to effective supervision strategies, and predictions of expected report behavior and the risk of future criminal involvement. These bits of information, accessed via the schema itself when it is called up to assist in the examination of a case, are available in memory to serve as mediators for such routine officer decisions as changing report modality or frequency, filing petitions for violation, or selecting useful counseling techniques.

Hence, judgments that relate to schematic cases are made more rapidly and with greater ease and confidence, because officers are retrieving already-made inferences rather than retrieving a set of relevant facts and making an entirely new judgment based upon those facts. This conclusion is also supported by the correlation and variance data.

In addition, the third study points to the problems inherent in constructing aschematic stimulus materials in the area of social cognition--a task for which existing methods are of limited value. The complex and highly varied nature of cases makes it extremely difficult to create histories that are entirely devoid of schema-evoking content. This is further complicated by the overlapping, "fuzzy" nature of offender categories, and by the nature of schema variables themselves which are represented as a probabilistic range of values. Therefore, one is faced with the challenge of developing an aschematic version of a schematic case which often does not exist or cannot be plausibly created. It is likely that "schemanness" is a property that is portrayed on a number of multi-variable continua. Hence, there is always the possibility that as a value becomes less schematic on a variable in one category, it may move closer to the schematic value of that variable in another category. An interim solution to the problem was to use two different kinds of nonschematic comparison cases, one set created by combining schematic

cases and a second set selected to be representative of actual cases. Indeed, the mixed cases proved to be difficult to judge as shown by ratings and response times. Nevertheless, the issue of whether mixed cases were truly aschematic remains unresolved. Clearly, additional research is needed to provide more definitive answers to this methodological dilemma.

The problem of creating aschematic cases has more than methodological implications; it also reflects the loosely formulated nature of schema theory and the attendant "mushiness" of the schema concept (see Fiske & Linville, 1980). In the field of social cognition, the goal of greater theoretical and definitional preciseness is both more necessary and more difficult to achieve. Nonetheless, the stimulus materials used in schema research can only be as useful, detailed, and meaningful as the conceptual frameworks that recommend their construction. Hence, more theoretical consideration should be given to articulating definitive criteria for identifying a package of information in long-term memory as a schema. Guided by such advances in theory, investigators can then proceed to manipulate and measure schematic variables with increased preciseness and validity.

A final point to be addressed relates to the selection of dependent measures. Research in social inference and memory has demonstrated that schemas have important

effects on attention, recognition, recall, and judgment (see Chapter Two). A limitation of the third study was its failure to examine whether schematic processing would lead to differences in one or more of these factors. For example, additional research will be needed to clarify the impact of schemas on: (a) officers' accuracy in assessing probationer risk; (b) the speed with which officers diagnose offender problem areas; (c) the actual development of effective treatment strategies; and (d) the organization and retrieval of case information. (See Appendix C for the Analysis of Variance Tables of Studies 2 and 3.)

CHAPTER V

CONCLUSIONS

Schematic Processing

The present research offers converging evidence supporting the concept of offender schemas, i.e., cognitive generalizations about criminals that structure, summarize, and explain the diverse elements of probation cases. Systematic differences were found among experienced and non-experienced officers which indicate that experts' schemas are: (a) richer in content (experts' schemas contained a significantly greater number of information units); (b) more meaningful (experts discussed a smaller number of schemas which seemed to be more central to their caseloads and to possess greater descriptive utility); (c) better articulated and formed (less probes were required to elicit information from experts during the interview, their descriptions were highly organized, and they were able to recreate cases more accurately); and (d) more clearly related to therapeutic and supervisory decisions (experts' schemas contained detailed plans for responding to particular types of offenders, and their superior performance in the card sort task stemmed from their ability to identify correct "treatment-inference item" matches).

On the basis of reported findings, one may speculate

about the influence of schemas on probation officers' diagnoses of offenders for treatment, and predictions about their future criminal activity. Results suggest the availability of organized categories of probationers that guide the processing of case information, contain inferences about the causes of crimes, and control the formulation of supervisory strategies and the selection of appropriate treatment modalities. If schemas actually exist, they probably direct the examination of an offender's case by dictating what key items should be reviewed, what can be ignored, how ambiguous material is to be interpreted, and how missing facts can be deduced. They may also contain one or more prototypical examples that are highly representative of the essential details of a case. In sum, knowledge organized in a schema operates to guide the perusal of probationer information so that an officer talks about "cases like these" and appears to know more about a case than has been read (cf., Taylor & Crocker, 1981).

The schematic organization of knowledge relevant to probation officers' assessments of offenders is a natural outgrowth of the constraints imposed upon the officer by the task and by inherent limitations of memory, attention, and cognitive effort. Because the voluminous information about a probationer must be quickly evaluated and applied, the evocation and use of schemas offers an efficient way to handle case material. Thus, in functional terms,

schemas facilitate cognitive economy (Fiske & Kinder, 1981) in memory storage by providing simple mechanisms to structure and categorize the multiple, redundant input impinging on the officer (Cantor & Mischel, 1979). If probation officers possess ready-made and well-structured knowledge about "types" of offenders, then their mental resources need not be exhausted by creating and developing cognitive representations of probationers in each encounter with a novel, incoming case. Thus, material stored in an offender schema will remain more accessible over time for retrieval and comparison with future input.

The cognitive economics afforded by schematic processing, however, may be a mixed blessing. On the one hand, categorizing criminals into meaningful groupings provides a solid foundation for efficient information processing and judgment. On the other hand, an undue reliance on preconceived notions is potentially costly inasmuch as it encourages a blanket ascription of the features of a particular schema to each presumed member, even when those characteristics are not truly descriptive of the individual being evaluated. Such gratuitous imputations may constrain the subsequent activity of an offender as well as color the perceptions and responses of the officer (cf., Synder, 1981; Synder, Tanke, & Berscheid, 1977). Further, the presence of schemas may lead officers to engage in a "confirmatory strategy" when testing hypotheses about various

probationers and their inferred traits and behaviors. By searching for "procrustean fits" to their cognitive groupings, officers may misjudge--and mistreat--criminals who poorly match their preconceptions. This tendency toward type 1 errors (accepting data as consistent with a schema when it is neutral or inconsistent) stands as a formidable obstacle in the way of necessary schema change. If, indeed, modification occurs (and there is some evidence to suggest it does),¹² it is likely to be in response to repeated, incongruous information across a number of different cases (i.e., the bookkeeping model).

In short, the advantage of schematic processing is that it results in rapid and informed judgments and prevents officers from being overwhelmed by case materials or by caseloads of often unmanageable proportions. The disadvantage is that it may culminate in an offender being assessed solely on the basis of the schema into which he/she is placed, rather than on the basis of his/her unique circumstances or characteristics.

Offender schemas can be viewed as probation officer's "implicit personality theories" (Schneider, 1973) about

¹²In Study 1, a number of officers reported that changes in the nature of offender schemas were possible. Change was most likely when information was highly disconfirming, salient, repetitive, and dispersed.

what behavioral signs (e.g., offense committed, report demeanor) coexist with what dispositional qualities (e.g., low self-esteem, asocial personality), and about how these qualities tend to cluster and co-occur in various types of criminals (cf., Schneider & Blankmeyer, 1983). These theories are invoked whenever officers make decisions about a probationer's treatability and/or riskiness. The question may be raised as to whether these schemas are entirely creations "in the heads" of criminal justice experts or if they have an independent grounding in reality. Research examining personality typologies and object categorizations suggest that there are significant, meaningful correlations among person attributes, and among object features in the real world (Mischel, 1981). For example, there is a strong, likelihood that gregariousness will co-occur with voluble, outgoing behavior in a particular kind of person (i.e., extravert), just as mellifluous songs, feathers, and wings tend to co-occur in a particular kind of animal (i.e., canary). Hence, it is likely that schemas are neither exclusively a product of experts' cognizing nor built altogether from the qualities of actual offenders. Instead, the contents of schemas are a function of the interaction between officers' perceptions, inferences, etc., and the nature of the offenders assigned to them for supervision and treatment.

Information "in the heads" of experts and in the real

world combine to form a reasonably accurate and organized cognitive representation that is useful to officers in effectively performing their duties. Such structures probably develop via an abstraction and consolidation process whereby specific data relating to probationers is summarized into more general and parsimonious groupings in order to facilitate economy in the cognitive system. In sum, offender schemas allow for a quick and efficient processing of information, provide a basis for going beyond case history material in drawing inferences and making judgments, and affect how incoming information is interpreted and categorized. Finally, there is ample evidence that schemas also influence memory processes (Hastie et al., 1980), although the present investigations did not explicitly examine this issue.

Practical Implications

In addition to having theoretical significance, the results of the present research contain practical implications for prediction and diagnosis in the area of probation supervision. Recently, there has been a growing interest in formulating and applying various typologies to categorize offenders for treatment and surveillance (e.g., Megargee & Bohn, 1979). The use of classification techniques derives from the notion that a structured screening process will permit more accurate, consistent, and equitable decision-making. The cognitive schemas of probation

officers may serve as a useful starting point for the development of such assessment devices. They not only comprise distinctions among critical groupings, but they also provide differential treatment strategies, predictions of risk and prognoses for improvement and rehabilitation.

Probation departments can better allocate their limited resources and better organize and monitor burgeoning caseloads through the accurate identification of offenders who require a large share of agency staff time as well as those who demand fewer interventions and are less likely to recidivate. The achievement of these ends translates into greater effectiveness and efficiency in the provision of correctional services.

Of course, the predictive and diagnostic power of schemas remains to be tested. In the event that they are found to be inaccurate, measures can be adopted to make probation officers aware of their misperceptions and to train them to utilize more objective strategies in categorization. It may also be demonstrated that schemas contain a "kernel of truth," in which case only the more useful aspects of officers' cognitive representations will be incorporated in the design of classification instruments.

Directions for Future Research

The research reported in this work represents a necessary first step in identifying the existence and

contents of cognitive schemas in a specific group of professionals within the criminal justice system. The current studies establish the usefulness of a schema approach in understanding how probation officers make rapid diagnoses for treatment and recommendations, and predictions about subsequent riskiness and criminal involvement. They also suggest recommendations for future studies with basic and applied implications.

One goal of future investigators should be the formulation of a set of procedures for: (a) testing the existence of schemas, (b) differentiating between various types of schemas within a specific domain of knowledge, and (c) describing the interrelationships between the separate units of information constituting a given cognitive representation.¹³ This would require greater preciseness in operationalizing dependent measures of schematic processing and would certainly result in greater conceptual clarity (see Chapter One). The other side of the same coin involves an explication of what schemas are not (i.e., when and how nonschematic processing occurs, and how it differs from schematic processing). The problem of creating aschematic stimulus materials (see Study 3) relates to this issue. Finally, the current work points to the

¹³Study 1 suggests useful guidelines for uncovering schemas in an interview procedure.

importance of examining individual difference variables in schema research. More specifically, cognitive social psychologists should be encouraged to move out of the laboratory to examine how knowledge is organized among "experts," and how this organization actually affects behaviors (e.g., judgments, perceptions, hypothesis testing strategies).

Some potentially important directions for further investigation of offender schemas in the area of probation include: (a) a study of the particular case-relevant cues that trigger the evocation of a specific schema type (i.e., a study of how officers "match" probationers to categories); (b) a test of the effect of schemas on information processing and recall among probation officers; (c) an identification of factors that account for the differential richness of schema types; (d) an exploration of whether the relative frequency and/or detail of schematic categories are related to the actual prevalence of offender types in the probation population; and (e) a direct examination of how officers apply schematic knowledge in rendering judgments about probationers.

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APPENDIX A

Schematic Case Number 3
"Female Welfare Fraud"

Name: Miss Buford

Descriptive Information: Miss Buford is a 23 year-old Black female convicted of two counts of welfare fraud, and sentenced to four (4) years probation. She was cooperative throughout the interview, appeared neatly dressed and was accompanied by three children, ages 7, 4 and 2.

Prior Record:

6/8/80 Disorderly Conduct
5 Days Jail, \$100 Fine

7/16/81 Soliciting
Dismissed

9/18/81 Shoplifting
Dismissed

1/15/82 Soliciting
1 Yr. Supervision

Social/Psychological Profile: Miss Buford is a soft spoken and humble woman whose primary concern is the care and well-being of her children. She has been dependent upon men most of her adult life and has lived with them in a number of seeming love-hate relationships. The offender described several incidents in which she was "beaten up bad" by her live-in boyfriends, who "make her do things against the law." She is unable to extricate herself from these situations because of her dependency needs, low self-esteem, and fear of retaliation which might also be directed at her children. Miss Buford was forced to quit high school at age 16 to work to support her family. She soon became pregnant and began living with a man who threatened her into "turning tricks." After a short time, he left her and she subsequently sought the comfort of three or four other men who treated her in a similar fashion (physical/emotional abuse, manipulation and abandonment). Miss Buford reported that her current male companion showed her how to falsify applications to increase her monthly welfare income. She insists that she had to do it in order to "feed her little babies."

Mixed Schematic Case Number 4

"Suburb Kid/Gangbanger"

Name: Mr. Anglet

Descriptive Information: The offender, Mr. Anglet is a 20-year old white male living in the suburbs and entering his third year in college. He arrived at the interview accompanied by his parents. Although he was a well-dressed, "clean-cut," intelligent young man, he answered many of the questions in an obviously sarcastic tone. Mr. Anglet seemed to resent his parents and openly ridiculed some of the remarks they made concerning his behavior. He was convicted of shoplifting and sentenced to a one (1) year probation term.

Prior Record:

1/18/81	Theft Dismissed
6/15/81	Vandalism Dismissed for Want of Prosecution
7/24/81	Disorderly Conduct \$100 Fine
9/25/82	Simple Assault 90 Days D.O.C.
1/17/83	DWI License Suspended

Social/Psychological Profile: Mr. Anglet presents himself as a typical juvenile delinquent, a tough kid who receives a sense of identity and self-worth, largely from an affiliation with his peer group. He appears to be a product of his environment, i.e., in order "to fit in with the rest of the group," he must engage in criminal activity. The offender's life centers around being with his friends and gaining their approval. Indeed, the streets are a proving ground for his masculinity. Mr. Anglet learned how to "make quick money" from his companions, who believe that the more conventional ways of earning a living are reserved for "suckers and wimps." He reported that he had abandoned attempts to find employment because "every place I went they turned me down without saying why." Breaking the law seems to give the offender a feeling of exhilaration and pride, and is a convenient outlet for pent-up anger and frustration.

Real Case Number 16

Name: Mr. Tyro

Descriptive Information: Mr. Tyro is a 38 year-old, Black male with a muscular build, dressed in a leather jacket and jeans. The offender swaggered into the interview and behaved in an aggressive, self-assertive manner throughout. He was recently convicted of assault and sentenced to a three (3) year probation term.

Prior Record:

9/24/74	Theft Dismissed
11/15/76	Battery 2 Yrs. Probation
2/27/79	Possession of a Controlled Substance 1 Yr. Supervision
7/17/81	Burglary 1 Yr. D.O.C.

Social/Psychological Profile: The offender is a native of Selma, Alabama, but was reared in Chicago, Illinois, where he received a 10th grade education with largely inadequate school performance. He has never been married and is presently living with a woman who has recently given birth to a child. The offender reported that in the past year he has changed residence six times. Mr. Tyro has worked at a number of odd jobs (e.g., car wash attendant, cab driver) but has never remained in any of them for more than a six-month interval. He has been unemployed since 1980. Despite his lack of formal education, Mr. Tyro is a smart, fast talking, street-wise man who showed that he can be quite affable. He seemed to go to great lengths to convey the impression that he has "reformed himself" and is "no longer interested in committing crimes." In fact, he denies any responsibility for his present conviction although the record indicates clear evidence of his involvement. Mr. Tyro's past record, and reports by his former probation officer belie his good intentions.

APPENDIX B

CASE ASSESSMENT QUESTIONS

1. How typical is the above offender? That is, how closely does he/she resemble any members of your caseload?

Circle one.

not at all similar		neither similar or dissimilar		not at all similar
1	2	3	4	5
6	7			

2. In his/her reporting behavior, how consistent is the offender likely to be?

highly consistent	neither consistent or inconsistent	not at all consistent
-------------------	---------------------------------------	--------------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

How confident are you about the above judgment?

not at all confident	neither confident or unconfident	highly confident
-------------------------	-------------------------------------	---------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

How easy was the above judgment to make?

not at all difficult	neither easy or difficult	extremely difficult
-------------------------	------------------------------	------------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

3. In his/her reporting behavior, how cooperative (e.g., follow the officer's directives, comply with conditions, participate in a rehabilitative plan) is the offender likely to be?

highly cooperative	not cooperative or uncooperative	not at all cooperative
-----------------------	-------------------------------------	---------------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

How confident are you about the above judgment?

not at all confident	neither confident or unconfident	highly confident
-------------------------	-------------------------------------	---------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

CASE ASSESSMENT QUESTIONS (Continued)

How easy was the above judgment to make?

not at all difficult			neither easy or difficult				extremely difficult
-------------------------	--	--	------------------------------	--	--	--	------------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

4. Briefly discuss the nature of the treatment and supervisory strategies you would employ with the offender. Include a list of possible referrals and the frequency and mode of supervision you would adopt.

How confident are you about the validity of the above?

not at all confident			neither confident or unconfident				highly confident
-------------------------	--	--	-------------------------------------	--	--	--	---------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

How easy was it for you to make the above assessment?

not at all difficult			neither difficult or easy				extremely difficult
-------------------------	--	--	------------------------------	--	--	--	------------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

5. How likely is the offender to satisfactorily finish his/her sentence (i.e., not be involved in future crime, comply with his/her conditions)?

very likely			neither likely or unlikely				not at all likely
-------------	--	--	-------------------------------	--	--	--	----------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

How confident are you about the above judgment?

not at all confident			neither confident or unconfident				highly confident
-------------------------	--	--	-------------------------------------	--	--	--	---------------------

1	2	3	4	5	6	7
---	---	---	---	---	---	---

CASE ASSESSMENT QUESTIONS (Continued)

How easy was the above judgment to make?

not at all
difficult

neither easy
or difficult

extremely
difficult

1

2

3

4

5

6

7

APPENDIX C

Table I

Two-Way Repeated Measures Analysis of Variance for Group Membership and Schema Type on Number of Correct Schema Type Matches

Source of Variance	SS	df	MS	F
Between Subjects	358.05	39	-	-
A(Group Membership)	217.80	1	217.8	59.02**
Subjects Within Groups	140.25	38	3.69	-
Within Subjects	497.75	280	-	-
B(Schema Type)	133.00	7	19	15.70**
A X B	43.00	7	6.14	5.07**
B X Subjects Within Groups	321.75	266	1.21	-

**p < .01

Table II
 Three-Way Repeated Measures Analysis of Variance for
 Assignment, Expertise, and Schema Type on Number
 of Correct Schema Type Matches

Source of Variance	SS	df	MS	F
Between Subjects	96.85	19	-	-
A(Assignment)	.40	1	.40	-
B(Expertise)	34.23	1	34.23	8.84**
A X B	.22	1	.22	-
Subjects Within Groups	62.00	16	2.87	-
Within Subjects	354.75	140	-	-
C(Schema Type)	151.30	7	21.63	16.51**
A X C	30.20	7	4.31	3.29**
B X C	19.37	7	2.77	2.11*
A X B X C	7.38	7	1.05	-
C X Subjects Within Groups	14.64	112	1.31	-

* $p < .05$

** $p < .01$

Table III
 One-Way Repeated Measures Analysis of Variance
 on the Confidence Ratings

Source of Variance	SS	df	MS	F
Between Subjects	124.73	19	-	-
Within Subjects	764.00	40	-	-
Type of Case	481.63	2	240.82	32.41**
Residual	282.37	38	7.43	-

NOTE. Ratings on the two schematic cases were combined for the analysis.

**p < .01

Table IV
 One-Way Repeated Measures Analysis of Variance
 on the Difficulty Ratings

Source of Variance	SS	df	MS	F
Between Subjects	104.06	19	-	-
Within Subjects	274.67	40	-	-
Type of Case	81.23	2	40.61	7.98**
Residual	193.44	38	5.09	-

NOTE. Ratings on the two schematic cases were combined for the analysis.

**p < .01

Table V
 One-Way Repeated Measures Analysis of Variance
 on the Typicality Ratings

Source of Variance	SS	df	MS	F
Between Subjects	14.99	19	-	-
Within Subjects	66.00	40	-	-
Type of Case	38.94	2	19.47	27.35**
Residual	27.06	38	.712	-

NOTE. Ratings on the two schematic cases were combined for the analysis.

**p < .01

APPROVAL SHEET

The dissertation submitted by Arthur J. Lurigio has been read and approved by the following committee:

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The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval by the Committee with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December 5, 1983
Date

Emil J. Posavac
Director's Signature