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CHARACTERIZING CRIMINAL RECIDIVISTS BY MEANS
OF TESTS OF COGNITION.

D. A. KIPPER.

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D.A.K.

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ABSTRACT.

Previous investigations providing psychological tests for identifying the adult, habitual criminal have neglected the concrete-abstract facets of cognition. The present study explores the usefulness of the concrete-abstract dimension for such a purpose by means of the Kahn Test of Symbol Arrangement (the K.T.S.A) and a Symbolization Test for Criminals (the S.T.C.), which was constructed by the author.

Two selected groups were employed; an incarcerated 'criminal recidivists' group and a control group of 'non-criminals' from a vocational rehabilitation centre. The groups were matched for social-class and level of education. Controls as a group, however, were significantly older and scored higher on intelligence ($p < .01$). Product moment correlations and analysis of co-variance indicated that the performance of both groups on these tests was independent of age and intelligence (measured by the AH4 part II).

The results showed that controls scored significantly higher (more abstract responses) than criminals, on both tests. The criminals displayed a typical pattern of more concrete and repetitive types of symbolizations and fewer abstract responses. This has led to the formulation of typical K.T.S.A. and S.T.C. criminal 'Symbol-Pattern' which identified correctly 72% and 77% of all participants, respectively (chi-square, $p < .001$). A combined K.T.S.A + S.T.C. score elicited the best classification (80% correct identifications, chi-square, $p < .001$).

The results were interpreted in terms of the hypothesis that criminality is associated with an "arrested cognitive (and emotional) development on the decriminalization process", i.e. the process of socialisation. Future refinements of the S.T.C. were also discussed.

INTRODUCTION.

THE SCOPE OF THE STUDY.

The study reported in this volume represents an attempt to explore the possibility of identifying the typical habitual criminal by means of psychological tests of cognition, that is, to differentiate a group of criminals from a group of non-criminal rehabilitees on the basis of two tests of symbolization evaluated in terms of the abstract-concrete propensities of the responses. These tests, the Kahn Test of Symbol Arrangement (KTSA) which was hardly used before with a civilian criminal population, and an original Symbolization Test for Criminals (S.T.C.), offer a genuine approach to the study of human behaviour.

From its inception, this research did not aim at verifying psychological theory of the etiology of criminal conduct, nor did it attempt to provide any. Thus, originally, the idea of constructing the study was not stimulated by any a-priori psychological rationale. It was rather felt that in view of the variety of often incongruous theories of the formation of criminal conduct, an approach of 'theoretical non-commitment' would be deemed to be appropriate. The prime purpose of the present undertaking was practical, i.e. to attempt at providing a psychological test suitable for characterising the 'genuine', habitual criminal.

On the other hand, the considerations which have led to the construction of this research were inspired from what has not been done in the area of criminality, rather than from hypotheses derived

from earlier investigations. Two main observations played a significant part in this respect; First, it was observed that the adult criminal received far less attention in psychological research than the juvenile delinquent. It was suspected that this might reflect an attitude of pessimism with regard to the rehabilitative prospects of such individuals. If this is true, more rigorous studies with the habitual, adult criminal should have been undertaken rather than adopting an attitude of withdrawal and avoiding to cope with this phenomenon. Alternatively, it is conceivable, that the young delinquent received the main attention in psychological studies because of preferences to investigate lawless behaviour in its early signs rather than in advanced stages in adulthood. This seems to be a perfectly defensible attitude of the scientific researcher. Yet, the 'criminal-psychologist' cannot confine himself to pure science. He has some responsibilities to help to cope with pressing problems in real-life. The gravity of the problem of the persistent criminal cannot and should not be ignored.

Secondly, the majority of psychological studies with criminals were derived from those theories, predominantly of the psychoanalytic thinking, which have emphasized the role of emotional maturity and child-parent relationship as vital to the formation of such behaviour. Consequently, psychological tests employed hitherto, studied such personality characteristics as; aggressiveness, hostility, guilt, frustration tolerance, inhibiting and control mechanisms, perception on the self, parental

figures, and others, etc. In the cognitive area, traditionally, investigations concentrated around the study of intelligence, in terms of I.Q. Other facets of cognitive functioning, e.g. abstract-concrete orientations, received meagre, if any, attention. possibly because of a lack of theorization.

Why, then, concentrate on the abstract-concrete nature of criminal thinking? The simplest, maybe rather bold, answer is why not, what objections could be raised against such an undertaking? Unless a rigorous series of studies in this direction has been adopted, one is in no position to make any definite statement concerning the relationship of these facets of cognitive thinking and criminal conduct. After all, abstraction has been one of the subjects of psychological studies for a long time (a comprehensive discussion of studies in abstract thinking in psychology may be found in PIKAS, 1966).

The above rationale, that the relative absence of studies with the abstract-concrete aspect of criminals' thinking indicates a necessity to study this behaviour, may be challenged from a theoretical point of view. Objections to such research may emphasize the following arguments. First, there is hardly any theory of personality (except, perhaps, for HARVEY et. al. 1961) which provides a relationship between abstract and concrete functioning and personality. Suppose that criminals will be found to demonstrate a lower abstract functioning, how would it be possible to interpret these findings? With all due respect, this argument

cannot be accepted. It is not inconceivable that contemporary theories of personality of the criminal are incomplete. Therefore, if the above supposition will be verified, the findings will have to be incorporated in the theories through further research. Furthermore, a deficit in abstract thinking of criminals may prove to be a manifestation of their difficulties to cope with law, and thus a useful differentiating symptom. Theoretically, this could be the result of some, yet unknown process, or a parallel cognitive manifestation of emotional underachievement. This might imply that further research would have to relate levels of abstraction and psychological development of the 'genuine' adult criminal.

A somewhat stronger argument may be put forward. It might be claimed that since previous clinical studies of abstract and concrete functioning in brain-damage, especially in schizophrenic patients, were under severe criticism, (for a comprehensive survey of such studies in schizophrenia see, BUSS & LANG, 1965), there is no reason to assume that such studies with criminals will be more fruitful. Again, the best way to substantiate or repudiate the validity of this contention is through rigorous research. Furthermore, the main criticism against past studies of this kind were on methodological and experimental grounds, namely, lack of adequate control groups, inappropriateness of the test materials and scoring methods (BUSS & LANG, op. cit). In modified tools, such studies are still fashionable and promising (see, for instance, BRATTEMO, 1965). It is believed that the KTSA and the S.T.C. tests employed

in the present study offer a technique which will meet earlier criticism. Indeed, in the case of schizophrenia, an alternative theory was suggested, namely, that such patients display a deficit characterized by over and under-inclusiveness of stimuli, rather than concrete (abnormal) functioning. This could be a hypothesis worth while investigating with criminals as well, but was not included in the present study.

As indicated earlier, the main purpose of this study is not to explore the nature of criminal thinking as such, but more to provide some indications with regard to the possibilities of identifying the 'genuine' adult criminal on the basis of certain tests of cognition. This might constitute a first step toward producing, eventually, a battery of tests which will predict the presence or absence of 'genuine criminal tendencies' in, say, first offenders. (Testing this power of the tests employed in the present research must involve a follow-up study).

Theoretically, the study of abstract-concrete thinking of criminals might have some relevance to the hypothesis that, basically, criminal conduct is a case of 'arrested development'. In short such a hypothesis advances that people are born criminals in the sense that, as infants, their behaviour is motivated solely by personal needs irrespective of social obligations. The subsequent process of psychological maturation, education and socialization can be conceived of as a process of 'decriminalization'. The criminal, therefore, is a person who has failed to achieve

successfully this process both emotionally and cognitively.

(This possible hypothesis will be discussed further in chapter 7).

Incidentally, without contradicting the foregoing, it was observed that previous attempts to identify juvenile delinquents by means of abstract-concrete thinking have yielded conflicting results. One study showed that juvenile delinquents demonstrate more concrete and less symbolic thinking (GLUECK & GLUECK, 1950), while another study could not support these findings (HARRINGTON & DAVIS, 1953). It would be interesting to follow-up this controversy with adult offenders.

Fifty years of intensive psychological studies with criminals have provided a substantial knowledge about the nature of this misconduct. However, it has failed to provide any outstanding psychological test(s) which will discriminate, consistently and successfully, criminals from non-criminals. It is reasonable to believe that any attempt at dealing with this shortcoming should be welcomed.

The Plan of the Study.

The discussion presented in the following volume is divided into four parts. The first, which includes chapters 1 and 2, is concerned with the limitations and shortcomings of the psychological study of criminals. The study of criminals represents, in a way, a unique phenomenon. Unlike other cases of behavioural maladjustments, criminals are the subjects of investigations by a number of disciplines other than psychology and psychiatry, such as; sociology, law, and biology. This multi-disciplinary interest in the criminal phenomenon has led to the creation of a special discipline namely; criminology, which incorporates the investigation of many aspects of criminal conduct except, perhaps, the psychological and the psychiatric. The division between the disciplines dealing with criminal behaviour reflects, possibly, different beliefs of what is the core of this maladjustment. Nevertheless, the 'criminal-psychologist' while acknowledging the importance of other contributing factors, is confined to the study of personality and other psychological propensities of lawless individuals. His findings, therefore, have to be assessed, subsequently with relation to those obtained by investigators from other disciplines.

Similarly, 'criminality', is a legal sociological and anthropological concept and not, necessarily, a pure psychological term. Consequently, a psychological study of 'criminality' suffers from severe limitations. The highlights of these handicaps concerning

the inherent difficulty and confusion in defining 'the criminal' will be outlined in the first chapter.

The second part, chapters 3 and 4, discusses the Kahn Test of Symbol Arrangement (the KTSA) and the Symbolization Test for Criminals (the S.T.C.) employed in the study.

The development of psychological tests in the last sixty years has reached a stage where attention is paid, nowadays, not only to what psychological characteristics are measured by a given test, but also to the technique employed. The immense repertoire of tests accumulated has revealed both that the majority of psychological concepts are amenable to empirical investigations and that a considerable number of tests measure similar psychological features. Often, the differences among the latter are in the techniques by which these features were obtained. The innovation and improvement of psychodiagnostic techniques and the advocations of fresh approaches mark a growing trend in psychological testing.

Indeed, abstract and concrete functioning are psychological propensities which have captured the attention of psychologists for many years. The first attempts at measuring these characteristics were already conducted during World War I, (see GOLDSTEIN & SCHEERER, 1941). Thus, the tests employed in the present study do not measure new aspects of behaviour but rather advocate a new approach and offer an original technique of evaluating these facets of thinking. The second part of the text will be devoted to description and appreciation of the new suggested method.

The third part, chapters 5 and 6 describe the experimental design and presents the statistical findings. The successful results obtained will be discussed and evaluated in the fourth part.

It is rather unfortunate, perhaps unavoidable, that the scope of the present study was limited by technical and administrative conditions. First, the study was conducted with two selected groups of criminals and non-criminals (rehabilitees), all from government institutions. Ideally, a larger representative sample of subjects should have been employed. But there was a limit of time within which this study had to be completed. It was, therefore, necessary to reduce the number of testees employed to a reasonable minimum. Secondly, the study employed incarcerated criminals. In spite of a full co-operation and a great good will of the prison authorities certain restrictions were imposed, particularly with regard to the method of selecting the testees (see chapter 5). A comprehensive study would require easier access to more resources.

Furthermore, this study was conducted by a single researcher. Normally, the burden of the commission of such a comprehensive undertaking, especially where individual testing is involved, is shared by a team of investigators. Under these circumstances, the scope of this study had to be restricted. Therefore, it must be evaluated on its appropriate proportion. It should be clearly emphasized that this volume represents merely an attempt to explore the possibility of identifying habitual criminals on the basis of

two tests of cognition. It does not claim to have demonstrated the usefulness, nor does it claim the imminent adoption of these tests in practice. This should be considered only upon future confirmation from subsequent rigorous studies.

CHAPTER 1:WHO IS THE 'CRIMINAL'?

The 'criminal-psychologist' faced with the task of identifying 'the criminal' would like ideally, to be in a position to do so in two ways. First, he would like to be able to offer an etiological explanation, that is, to portray the psychological causes which lead to the subsequent formation of the criminal conduct. Secondly he would prefer to be able to identify a 'criminal profile' based on performance on psychological tests which distinguishes the criminal from the non-criminal. In fact, contemporary knowledge of criminal behaviour does not provide sufficient information which can fulfill satisfactorily this ideal.

It is only partially true to attribute this situation to the relative early stage of development of psychological investigation with criminals. There are some inherent difficulties which present the 'criminal-psychologist' with an unprecedented challenge. In short, he has to deal with a form of behaviour which some scholars even doubt whether it has any relationship to personality (see, for example, SCHUESSLER & CRESSEY, 1951, VOLD, 1958 p. 126 - 7). The latter was concluded from the results of psychological testing of offenders (see chapter 2). This conclusion may claim further support from the absence of a clear psychological definition based on psychological test, of 'who is the criminal'? Indeed, without underestimating the impressive advancement in criminology and

'criminal-psychology', it is also felt that the theoretical controversy over the etiology of criminal behaviour, as observed in the literature, adds to the unclarity of such a definition. (For a historical survey of studies with habitual criminals, see AHTO, 1951, and for an exposition of the various theories of crime see e.g. VOLD, 1958: ROBISON, 1960).

There are three major issues which make it difficult to answer satisfactorily the above question in psychological terms. These are; the multi-dimensional feature of the concept 'criminality', the theoretical controversy over the etiology of this form of maladjustment, and the lack of common consensus with regard to the classification of criminal types. These will be outlined briefly in this chapter. (A detailed discussion seems to be beyond the scope of the present study and might divert the attention from the main issue under study. However, major bibliographical sources, for further consultation will be provided throughout the text).

These issues bear some important implications on the nature of the present study. This clearly illustrates the limitation of the chances of achieving a comprehensive identification of the criminal solely in psychological terms. Furthermore, realizing these basic controversies, a decision to avoid these problems was adopted in the present study. There is little sense in trying to solve any of these long standing controversies with the modest funds and sources available in this study. Therefore, a deliberate

attitude of 'theoretical non-commitment' was adopted along with avoidance from any subscription to criminal typology (the method and rationale for choosing the criminal group is described in chapter 5).

The Multi-Dimensional Feature of the Concept 'Criminality'.

The concept 'criminality' has three roots of derivation. First, it has a religious origin. The idea of 'wrong doing' was introduced, originally, in those codes of behaviour based on the belief that human conduct may be either right or wrong in the eyes of God, hence reward and punishment must follow accordingly. With the formulation of secular codes (the law), the early religious concept of 'sin' namely, the disobedience of the rules of God, was replaced by the concept 'crime'. "Nevertheless, it is a mistake to overlook the fact that whether or not any conduct constitutes a crime in English Law depends solely on whether or not such conduct has been prescribed by Law. The hallmark of criminality is that it is a breach of the Criminal Law" (FITZGERALD, 1962, p. 7).

The affinity between the religious and the legal conception of 'criminality' is evident not only from the historical development but also from the sharing of basic assumptions. One of the foremost essentials, is the idea of free-will and free-choice. Religion had advanced the notion that man is the master of his

own behaviour, in the sense that he was given the freedom to choose between right and wrong and, therefore, must bear the consequences of his actions. Such an exposition may be exemplified in the following, "I call heaven and earth to record this day against you, that I have set before you life and death, blessing and cursing: therefore choose life, that both thou and thy seed may live". (HOLY BIBLE, DEUTERONOMY, 30:19).

Similarly, the criminal law, (see e.g. MORRIS, 1951, HALL, 1960; FITZGERALD, 1962) has adopted the rationale that man is punishable by law because he has chosen, out of his own free-will, a forbidden course of action and thus must have had a criminal intent; or as referred to in legal terms; 'mens rea' (e.g. NAFLAY, 1960; PALMER & PALMER, 1964, Pp. 22 - 25). In short, this view may be summarized in the following:

"Since he (man) can choose the path of moral right or moral wrong, his commission of criminal act constitutes a free choice of evil, the expression of a criminal state of mind: mens rea. The responsibility of the act and of the person committing it are indivisible; such a person is therefore held criminally responsible, that is deserving a moral condemnation and punishment When this has been accomplished, justice has been done." (SACHAR, 1963, p.40).

The law, therefore, advances the idea that 'criminality' is a voluntary and volitional form of behaviour against a prescribed set of rules which can be controlled through the individual's own judgement.

The second root of the concept 'criminality' has a medical origin, where the idea of an association between criminal conduct and bodily disfunction or malformation emerged a few centuries ago. Perhaps, the earliest influential movement to adhere to this hypothesis was phrenology with its forerunners GALL (1758 - 1828), SPURZHEIM (1776 - 1832) and CALDWELL (1772 - 1853). They have argued that mental propensities which are typical of criminals were believed, for example, to correspond to a bump found in the skull slightly above and behind the ear.

However, the undisputable forerunner of the medico-biological movement in the study of criminals was the Italian LOMBROSO (1835 - 1909) who believed in the existence of a 'born criminal' archetype (first claimed to represent 65 - 70%, and finally 35 - 40% of all criminals). LOMBROSO advanced the hypothesis that the criminal is an anthropological (atavistic) phenomenon in itself. This was concluded from alleged characteristics found in the shape of the skull and the brain of criminals, as well as from certain disturbances in the sensory and emotional mechanism. Similarly, one of his disciples (e.g. GAROFALO 1852 - 1934) rejected the concept of free-will, and adhered to the thesis of the 'natural criminal'. These ideas gave rise to a powerful movement in studying the criminal (see AHTO, 1951) to substantiate the hypothesis that criminality indeed originates as a result of an hereditary inferiority which is aggravated by environmental conditions (a classic exponent of such a thesis was HOOTON, 1939 also in B. ROSENBERG et. al. (Eds)

1964). Among these were studies with identical twins (e.g. ROSANOFF et. al., 1934), endocrinological studies, etc. (see AHTO, op. cit., p. 31).

The transition from this line of studies to the modern psychiatric-psychological approach is exemplified in the work of SHELDON (1949, following KRETSCHMER'S ideas) relating physique and temperament. The former have found, for example, that juvenile delinquents scored on his endomorphy-mesomorphy-ectomorphy scale an average of 3.5-4.6-2.7, namely, they tend to be mesomorphs.

The next, turning point in the medico-biological conception of 'criminality' was marked by the formulation of the contemporary psychological and psychiatric approaches to the study of behavioural maladjustment. The forerunners of this movement were FREUD (1856 - 1939) and PAVLOV (1849 - 1936). The previous idea of deterministic influences of biological deficiencies on the formation of criminal conduct was exposed in this new movement in terms of psychological inabilities to control and inhibit certain impulses or a failure to be conditioned to certain stimuli.

In short, the medical conception of 'criminality' has always held the belief that this form of behaviour is the natural inevitable consequence of certain deviant psychological processes, beyond the conscious control of the individual. Determinism here according to the psychoanalytic theory implies "..... the fixing of the potentialities for character formation, takes place in the first three years of life..... It is not within the power of human choice to prevent this," (STOTT, 1954, p. 367).

The third root has a sociological origin. Although, many of the above-mentioned investigators did not dispute the importance of environmental influences in the formation of the criminal behaviour, the sociological view differs markedly from the two foregoing conceptions. In a contrast with the others, it advances the thesis that 'criminality' is basically the product of external conditions; i.e. cultural, sociological, demographical, economic underprivilege, etc., rather than the outcome of intra-psychic factors. (A full exposition of the sociological idea of 'criminality' cannot be presented in this study).

The difference between the legal and medico-biological conception of 'criminality' manifested itself in practice concerning the problem of differentiating 'criminality' from 'Mental abnormality', namely, the question of 'criminal responsibility' (see, e.g. GLUECK, 1962; WILLIAMS, 1960; FLEW, 1954; GUTTMACHER, 1954; SALTER, 1954). Perhaps the greatest difficulty is that this difference between the three conceptions of 'criminality' puts the psychologist in a paradoxical situation. If he wishes to adhere to his medico-biological conception, he must then realize that in practice, this may conflict with other ideas of 'criminality'. On the other hand, if he tries to compromise with the other conceptions, he is bound to find himself in a serious limitation, that is, he will find himself dealing with a multi-dimensional concept which cannot be described exclusively in psychological terms.

The present study was conducted on the assumption that whatever attitude with regard to this dilemma is adopted, the foremost task of the 'criminal-psychologist' is to have an operational definition of 'who is the criminal'. This should start from an attempt to identify a group of people, who by every standard would be considered as 'criminals' on the basis of psychological tests.

The Theoretical Controversy Over the Roots of Crime.

The basic incongruency in perceiving the meaning of the concept 'criminality' has manifested itself in contemporary theories of the development of criminal behaviour. Some theorists believed that lawlessness, like any other form of behaviour, was related to biochemical or constitutional predispositions (HOOTON, 1939, EYSENCK, 1963 - 64b); some held that intra-psycho development in early life accounted for such maladjustment (see below) while others claimed that social and environmental factors played a significant, often crucial, role in the formation of such conduct (e.g. SUTHERLAND, 1947).

Some psychological theories (e.g. ALEXANDER & HEALY, 1935, also below) have paid a special attention to socio-economic factors in an attempt to formulate a comprehensive explanation of criminal behaviour, yet the basic assumption remained unchanged, that is, that the key to the understanding of criminality should be sought in the intra-psycho development.

Nevertheless, even within the psychological approach, a controversy over the theoretical explanation of etiological factors of criminality is a predominant feature. An example of such a controversy may be illustrated within one of the most powerful psychological approaches to criminality, namely, the psychoanalytic approach.

All psychoanalytic theories start from one basic, commonly shared principle, that is, "..... like any other behaviour, criminal behaviour is a form of self expression and what is intended to be expressed in the act of crime is not only unobservable in the act itself, but also may even be beyond the awareness of the criminal actor himself." (FELDMAN, 1964, p. 51). Thus the psychoanalytic view postulated that:

"....., there are three basic psychological processes operating within the individual comprising the original impulses, the mechanisms of adjustment, and the internalized group norms. Each of these processes tends to be in potential or active conflict with the others, and the individual is able to maintain a stable existence only to the extent that a viable "balance of power" obtained among them and functions to temper the conflicts and prevents an explosive eruption this balance, in turn, depends upon minimally favourable equilibrium between the kinds and amounts of compensating gratifications and enforced renunciations the individual experiences.... criminality is undertaken as a means of maintaining psychic balance or as an effort to rectify a psychic balance which has been disrupted."

Nevertheless, "considerable diversity of views have developed as to exactly what it is in the socialization of the individual which compels him to restore to crime and as to precisely how criminal behaviour fulfills the function of helping retain psychic balance." (FELDMAN, op. cit. p. 53).

One view (e.g. ALEXANDER & STAUB, 1956) claimed that criminality is basically a form of neurosis. Yet, unlike other forms of neurosis this manifested through 'alloplastic' type of symbolic-symptom-formation, that is, through outwardly directed aggression (also ALEXANDER, 1930). The function of this symptom-formation is to provide neurotic gratifications and resolutions of unconscious conflicts over which the criminal has partially lost control. This takes the form of a compulsive need for punishment for intolerable guilt feelings believed to stem from poorly sublimated incestuous strivings.

Another view (e.g. FRIEDLANDER, 1947) argued that the criminal was an 'antisocial character' who had been the subject of a defective socialization process which made him unable to cope properly with the normative requirement of his external environment. The main difference between the criminal delinquent and his non-delinquent peer is quantitative rather than qualitative. The former can neither postpone his needs nor articulate them in an acceptable manner, and thus cannot endure temporary frustration. Consequently, he engages himself compulsively, in antisocial activities seeking for immediate gratification. Behaviour, thus, is dominated by attitudes of pleasure seeking and avoiding penalty. Yet, the "antisocial character" lacks internal guides to evaluate his actions, and exhibits poor adjustment mechanisms. When punished, he reacts with hatred and frustration rather than with remorse. Some criminals, e.g. kleptomaniacs, are neurotics in the sense that they display guilt which

impels them to seek punishment for their antisocial behaviour.

HESSLER (1949), disagreed with the idea that delinquents were neurotics. He rather believed, that their 'neurotic or psychotic' behaviour was a reaction to 'abnormal, basic conflicts' with the value systems of the societies in which they live. This takes the form of an 'alloplastic' attitude.

A still different view held (e.g. HEALY & BRONNER, 1936) that criminal activity was a means of obtaining substitutive and compensating gratifications of needs and desires, which would, ordinarily, be fulfilled within the network of the relationships in the family, i.e. the need for security, recognition, acceptance, and self-assertion. Where the interpersonal relationships within the family have failed to gratify such needs, frustration and feelings of deprivation develop. Consequently, future activities may be diverted into unlawful conduct as an effort to secure some substitutive satisfactions, to pacify the feelings of frustration, and to gain some self-assertion.

An interesting view was advanced by JOHNSON (1949) who maintained that criminal conduct did not stem from impoverished ^{ment} adjusted mechanisms or failure to internalize norms (e.g. FRIEDLANDER, op. cit.). The authors felt that his theory was related to the fact that many criminals came from the so-called 'broken homes'. Thus, he claims that such behaviour develops in families where the child experiences unconscious permissiveness of parental figures who are themselves rather ambivalent toward the acceptance

of the norms prohibiting criminality. The criminal suffers from a 'superego lucanea', that is, while he may be fully orientated toward accepting certain social norms, he has failed to develop orientation of conformity to others. This 'lucanea' is derived from similar defective orientation of his parents who, unconsciously encouraged criminal activities in their child as a means of obtaining vicarious gratifications for their own unconscious strivings.

A different, more sociologically orientated theory, was suggested by ALEXANDER and HEALY (1935) and was based on the socio-economic structure of the affluent societies. They argue that criminality is the result of a conflict faced by people who display weak and dependent personality and who, on the one hand, have recognised the importance of initiative in achieving social and materialistic success but, on the other, live in social situations of deprivation and poverty which put them in a disadvantageous position. Thus, trapped between their internalisation of the social norms of personal achievement and their personal weakness and social inadequacies, they are compelled to find some outlet for their intolerable conflict. Therefore, they tend to repress their feelings of weakness and inadequacy by adopting an excessive individualistic aggressiveness.

ERIKSON (1956) believed that antisocial behaviour was the result of ^{the} 'identity crisis' which the child faced in the process of his development, particularly during adolescence. A sense of

'ego identity', in the author's view is, a persistent 'sameness' with oneself and a persistent sharing of same kind of essential character with others. When such an 'ego identity' has failed to develop, because of social and biological factors, and an 'ego diffusion' prevails, antisocial behaviour develops.

On the other hand, the theory of 'differential associations' (SUTHERLAND, 1947), to mention one of the sociological theories, has claimed that a person becomes a criminal, principally, because he has been relatively isolated from those groups whose attitudes, motives and rationalisations are anticriminal, or because of residential, employment and social positions, or something else, which has brought him into frequent association with the behaviour pattern of criminal groups. In other words, criminality is behaviour learned through certain selected social interactions between a person and 'crime committing' situations. Though, this theory is accepted by some criminologists, it is not free from criticism. S. GLUECK (1956), for example, argued that while there was no novelty in arguing that criminality was a learned behaviour this theory did not explain how, for instance, aggressiveness and impulsivity, are learned. Furthermore, it is difficult to accept the contention that criminality occurs only when a situation appropriate for it is present. Many criminals create intentionally situations so that illegal activity could take place.

The theories mentioned above represent a general trend in the understanding of criminal behaviour. This is expressed in terms of two opposing conceptions; one which sees criminality as a normal learning or copying behaviour, conscious or unconscious, which occurs under impoverished and socially or psychologically undesirable conditions, while the other regards criminality as a 'reaction', a substitutive, compensatory and defiant behaviour against intolerable guilt feeling, frustration and inability to gratify needs in an acceptable socialized manner. Both views stress the relative lack of control of the individual over his illegal activities, also both agree that such a conduct is an inevitable consequence of some early psychological and environmental conditions.

The ultimate truth might be somewhere between these two positions. Ideally, a theory which provides some clues for a reasonable synthesis, perhaps, is needed. Again, it is argued in the present study that the first step toward such theorisation should start in providing a psychological characterization of those persons who, by every standard, will be regarded as criminals, namely, criminal recidivists.

Heterogeneity of the Criminal Population.

The idea that criminals represent a heterogenous group which consist^s of different types has been claimed and discussed so often, that it appears to be regarded as an undisputable phenomenon.

Almost every theory of criminal behaviour has made provisions for types of criminals varying from two to eight different categories. For example, an analysis of major previous attempts at typologizing criminals was made by KINCH (1962) who concluded that his" paper has suggested that there is some rather conclusive evidence that delinquents do not just differ from one another in degree, but in addition they vary in kind." (op. cit. p. 327).

The difficulties, however, seem to arise from the diversity of opinions with regard to the criteria according to which such classification of criminal types should be exercised. Some claim that the relationship with 'reference groups' is the most important factor in such typology (e.g. KINCH, op. cit.), some regard the nature of the offence committed as the basis for classification (e.g. GIBBONS & GARRITY, 1962; GLINARD & QUINNEY, 1967) and others feel that psychological characteristics should be the most appropriate yard stick (e.g. KARPMAN, 1947; FRANKS, 1956).

KINCH (op. cit.), for instance, has recommended the inclusion of the following considerations in any attempt at classifying criminals: (a) the offence pattern, (b) the criminal's own 'self-concept', and (c) his relationship to 'reference groups' i.e., identification with 'delinquent subcultures' or relationships with the larger society and its establishments. The latter, being the most significant factor, in the author's opinion, has led to the

following model of classification (see APPENDIX IV):

NAME OF TYPE.	REFERENCE GROUP.	
	Larger society	Delinquent groups
1. Pro-social delinquency	+	-
2. Anti-social delinquency	-	+
3. A social delinquency	-	-

A different type of classification was reported by (GIBBONS & GARRITY, 1962). Indeed, these authors have included in their suggested typology criteria similar to those used in the foregoing, namely, the criminal's 'self-concept', attitude toward the larger society, particularly toward authority, and the 'offence pattern' including aggressiveness. However, their types were arranged, primarily according to the type of offences committed. Thus, an eight fold classification was suggested, as the following:

(1) The Professional Thief; non violent, technically skilled crimes with large profit, (2) The Professional "Heavy" (armed robbery, burglary, etc.); violent, technically skilled crimes with large profit, (3) Non-professional Property Offender (burglary, larceny, etc.); violent, relatively crude crimes with small profit, (4) Auto-thief Joyer; non violent, relatively crude crimes, no profit motives involved; (5) "Naive" Check Forger; non-violent, unskilled crimes with small profit, (6) White Collar Criminals (violation of the state's rules regarding business and financial activities); non violent, technically skilled and complex

offences with large profit, (7) Embezzler; non violent; technical skills vary considerably and so do the profits, and (8) Professional "Fringe" Violators (violation of the law using professional skills, e.g. abortion); non violent, technically skilled crimes with relatively large profit.

Recently, another typology was suggested (CLINARD & QUINNEY, 1967) which again was based on a so-called 'criminal behaviour system' that is, the characteristics of the criminal's career in terms of the type of offences committed, the group support of that behaviour, the reactions from the larger society, etc. These authors were alleged to recommend the following eight criminal types:

- | | |
|-------------------------------|---------------------------------|
| (1) Violent, personal crimes. | (2) Occasional property crimes. |
| (3) Occupational crimes. | (4) Political crimes. |
| (5) Public order crimes. | (6) Conventional crimes. |
| (7) Organized crimes | (8) Professional crimes. |

The last illustration in this brief review is an attempt to classify some suggested criminal types, as evident in the psychological literature, not mentioned in KINCH (op. cit., except for No. 4 in the table below). Here criminal types were determined according to the ability to identify with some norms. Thus, the 'Adaptive' type is a person who is able to identify and form some positive relationships but exercises this with non-conforming groups or via undesirable learning process. The 'Maladaptive' type displays a defective ability to identify or to form positive

relationships with others. For example, FRANK (No. 3 below) suggested an 'introvert' type who was alleged to be conditioned to poor and undesirable situations compared with the 'Extrovert' type who did not condition well at all. Or, KARPMAN (No. 5 below) reported a 'Psychogenic' type who could profit from psychotherapy, i.e. is able to learn, as opposed to a 'Psychopathic' type who could not.

Psychological typologies of criminals and young offenders.

Author.	Adaptive.	Maladaptive.
1. Argyle (1961)	a. Deviant identification.	a. Neurotics. b. Inadequate superego, weak ego control.
2. Bettelheim (1950)	a. Conforming to ill norms, copying parental disturbances.	a. Neurotics. b. Psychotics.
3. Frank, (1956)	a. Introverts.	a. Extraverts.
4. Jenkins (1946)	a. Adaptive.	a. Maladaptive.
5. Karpman (1947)	a. Psychogenic.	a. Psychopathic.
6. Levy (1932 - 3)	a. Environmental.	a. 'sick' children. b. Unsatisfying parental relationships.

The difficulty in adhering to a typology based on the 'type of offences' committed is, that as far as psychological studies are concerned, there is no clear psychological relationship between these patterns of behaviour and personality. Perhaps, the main advantage of such suggestions is that they provide an interesting hypothesis for future research. At the moment it is difficult to assert which classification should be preferred. On the other hand, a psychological classification, e.g. the table above, is more likely to be amenable for verification through psychological methods. Even the last psychological typology which implies that, basically, there are two classes of criminals, 'adaptive' with 'normals' yet abused abilities, and 'maladaptive', mentally disturbed is not satisfactory. Indeed it probably covers the whole range of criminals, and may differentiate one type of offender from another, it does not, necessarily, differentiate criminals ('adaptive') from non-criminals ('normals'). Therefore, it appears that more psychological characteristics of criminals should be identified before a genuine 'differential' classification of criminal types could be made.

Therefore, while the 'criminal psychologist' cannot subscribe to the above 'type of offence' classification, he is not yet in a position to have an alternative, comprehensive 'psychological' typology. The latter should be achieved following many studies of characterizing criminals on the basis of psychological propensities, bearing in mind that there are also 'non-psychological' aspects of such behaviour.

CHAPTER 2:PSYCHOLOGICAL TESTING OF OFFENDERS.The Need for a Special Test of Criminality.

Introduction: It is quite clear from the literature of criminality that the current repertoire of psychological tests has failed to provide an outstanding instrument for identifying the typical criminal. Previous attempts did not gain the expected consensus. Often, results are inconsistent or even contradictory. In those cases where some consistency was evident, it appeared to characterize rather small fragments, homogeneous subgroups of the total criminal population. No conclusive evidence has yet been provided to assert that the majority of adult 'genuine' offenders can be recognized on the basis of distinguishable, identifiable and measureable psychological factors, unique to such individuals. This, possibly, is related to the fact that 'criminality' is not a simple or pure state with clear psychological definition, but rather a concept involving multi-dimensional features. Therefore, sometimes, the very concept⁴ 'the typical criminal' is disputable.

On the other hand, direct observations of the behaviour of criminals tend to support the impression that a substantial portion of adult offenders, particularly recidivists, appears to display distinct characteristics when compared with the non-criminal population. In the absence of adequate psychological test(s), this observation cannot be substantiated properly.

The analysis of the present state and accomplishments of psychological testing with criminals has to consider two main issues. First, the special difficulties encountered when dealing with criminal groups must be realized, and secondly, an historical survey of past trends of testing the offender has to be made. The following chapter will discuss these two issues.

THE SPECIAL DIFFICULTIES WITH THE CRIMINAL GROUPS.

Ideally, a psychological test is expected to throw some light on several aspects related to the assessment of the personality of the testee. It is expected to clarify etiological factors contributing to the mental disturbance, to specify the typical and predominant psychological mechanisms; emotional and otherwise, to differentiate the given maladjustment from other forms of psychopathology, and finally, to indicate prognostic and therapeutic chances. In fact, tests vary in their competence to fulfill all these tasks. Some display superiority in one or more aspects than the others. Generally, however, some information about the first three above-mentioned aspects, must be furnished by a psychological test in order to qualify for use in routine practice.

'Criminality' as an identifiable behaviour, is an exceptional form of maladjustment which encounters psychological testing with unprecedented challenge. This has, undoubtedly, affected the competence of the tests to fulfil satisfactorily their expected role.

The Multi-Dimensional Feature of Criminal Behaviour.

It is a common belief that, unlike some other forms of behavioural maladjustments, the impact of non-psychological factors on the formation of criminal conduct is substantial indeed. A vast literature has demonstrated the contribution of such factors to the formation of this behavioural maladjustment (ROBISON, 1960). Among these, the influences of family background, social class, occupational opportunities, demographic (areas of resistance) factors, education, cultural influences, heredity, etc. were dealt with at length. A basic difficulty is that many of these factors are not psychological concepts, hence they are not amenable to measurement or definition in psychological terms. This shortcoming appears to limit the scope for the successful identification of criminals by means of psychological tests alone.

On the other hand it would be erroneous to conclude that all attempts at psychological characterization of offenders are doomed to failure. Indeed, the multi-dimensional feature of criminality implies that no single factor can be assumed to be responsible for the formation of such behaviour (COHEN, 1962), and an interaction between several factors should be sought. However, it has not yet been established which, for instance, of the biological, psychological or environmental predispositions (factors) contribute most to the formation of criminal proneness. If it is difficult to compute the relative contribution of each factor, the following

hypothesis could be put forward:

A psychological handicap is a necessary condition for the formation of criminal behaviour yet, it is not a sufficient condition on its own to induce this behaviour. In other words, some psychological insufficiencies (weaknesses) must exist in order to facilitate the emergence of 'criminal dispositions' (some prefer to call it 'the chances to be engaged in criminal activities'), but the factors which ultimately determine whether this will, in fact, take the form of delinquency or not, might be environmental.

In the past, the moderate success of psychological tests in identifying the criminals has led to many different interpretations. Opinions varied, even whether criminality can be claimed to represent personality disturbances. For example (SCHUESSLER & CRESSEY, 1951) questioned the alleged association between personality and lawless behaviour, and argued that no solid evidence has confirmed such hypothesis. Subsequent studies, notably these of (PANTON, 1958a, 1958b, 1960) however, succeeded in demonstrating certain relationships between psychological characteristics and some groups or types of delinquents and adult criminals.

The first task of psychological testing of criminals is, therefore, to specify what are the psychological peculiarities (or deficits) observed in criminals rather than to assert how these deficiencies are related to the behaviour manifested.

Homogeneity of the Criminal Population As A Psychological Group.

In the past 17 years, psychological tests, mostly the projective kind, have demonstrated the presence of emotional inadequacies among criminals but the attempts to classify all criminals into a distinct psychological type have proved to be fruitless. Thus, a frequent claim that criminals are primarily neurotics, with acting-out tendencies, appeared to be rather an inaccurate generalization. On the contrary, many studies have demonstrated the existence of both very moderate psychological disturbances and more severe ones among various criminal individuals. Some reports went even further to claim that most criminals are, basically, psychologically normal (e.g. EAST & HUBERT, 1939, GUTTMACHER, 1962).

This introduces an additional feature of the multi-dimensionality characteristic of the criminal group. In fact, it suggests that even as a psychological phenomenon, criminality is a heterogeneous factor which varies in the degree of psychological inadequacy, from a severe to a mild form of disturbance.

When attempting to characterize criminals on the basis of psychological propensities, these characteristics have to be seriously considered. The following discussion will elaborate some of the above points and will aim at substantiating the hypothesis that there is a strong indication of the need for a psychological test specially devised for criminals. This will be supported by a brief historical analysis of traditional trends

of previous attempts followed by some suggestions for a possible alternative approach.

HISTORICAL SURVEY OF PSYCHOLOGICAL TESTING WITH CRIMINALS.

The following survey illustrates the traditional approach to the psychological testing of criminals. This survey is divided into two subsections. In the first, lists of the tests often used during the periods 1925 - 1950 and 1949 - 1966 will be presented. The second section deals with some of the findings obtained from these tests. These will serve as an illustration of the predominant trends of testing criminals and delinquents.

Types of Test Used For Identifying the Criminal.

The period 1925 - 1950: In an article entitled "Psychological characteristics of criminals" (SCHUESSLER & CRESSEY, 1951), a list of the psychological tests used with criminal groups during 1925 - 1950, was provided. The authors' main purpose was to demonstrate the lack of evidence to support the hypothesis that personality and criminality are associated. The same list is presented (below) in the present context for a different purpose. It is brought into the present discussion merely as an illustration of the various attempts to identify the criminals by means of psychological testing during the above-mentioned period. (In the original article, these authors claimed to have studied a list of 113 reports. In fact, their presentation included only 109 studies as listed in the following).

Comparisons of criminal and non-criminal groups with tests of personality during 1925 - 1950 (after SCHUESSLER & CRESSEY, op. cit. p. 477).

Tests employed.	Times.	Successful differentiation.
1. B.P.S.	1	0
2. Bell Adjustment Inventory	4	0
3. Bernreuter Personality Inventory	7	0
4. Brown Personality Inventory	1	1
5. California Test of Personality	1	0
6. Cattell Character-Temperament Test	1	1
7. Character Tests	13	6
8. Downey Will Temperament Test	3	0
9. Furfey Developmental Age Test	3	2
10. Goodenough Drawing Test	1	1
11. Guilford Martin Inventory	1	0
12. Humm-Wadsworth Temperament Scale	1	0
13. Kent-Rosanoff Word Association Test	3	2
14. Laslett Word Association Test	3	2
15. Maller Case Inventory	1	0
16. Maller Character Sketches	1	1
17. Mirror Drawing Test	1	0
18. M.M.P.I.	4	2
19. Murray Psychoneurotic Inventory	2	2
20. Neyman-Kohlstead Introv.-Extrav. Test	3	0
21. Poteus Maze Test	4	4
22. Pressey Interest-Attitude Test	4	2
23. Pressey X - O Test	8	2
24. Rogers Test of Personality Adjustment	2	0
25. Rorschach Test	3	0
26. Sweet Personal Attitude Test	6	3
27. Thurstone Personality Schedule	3	2
28. Vineland Social Maturity Scale	3	1
29. Washburn Social Adjustment Inventory	2	1
30. Woodworth Personal Data Sheet	19	9
Total:	109	44

The list is characterised by many old tests, some of which are out-dated and some which are even hardly known. The lack of familiarity with old tests is probably attributed to the rare use of such instruments which again might indicate their relative inappropriateness.

Besides this, an analysis of the list reveals the following features. The total successful discrimination between criminals and non-criminals, as reported above, is about 40% only. No single test has yielded a consistent differentiation, except for the Porteus Maze (No. 21). But the relatively small numbers of studies with this test makes generalization rather hazardous. None of the individual tests, which were employed more than 5 times, was reported to yield over 50% ^{per cent} successful discriminations. The ^oWardworth Personal Data Sheet (No. 30), though used many times, showed a similar trend. Furthermore, those successful attempts reported with the latter employed delinquent children exclusively. Results showed considerable variations of the average score for different groups of delinquents, thus making the use of the test rather impractical.

In addition, the employment of such a variety of tests does not indicate a superiority of one test over the others. This assertion is supported by the fact that no single test was used frequently enough with more than 50% successful differentiations.

Most tests used, were tests of personality. None, was a special test of criminality or was proved - subsequently - to have particular applicability for criminal populations.

The period 1949 - 1966: A list of the typical tests used with criminals during the last 17 years is presented below. In order to avoid the arduous task of reviewing a massive literature of

testing criminals with psychological tests, a representative list based on approximately one hundred studies was made. Indeed, this is an incomplete list. (It is possible that some tests, or studies, which ought to be included, unintentionally were omitted). However, the main tests used with criminals were listed, and the table below is believed to represent the general trend. Moreover, further addition to this list could only support the contention advanced^d in the following (see later). In any case, this presentation is in harmony with ZAVALLONI (1957) who has concluded that the tests most frequently employed with criminals in Europe and North America were the Stanford-Binet, the Wechsler and Raven Matrices, for intelligence; the M.M.P.I., the Rorschach, T.A.T. Word Association tests and the Szondi, for personality.

The list below is arranged in alphabetical order and is based on published studies only. The frequency of the times that each test was used is omitted because it does not include all studies. However, some of the listed tests were used only once (No's. 1, 5, 7, 8, 15, 27) whereas others, more frequently (e.g. 30 times, in the present survey, for M.M.P.I.).

Psychological tests used with criminals during the period 1949 - 1966 (an incomplete list based on approximately 100 studies).

Tests employed.	Author.
1. Baker-Sarbin Perceptual-Cognitive study.	(BAKER & SARBIN, 1956)
2. Brief Scale of Juvenile Delinquency.	(PETERSON et. al., 1959)
3. California Test of Personality.	(HAND & LENO, 1955)
4. California Test of Mental Maturity.	(ROZYNKO & WENK, 1965)
5. Ego Strength Q Test.	(CASSELL & HARRIMAN, 1959)
6. E.P.P.S.	(BERNBERG, 1960)
7. General Aptitude Test Battery.	(op. cit. No. 4)
8. Group Personality Projective Test.	(op. cit. No. 4)
9. Introversion-Extraversion Tests.	(e.g. MICHAEL, 1956)
10. Koh's Block Design Test.	(TAYLOR, 1961)
11. KTSA	(GOULDING, 1958)
12. McGill Delta Test.	(op. cit. No. 10)
13. M.M.P.I.	
14. Otis Quick Scoring Test.	(WEBSTER, 1954 - 5)
15. Personnel Test for Industry.	(DOPPELT & SEASHORE, 1959)
16. Picture Identification Test.	(LIEBERMAN & CHAMBERS, 1963)
17. Porteus Maze Test.	(FOOKS & THOMAS, 1957 RAO (1960)
18. Proverbs Tests.	(HARRINGTON & DAVIS, 1953)
19. Raven Progressive Matrices.	(MARCUS, 1955)
20. Rorschach Test.	(PERDUE, 1961, BEARDSLEY, 1961)
21. Rozenzweig P-F Test.	(PEIZER, 1961, VANE, 1954)
22. Sentence completion Test.	(KINGSLEY, 1961, NAKANO, 1959)
23. S.R.A. Youth Inventory.	(PETERS, 1957)
24. Szondi Test.	
25. Sociometric Test	(TRENT, 1957)
26. T.A.T.	
27. Test of aggression.	(BERG & TOCH, 1964)
28. The Street Gestalt Test.	(JONES, et. al. 1955)
29. Wechsler, W.A.I.S. & W.I.S.C. tests.	
30. Word Association Tests	(LUTHRA, 1957)

The analysis of these lists reveals several interesting points. First, it is noticed that at least fifty-five different tests were offered for the psychological identification of criminals in the last half century, and the search for a suitable test continues. This continuous effort must indicate some feelings of apprehension with regard to the appropriateness of the suggested list of tests. It seems obvious that this impressive repertoire of tests represents a stage of dissatisfaction with the progress of psychological testing with criminals.

It might be argued that any routine, clinical assessment of behaviour is seldom based on a single test, hence the search for a battery of tests for criminals. This, however, does not justify such extensive lists as presented above.

Secondly, the above lists hint at dissatisfaction with the suitability of the major clinical tests, namely, the Rorschach, the T.A.T., etc., in the area of criminality. (This does not deny the usefulness of such tests in providing insightful information about the criminals and their personality). Such misgivings are implied from those studies (e.g. BAKER & SARBIN, 1956; PETERS, 1957; CASSELL & HARRIMAN, 1959; BERG & TOCH, 1964, etc.). It is reasonable to assume that such a trend would not have been developed without the feeling that the major personality tests have failed to provide the best method for the identification of criminals.

Thirdly, the above lists indicate the formation of a rather new approach in the testing of criminals. There appears to be a trend which tends to abandon the idea of employing general personality tests for such a purpose. Instead, tests which measure specific behavioural characteristics are constructed. These might be emotional propensities, namely, aggressiveness, frustration tolerance; cognitive features, and others such as, self-concept. Another challenge is evident not only with regard to that general approach of testing the criminals, but also in the adoption of new techniques of testing. Representatives of the latter can be observed in the second list in the cases of the K.T.S.A., and the sociometric test (TRENT, 1957).

Finally, it is observed that only one test (QUAY & BLUMEN, 1963, for instance) from the second list (No. 2) claimed to be a special measurement ^{of} to criminality proneness. This is a test designed to detect potential juvenile delinquents. The formation of such a test represents the need for a straight forward psychological tool for the purpose of identifying the criminal.

The paucity of such attempts does not contradict this assertion. The argument that the presence of one test of this kind might signify the lack of a need for a special test for criminals, rather than a dire need for such a test, is not accepted. In the light of a continuous attempt to find an appropriate test for criminality, as shown in the foregoing, it is clear that a satisfactory stage has not been achieved yet. It is more likely that

the moderate success of previous studies has discouraged further development in this direction. On the contrary, the paucity of special tests for criminals, particularly the adult offender, is not surprising. It is also suspected, that this is partially due to the fact that the best approach to this task is still a mystery.

TYPICAL APPROACHES IN TESTING THE OFFENDER.

Analysis of the last twenty years of psychological testing with offenders reveals two main trends. These may be described as a 'major' and a 'minor' trend. The majority of studies have followed a traditional line characterized by attempts to construct subscales suitable for criminals. These subscales were derived from already existing psychodiagnostic tests, and aimed, principally, at detecting psychopathological signs, predominantly in the area of emotionality. A smaller number of studies have pursued a different line. There, an effort to provide special tests for unlawful individuals was evident. Moreover, these attempts were concerned also with studying personality aspects other than emotionality, e.g. cognition, perception, and the like.

The following sections illustrate typical cases of these trends. The discussion of the major trend is divided into three subsections, namely, attempts to provide subscales, attempts to establish psychopathological profiles; and studies in the area of emotionality. This is, to a great extent, an artificial division. Many studies dealt with all these features simultaneously. But for the purpose of the present illustration it was thought desirable to separate these aspects and to discuss them independently.

The minor trend includes examples of special tests with offenders, such as a study of aggression, a test of criminality, tests of cognition, and others.

It should be pointed out that the following is aimed at illustrating the characteristics of the above-mentioned trends and does not intend to provide a complete account of all findings obtained in psychological testing of offenders. Consequently, only few representative examples will be discussed briefly.

a) The Major Trend.

Studies typical of this trend have employed both structural^{ed} questionnaire type of tests, and projective kinds. Some have involved adult criminals but the majority were conducted with juvenile delinquent populations.

Attempts to establish subscales for criminals: The M.M.P.I. is a typical example of the tendency to form a subscale for criminals. A number of studies have reported successful identification of various criminal groups on the basis of subscales derived from this test, (for example, see WILCOCK, 1964, CRADDICK, 1963, GYNTHNER & McDONALD, 1961, ROSEN & MINK, 1961 for civilian offenders, and CLARK, 1949, 1952, BLAIR, 1950 for military offenders).

The ability to identify juvenile delinquents on certain subscales of the M.M.P.I. can be observed in HATHAWAY and MONACHESI (1953, 1959). It was found that delinquents produced more responses on the so-called 'excitor scale' i.e. Pd., Sc., and Ma. subscales (Psychopathic, deviation, Schizophrenia and Hypermania). On the other hand, high scores on a 'supressor scale', i.e. D., Mf., and Si (Depression, Masculinity-Femininity and Social

introversion) were associated with a reduced rate of delinquency. The M.M.P.I. Pd. subscale was also found, previously, to typify juvenile delinquents, but with less discriminative power than in the above report, in MONACHESI (1950).

Perhaps the studies with the adult, particularly, the habitual offender, are more interesting in the present context. Thus, in a series of studies, (PANTON, 1958a, 1958b, 1959a, 1959b, 1960) similar results were obtained for adult groups. It was observed that different criminal subgroups might be detected by different subscales. Thus, the Pd., Sc., and Pa. subscales were typical for 1096 White inmates rather than of 458 Negroes (PANTON, 1959a). This was also supported in another study employing 231 White, and 228 Negro prisoners (CALDWELL, 1959).

Studies with the persistent criminal (recidivists) reported successful identification by means of the M.M.P.I., but often not with the same subscale. For example CLARK's (1948) M.M.P.I. 'Recidivism scale' derived from the performance of AWOL (military) offenders was found ineffective with civilian, habitual criminals (see also comments in FREEMAN & MASON, 1952).

PANTON (1962b) reported 80.5% successful prediction of parole-violators and non-violators on the basis of 26 M.M.P.I. items. Cross-validation study yielded 78.6% success. On the other hand WATTRON (1963) reported a set of 72 M.M.P.I. items as a good predictor of failure on the parole. PANTON (1962a) reported the Pd., Ma., and Ap. subscales to identify habitual criminals, except

those between 20 - 29 years of age who have committed less than 3 offences. The same subscales were reported to detect recidivists successfully elsewhere (LEVY & FREEMAN, 1954). However, WEST (1963) found that habitual criminals (in England) were identified by both the M.M.P.I. Pt. (Psychaesthesia) and the Pd. subscales. It is noticed that the Pd. subscale was reported often to differentiate successfully criminals from non-criminals. WEST (op. cit.) has discussed the merits and limitations of this subscale and concluded:

"One may tentatively conclude that this scale, while of some use in distinguishing between criminals and non-criminals, is less useful for distinguishing one kind of criminal from another". (Pp. 80 - 81).

Another example of establishing a typical criminal profile from a general test, can be seen in the area of intelligence (the W.A.I.S. and W.I.S.C. tests). A full discussion of the findings with these tests is not necessary here. It will be sufficient to make a short comment to illustrate the present position with regard to the ability of the W.A.I.S. and W.I.S.C. to identify the criminal, especially the young offender.

Thus, a number of studies have supported the hypothesis that the juvenile delinquents typically produce a high Performance I.Q. and low Verbal I.Q. (see for example, ALTUS & CLARK, 1949, VANE & EISEN, 1954, DILLER, 1955, HARRIS, 1957). But the claim that they also display a typical subtest configuration has not been confirmed unequivocally.

The foregoing exemplifies the tendency to establish a typical profile or special subscales for criminals on the basis of general personality and intelligence tests. Some attempts were more successful than others. The fact that a number of studies with the M.M.P.I. have shown positive results with criminals is encouraging, but the inconsistency of such findings is problematic. In any event, it is difficult to accept that these findings, inconsistent as they are, can serve as an adequate substitute for a special test of criminality.

Identification of criminals on the basis of psychopathological signs:

The belief that criminal activity and psychiatric disorders are closely associated has been predominant in psychological thinking since the times of PINEL (1745 - 1826), ESQUIRAL (1772 - 1840) and PRICHARD (1786 - 1848). They and others, through their work, gave rise to the subsequent trend to characterize the criminals on the basis of clinical tests designed to reveal pathological signs in the mental functioning. The common assumption is that, as a form of maladjustment, criminality must have typical manifestations of mental disorder which such tests sought to detect.

One of the early hypotheses in modern times, claimed that, as a group, criminals are mentally deficient compared with the general population. The introduction of intelligence tests in the beginning of this century resulted in an intensive study of this assumption. The contention that criminals reveal defective intelligence,

(or that those caught are the least intelligent) was often put forward. For example (GLUECK & GLUECK, 1934) claimed that recidivists in their study of juvenile delinquents had a lower mean I.Q. than the general population. One recent example (RAO, 1960) has reported that criminals who participated in his study had inferior intelligence.

This type of finding has been repudiated in the past and in subsequent studies (e.g. PATI, 1965, WALTER, 1953). The hypothesis that criminals are inferior in their intelligence compared with the general population, and the more criminal the individual, the greater the deficiency, was challenged by WEBSTER (1954 - 1955). The mean I.Q. scores for first offenders and habitual criminals as derived from the Otis Quick Score test was equal and comparable with the average I.Q. for the general population. However, the author pointed out that the range of I.Q. for criminals spread from feeble-mindedness to superior mental ability. The absence of relationship between intelligence and criminal recidivism was supported again, with the Raven Progressive Matrices test (MARCUS, 1955).

Some differences in I.Q. were found between different ethnic groups of criminals (ROZYNKO & WENK, 1965), but these were interpreted in terms of differences of motivation rather than as the result of varying intellectual capacities.

Finally, it appears that the contemporary position is that generally, criminals cannot be considered as having inferior

intelligence when compared with the general population (PATI, 1965, SMITH, 1962, DOPPLET & SEASHORE, 1959, SHULMAN, 1951, and others). The difference observed in scoring highly on W.A.I.S. Performance scale and lower on the Verbal scale is thought to reflect learning disabilities. Unfavourable home conditions and poor schooling provision accounts for such difference (SMITH, *op. cit.*).

The hypothesis advanced by RAPAPORT *et. al.* (1945) that intelligence tests may serve as personality tests was questioned by FRIEDMANN (1959). On the basis of 40 years study she doubted the validity of assessing the personality of individuals from their performance on intelligence tests.

Another illustration of the trend to identify offenders, especially the habitual criminal, in terms of psychopathological symptoms is exemplified in the case of tests of introversion-extraversion.

The tendency of criminals to possess extraverted personality was claimed by MICHAEL (1956). A 28 years follow-up study of 551 subjects has revealed that 'extraverted' children were proportionally more likely to commit not only juvenile delinquent acts, but also crimes in adult life, compared with 'introverted' and 'ambiverted' children.

ROBIN (1957) studied the validity of FRANKS's (1956) theory. The latter advanced the hypothesis that there are two kinds of criminal recidivists. One, an 'introverted' type, easily conditioned, who became an offender because of poor environmental

background. In other words, this type has learned an undesirable code of behaviour. The other, an 'extraverted', psychopathic type, difficult to condition, that is, does not benefit from socialization, and, therefore, may come from any environment. ROBIN^g (op. cit.) has failed to support that theorem. No differences in the immediate personal environment of 65 introverted and extraverted delinquent recidivists from an approved school were observed.

BARTHOLOMEW (1959) has studied the performance of adult offenders on the M.P.I. Two groups, 50 criminal recidivist and 50 first offenders, with a mean age of 34.66 years, ranging from 22 - 54 years of age, were employed. The number of previous offences for the recidivists was $M = 9.72$ (S.D. = 6.20), with a range of 2 - 28 previous convictions. Results have shown that the recidivists were more neurotic ($M = 15.69$ S.D. = 5.57) than first offenders ($M = 12.43$, S.D. = 5.91, $p < .01$). Furthermore, the former were more extravert^d ($M = 12.90$, S.D. = 4.46) versus ($M = 10.71$, S.D. = 5.91) for the first offenders ($p < .05$). Similar results were obtained with another group of 54 recidivists (op. cit.). The author concluded that the criminal recidivists were more neurotic, and also claimed to gain support from another source: "... FIELDS (private communication) finds a neuroticism score for recidivists greater than that for the normal population." (op. cit. p. 126). FICH (1962) re-affirmed the claim that criminal recidivists show more neurotic trends

than non-recidivists. Again, using the M.P.I. recidivists' scores on neuroticism yielded $M = 28.06$, $S.D. = 12.62$ versus $M = 24.12$, $S.D. = 9.80$ for the control group. However, in his study the 'extraversion' scale did not differentiate the two groups. The same test was used with habitual criminals, by WEST (1963) who concluded:

"Two of the chief clinical observations, namely, the high incidence of neurotic tendency and the positive association between this and passive-inadequacy, were both confirmed... In addition, the clinical rating of emotional indifference were to be positively correlated with the test measurement of extraversion. The findings lent some support to the clinical division between passive-inadequates and active-aggressive or predatory type of anti-social personality; the former group included a higher proportion of introverted-neurotic individuals, the latter a higher proportion of extraverted and emotionally indifferent individuals". (op. cit. p. 83).

The hypothesis that criminals are neurotic individuals was tested by other means as well. For example, LUTHRA (1957) reported that all his testees, a group of convicts and a group of probationers, appeared to be neurotic. This was concluded on the basis of their performance on a battery of tests including the T.A.T., the Rorschach and Word Association test.

The contention that the criminal behaviour is a form of neurotic disturbance, associated with acting-out tendencies, is common to many studies. The foregoing, in fact, represent only a few of such investigations. Yet this assertion has failed to elicit a unanimous agreement. NEUSTATTER (1957), for example, has pointed out that since the psychoneuroses are the most common of all other

forms of psychopathology, it is expected to find a high percentage of such maladjustments among criminal population. But, in fact, he claimed that "On the whole the psychoneuroses play a small part in crime, nevertheless they are so common that it is impossible to omit them". Others (GLUECK & GLUECK, 1956) have also suggested that not all delinquents are neurotics, and it is necessary to differentiate between those who are neurotic and those who are not.

The term 'psychopath' was used frequently as synonymous with 'criminal', often erroneously. This was common among those attempts to provide various types of criminals. One example of such a tendency is illustrated in the following. BARTHOLOMEW (op. cit.) suggested three types of criminal recidivists, varying according to the degree of their psychological disturbances. That is a 'true' psychopath' or 'anethopath' (a concept introduced by KARPMAN, for example KARPMAN, 1941), a 'non-neurotic sociopath' type, and finally a 'phallic psychopath' (after WITTELS, 1937).

The term 'psychopath' is understood in contemporary psychological thinking to refer to a very small group of people, far smaller than the criminal population. The term itself is not clear and involves a great controversy. It was often suggested that 'psychopathy' is not a homogeneous class of individuals but rather include^s sub-groups (KARPMAN, 1948). The latter have suggested various types of psychopaths, 'primary' ('anethopath!') and 'secondary', or 'symptomatic' and 'idiopathic' (the last two

were also adopted by ARIETI, 1963). Moreover, KOZOL (1961) emphasized that the different definitions given to 'psychopathy' indicate a lack of consensus whether this form of maladjustment should be included among the neuroses or among the psychoses (see also MAUGHS, 1957, 1961). Thus, BROMBERG (1961) believed that the structure of the psychopathic character is similar to that found in the neuroses:

"The empirical findings in the patients which make a diagnosis possible appear less stereotyped; hence the psychopath appears more like a neurotic individual of rather fixed character structure".
(op. cit. p. 441).

On the other hand, CLECKLEY (in MAUGHS, 1961) claimed that the psychopath belongs in the group of the psychoses. It seems, therefore, that the knowledge about this form of psychopathology is meagre indeed, and that opinions vary considerably.

JACOB (1961) has attempted to demonstrate the similarities and differences between the criminal and the psychopath. Both seem to show a 'distortion of mental and emotional pattern' an 'anti-social, or anti-society view', both possess a feature explained as 'single mindedness' which serves to facilitate the fulfilment of their goals and ambition. Both reveal 'compulsive tendency'. On the other hand, criminals differ from the 'psychopath' in, for example, a tendency to be 'persistent' in having 'anxiety' and, sometimes, 'remorse', and reveal lower intelligence than psychopaths.

The following excerpt from EYSENCK (1963 - 4) appears to summarize adequately the contemporary position concerning the relationship between criminality and psychopathy:

"I have indeed proposed a theory of psychopathy, but psychopathic behaviour, while it overlaps with criminal behaviour, is by no means the same sort of thing; most experts would agree that, while some psychopaths are criminal, many are not, and that most criminals are not psychopaths". (op. cit. p. 151).

The use of the term 'psychopath' for criminals was often replaced by the term 'sociopath'. The sociopathic personality (antisocial reaction type) was described (TUCHLER, 1965) as chronically antisocial individuals who are always in trouble, profiting neither from experience nor from punishment, and maintaining no loyalty to any person, group or code. They are frequently callous and hedonistic, showing marked emotional immaturity, with lack of sense of responsibility, lack of judgement and an ability to rationalize their behaviour so that it appears justified. DIAMOND (1961) suggested that the core of the pathology of the 'sociopath' is faulty identification with others, and this"... limited or transient identification or complete lack of the capacity - ^{as} counts for his antisocial behaviour" (op. cit. p. 464). But GUTTMACHER (1962) feels that only 10 - 15% of all criminals may belong to this category. Among them some of the most malignant and recidivist offenders may be found. The author also stated that these individuals possess a peculiar incapacity to conceptualize, particularly with regard to 'time'.

Thus this type of maladjustment seems to account only for a small group of criminals, yet the typical characteristics of the maladjustment is not clear enough. This was pointed out by BEARDSLEY (1961) who compared three groups of schizophrenics, neurotics, and sociopathic personalities, 12 testees in each by means of the W.A.I.S., the Rorschach and the Szondi test. He concluded that it is evident that there is no one set of personality characteristics typical of the sociopath. Rather, it appears to be a 'sociopathic syndrome' characterized by the following: intensive, infantile[†] need for sensual contact with little hope of ever being able to derive satisfaction from this need, moving casually from one relationship to another, lack of warm relationship to mother in childhood, poorly integrated super-ego, a rather weak ego which fails to integrate experience with basic goals and impulses, habitual defense against the demands of the external world and the inner instincts through habitual responses, absence of critical awareness of one's own motives, repression mechanism, and obvious anxiety and guilt. This 'syndrome' is believed to apply to all people who 'act-out' against society and are ill enough to be sent to mental hospital.

Identifying criminals by means of emotional, qualitative traits:

The general tendency of psychological testing was to concentrate on the area of emotional characteristics of the criminal (intelligence tests, excepted). This trend is closely associated with the fact that most theories of the formation of the criminal

personality used qualitative terms, such as, ⁹aggression, identification, defense mechanism, etc. It was often claimed that in these areas of personality the criminals display the greatest handicap.

Consequently, a large number of psychological tests were derived from such theories, and were expected to provide quantitative confirmations for the conceptual postulations. One such example, is the Szondi test, often used, particularly in Europe. The overall results reported with this test do not justify placing an unqualified trust in the discriminative power of the Szondi, when used with offenders. GUERTIN (1951), for instance, failed to identify successfully 12 male delinquents from a correctional institution and 68 hospitalized, criminally insane schizophrenics by means of their performance on the Szondi test. However, he believed that the technique of 'picture presentation' in psychodiagnosis, as used in the Szondi, is promising and ought not to be discarded. DERI (1954) could not find specific Szondi 'signs' for murderers, prostitutes, thieves and truancy cases employed in his study. But ~~all~~ all participants were reported to display 'intensive primitive drives with simultaneous lack of integrative or sublimative mechanisms' as well as a 'lack of healthy, self-regulated process'. COULTER (1959) tested the efficiency of 14 Szondi indicators and counter-indicators of anti-social behaviour on a large sample of experimental and control groups. Only two indicators have demonstrated significant discriminative power,

of which only one supported Szondi prediction.

On the other hand, GRANT (1956) claimed to have predicted successfully 'institutional adjustment' on the basis of the performance of criminals on the test. The last two studies used rather unsophisticated experimental design, i.e. lacked control groups, and employ a small number of testees and thus must be treated with due caution. Finally, the Szondi test failed to discriminate 18 alcoholics from 18 abstainers^{no} (i.e. people who have stopped drinking) and 18 'non-drinkers' (RAMFALK & RUDHE, 1961).

Another illustration for the above-mentioned trend is the use of the T.A.T. This test is frequently included in the test battery for criminals and a complete survey of its results is beyond the scope of the present context. It was thought that one or two examples would be sufficient to illustrate this point.

YOUNG (1956) for instance, administered the T.A.T. to two groups of delinquent boys and delinquent girls, 34 participants in each. He observed some differences on the test protocols between the sexes, but the most significant findings referred to the whole group. As a group, the delinquents emphasized the following themes: an expressed need for 'succorance and love', expressing 'aggression' and 'intra²gressive-dejection'. LYLE and GILCHRIST (1958) believed that differences between delinquent

and non-delinquent groups were expressed most in terms of the manner of organizing the themes rather than in their content. Thus, they have observed that the 31 delinquents employed showed little evidence of guilt or intrapunitive reactions compared with the T.A.T. protocols of 36 non-delinquents, (see also PEIZER, 1956). In addition, it was suggested that the best discrimination may be observed by the presence or absence of certain defense mechanisms. The same study, based on rating T.A.T. protocols by two independent scorers, showed that ^{the} non-delinquent, for example, manifested more mechanisms of denial, inhibition and rationalization.

Information of that nature is typically provided by other projective tests such as the Rorschach, M.A.P.S. and the HOLZMAN tests.

b) The Minor Trend.

It has already been mentioned that this trend is distinguishable from the former in two respects: First, it is typified by the use of tests specially devised to measure single psychological mechanisms, rather than a general personality profile. This, also includes tests of special relevance to criminal populations. Secondly, many of the above-mentioned types of tests studied psychological factors other than purely emotional reactions.

Tests of aggression: Three studies will exemplify the tendency to employ special tests for measuring aggression among criminal groups. BERG and TOCH (1964) have administered a self-devised test of aggression, consisting of 12 slides (photographs) to 30 impulsive and 30 neurotic prisoners. By the definition of the selection of the groups, it was hypothesized that the former will perceive these photographs in terms of 'aggression' directed outwardly, toward other objects or people, whereas the neurotics will display a more 'socialized version' of aggression. The results reported have confirmed the hypothesis.

The direction of aggression as expressed by criminals, was also studied by means of the Rosenzweig Picture-Frustration Test. In one study, the effect of long incarceration on the direction of aggression was studied (PEIZER, 1956). Two groups of 40 inmates each, one having served at least 3 years in prison and the others, a maximum of one year imprisonment, were compared. The length of imprisonment was found to mitigate extra-aggressive tendencies, and resulted in, significantly, more intra-aggressiveness. VANE (1954) compared the performance of 50 delinquent girls (aged, $M = 18.9$, $S.D. = 1.6$ years) with that of 50 non-delinquent girls (aged $M = 16.9$, $S.D. = 0.8$ years). The delinquents differed significantly from the non-delinquents, but in the opposite direction to that expected. They have revealed a tendency to direct less aggression outward and more to turn aggression inward or to avoid it altogether. The authors expressed skepticism with regard to the usefulness of this test with delinquent girls.

Other special tests: CASSEL & HARRIMAN (1959) reported an attempt to identify criminals on the basis of two special tests; a Group Personality Projective Test (GPPT), and an Ego Strength Q Test (ESQT). The results obtained have distinguished the criminals from the 'normals', but not from a 'neuro-psychiatric' group. LEIBERMAN and CHAMBERS (1963) reported 88% correct identification ($p < .01$) 50 prisoners and 50 students on the basis of a 'Picture Identification Test (PIT)'. PETERS (1957) has found that adolescent delinquents held negative feelings toward themselves and others, when compared with non-delinquents, as revealed from their performance on a self perception test and a modified version of S.R.A. Youth Inventory. TRENT (1957) has used a sociometric test and a test of manifested anxiety with 63 delinquent boys.

KINGSLEY (1961) administered the Sack's Sentence Completion Test to three groups, i.e. 25 psychopathic offenders, 25 non-psychopathic offenders and a group of 50 controls. Psychopaths differ from the latter in their attitudes toward 'father' 'the future' and their own 'self-esteem'. Some differences between the psychopaths and non-psychopaths were also observed.

The above brief list of special tests illustrates the tendencies to look for tests, other than general personality measurements, in identifying the criminals.

A special test for juvenile delinquency: An attempt to devise a special questionnaire type of test for detecting juvenile delinquency is reported below. (Another attempt, not necessarily purely psychological, was reported by GLUECK & GLUECK, 1950, 1956). A 40 'true-false' item questionnaire was devised by QUAY and PETERSON (1958). The test requires a minimum 5th grade reading ability, administered in 25 minutes and easily scored. The standardization group included a total of 781 juvenile delinquents and correct classification was reported as 67%. The reliability coefficients for several samples ranged from $r = .53$ to $r = .82$. A factor analysis of the responses (PETERSON et. al. 1959) yielded three main factors. One, a 'Psychopathic' dimension, is characterized by traits such as 'tough, amoral, rebellious qualities, impulsiveness, conspicuous distrust of legal and other authorities, and apparent freedom from family ties'. These resemble the qualities measured in the M.M.P.I. Pd. subscale. A second factor, a 'Neurotic' dimension is typified by feelings of remorse, tension, guilt and depression. The third factor 'Inadequacy' includes a persuasive sense of incompetence and failure. Two background factors were 'vaguely' observed namely 'family dissension' and a 'history of difficulties in school'. In another study (QUAY & BLUMEN, 1963), factor analysis revealed five factors which were related to 13 types of offences. These factors were: 'uncomplicated truancy', 'Impulsivity, thrill-seeking delinquency' 'Interpersonal aggression' - related to hostility toward others, e.g. assault, 'Impersonal aggression' -

running away from home and vandalism and 'age' - runaway, bicycle theft, etc.

Tests of cognitive functioning: This section presents studies with tests, mostly self-developed measurements, pertaining to the cognitive functioning of offenders, other than tests of intelligence.

JONES et. al. (1955) compared the performance of 41 delinquents with that of 49 non-delinquents on a version of the Street Gestalt Test. The results obtained for the delinquents were reported to suggest some retardation in their perceptual-cognitive development. In another study (BAKER & SARBIN, 1956) 41 psychopathic delinquents did not differ from 48 non-delinquents in their performance on a self-devised, special test of perceptual-cognitive differentiation. The delinquents, however, were reported to show greater difficulties in making such differentiations. This was interpreted as a factor which contributes toward their, so-called 'social-retardation'.

The hypothesis that confinement (imprisonment) results in personality deterioration, including a loss of cognitive efficiency was tested in Australia by TAYLOR (1961). The Koh's Block Design Test and the McGill Delta Test differentiated ($p < .05$) inmates who served longer imprisonment sentences from those who served shorter sentences. However, only 6 pairs of inmates, and another 10 long term prisoners participated in the study. Although the

results confirmed the hypothesis, the small sample employed does not permit any generalization.

HARRINGTON and DAVIS (1953) attempted to distinguish between a group of 29 delinquent and 33 non-delinquent boys on the basis of their performance on a list of proverbs rated along the abstract-concrete dimension. The groups were equated for age and intelligence. Four independent scorers rated the results with interscorer reliability coefficients varying from $r = .88$ to $r = .97$. The delinquents did not differ from the non-delinquents in their ability to abstract the general principles from a list of proverbs.

Discussion.

The belief that criminal conduct is a form of behaviour which is closely associated with psychological illness is an old conception. Such an hypothesis that ^Alowless activity reflects an underlying mental disturbance is shared, in varying degrees, by most contemporary psychological theories of criminality. This predominant presumption in psychological thinking has created a trend towards studying the criminal, using clinical tests with the purpose of substantiating that assumption. A striking phenomenon is that in spite of several decades of intensive research, the exact nature of this assumed psychological disturbance, or group of disturbances, has not been agreed upon. Consequently, an outstanding psychological test for criminals has not been developed.

The foregoing brief survey has revealed two features inconsistent with the assertion that 'criminality' is associated with 'psychopathology'. First it is not clear why psychological tests which have demonstrated satisfactory power to detect adequately identifiable groups of psychological maladjustments (clinical groups) have failed to do so with the majority of the criminal population. The question arises whether the defect lies in the inappropriateness of the tests, in the theories behind them, or in both. Or, it might be possible, that the alleged association between 'criminality' and 'psychopathology' is less than what was

assumed. Secondly, it is clear from the above that the search for an adequate test, or battery of tests, which will differentiate the majority of criminals from the non-criminals is in its early stages. Fresh attempts at such an aim are reported frequently. Again, this could be an expression of either the difficulty of identifying a heterogeneous group (psychologically and otherwise) such as the criminal population on a set of psychological factors, or the result of the fact that criminality is an independent factor which has not been identified successfully so far, in psychological terms. In any event, both features justify the need to establish a test for identifying the adult criminal in 'non-psychopathological' terms.

The last concept seems to maintain a hypothesis which appears to be in conflict with the assumption that criminality is largely a form of psychological illness, as it implies that a 'non-psychopathological' criminal type may be found. In fact, this suggestion is supported by previous claims. WEIHOFEN (1954), for example, argued that:

"To agree to theories asserting that all criminals are mentally disordered, else they would not engage in such dangerous behaviour, is impractical as it would reduce the concept of mental disorder to a point where it has no discriminative significance. Many types of crime, especially petty crimes, cannot be attributed to mental disorders. It is rather due to defective training and bad environment... On the other hand, it is true that the most striking characteristic that large numbers of criminals have in common is emotional immaturity". (op. cit. Pp.12 - 13).

The other contention is that in spite of the heterogeneous nature of the criminals as a group, there is a distinct majority which can be identified in psychological terms.

THORPE (1946) has argued that the majority of delinquents and criminals are individuals experiencing serious difficulties, that is, they are relatively typical individuals who are in most respects similar to the general population, but are exposed to more or less severe stress - producing personality problems.

Nearly 30 years ago EAST and HUBERT (1939) believed that most prisoners, at least 80% were psychologically normal, and that psychological treatment of crime suffered from 'over propogandization and over-statements'. BROMBERG and THOMPSON (in ROSENBERG et. al. 1964, p. 57) are reported to have studied a random sample of about 10,000 convicts. Again, the reported figure was that 82% were found "average or normals". GUTTMACHER (1962) has divided the criminal population into four psychological sub-groups. He, again, gave the figure of 80% for an estimate of the proportion of the 'normal criminals', i.e. a dysocial group comprised of individuals who have identified with a social elements in society, usually with morally and socially defective parental figures. The rest, 20%, in his opinion, consist of groups of 'accidental, occasional criminals', a group of 'constitutional, organically predisposed offenders', and a group of 'psychopathic or sociopathic criminals'. The assertion that most criminals are psychiatrically 'normals' was claimed, by the

author, to be in harmony with the opinion expressed by leading authorities in the study of the psychology of crime, such as ZILBOORG, GUTTMAN and STAUB. Moreover, GUTTMACHER (op. cit.) claimed that the same proportion of the incidents of psychological abnormality is true for the criminal recidivists as a group.

The latter assertion challenges the hypothesis that the severity and persistence of criminal activities is necessarily related to the degree of psychopathology, that is, that the more persistent the criminal the greater the mental disturbance.

The fact that the severity of psychological characteristics varies from one criminal type (or individual) to another is a phenomenon acknowledged by a great number of psychological theories of criminality. Thus, provisions are often made for various psychological types of criminals. Unfortunately, one set of classifications does not, necessarily, correspond to the other. Yet, most suggestions at classifying the criminals into types share the belief that the degree of psychopathology observed in the criminal population range^s from one extreme to the other, that is, from severe mental disorders, i.e. psychoses, to a relative absence of discernible psychopathological signs.

This questions the wisdom^l of attempting to characterize all criminals on the basis of such clinical indices. It is not surprising that such instruments were relatively inappropriate to identify all the 'normal offenders'. One is faced with psychological measurements which are adequate for identifying only a

certain portion of the criminal population, namely, the psychologically ill.

Therefore, without repudiating the contention that criminality is associated with psychological factors, the following hypothesis might be introduced. It is suggested that criminality is primarily associated with psychological underdevelopment rather than with psychological illness. Thus, it is suggested that criminals display an insufficient psychological development and emotional maturity rather than a faulty development. In short, this postulates that such persons display 'normal' psychological, developmental characteristics which did not mature or have failed to achieve essential and final stages of psychological development. This is in contrast with the idea of faulty development which implies that maladjustment may be due to a process of regression, ^psuppression or to unfavourable predispositions. (This possible explanation will be elaborated further in the discussion, see chapter 7).

The implication of the above suggestion leads to the abandonment of traditional psychodiagnostic testing of criminals, and to the adoption of a different approach. It is possible, for example, to employ tests which measure the developmental progression of psychological propensities in the general population and compare them with that observed among criminals. In the present study such tests, pertaining to the abstract-concrete facets of the cognitive functioning, were introduced. The first test, the

Kahn Test of Symbol Arrangement (the KTSA) is used for portraying such typical cognitive functioning of 'genuine criminals'. This test is described in the next chapter. The second test, the Symbolization Test for Criminals (the S.T.C.) represents an attempt to adopt and exploit these cognitive characteristics for differentiating criminals from non-offender populations.

CHAPTER 3:THE KAHN TEST OF SYMBOL ARRANGEMENT (KTSA).

The Kahn Test of Symbol Arrangement (referred hereafter as the KTSA) is relatively a new test which offers a unique psychological device for the assessment of human adjustment to ~~his~~^{the} external environment by means of the ability to abstract culturally determined symbols. The following survey describes the historical development of the KTSA and reviews reliability and validity studies, effect of age and intelligence on the test performance, studies with children and comparisons with other psychological tests. A brief description of the KTSA, and its administration and scoring principles is also provided.

Sources of information: Information about the usefulness of the test was obtained from two independent sources. In the first place ~~a~~ first-hand information and, in some cases of unpublished reports, a secondary resource~~s~~ about all references listed in this volume was obtained. In addition two previous reviews of the KTSA; an unpublished manuscript (HILL & LATHAM, 1965) originally written in 1962 - 3, and a published survey by L'ABATE and CRADDICK (1965) were consulted.

The process of accumulating the material about the KTSA was initiated in 1964 - 5 before the appearance of the publication by L'ABATE & CRADDICK and often contained more details than that reported in the latter.

At times slight contradictions between the facts gathered independently and those reported in the published survey were observed. In such instances the decision as to which information is more reliable was in favour of the former. Ideally, such a dilemma ought not to have arisen. But in view of the substantial quantity of unpublished studies involved, this was, regrettably, unavoidable.

The present survey is the most intensive and up-to-date account of studies with the KTSA known to the writer. It covers all studies conducted over the period 1949 - 1967. Personal communications with some members of the psychological personnel of the U.S.A.F., particularly with Mr. Clack, and with Dr. Craddock of Washington U.S.A., were valuable.

HISTORICAL DEVELOPMENT OF THE KTSA.

Kahn is reported (KAHN, 1957, Pp. 104 - 106, HILL & LATHAM, 1965, Pp. 4 - 6) to have began experimenting with the possibility of employing symbol representations as a mean of psychological evaluation already in 1939. Then the purpose was for vocational screening, that is, to facilitate the selection of applicants for clerical positions in N.Y.C. There is, of course, hardly any novelty in adopting such a technique. On the contrary, this idea is quite common to many psychological tests such as the Binnet, WISC, T.A.T. M.A.P.S. and the like. Yet, this has inspired Dr. Kahn to introduce an original technique which was devised subsequently. It was in 1949 that the idea of constructing the KTSA occurred when the purchase of symbol-objects in a Los Angeles hobby shop was observed. Consequently, a small group of plastic symbol-objects was selected to form the substance for a new test situation.

There are two distinct periods in the development of the K.T.S.A. The first, a 'preliminary period' (1949 - 1956), is marked by initial explorations to assert the usefulness of the test. The second, a 'post-revision' period', began following the final revision and formulation of the test in 1956 (KAHN, 1956b, 1957). The revision did not introduce any drastic changes but only simplified the test. Administration was considerably shortened and scoring categories reduced. In spite of a clear

linkage between the preliminary form of the KTSA and its revised version, it would be justified to regard the latter as an entirely new test. (Prof. CRADDICK, 1965, private communication).

PRELIMINARY PERIOD (1949 - 1956). The initial experimental studies with the newly devised test followed a preliminary manual (KAHN, 1949) supplemented by group norms and standardization (KAHN, 1953) and were conducted in Los Angeles. Two unpublished Ph.D. dissertations (KAHN, 1950, FILS, 1950) gave impetus for subsequent studies with the test. A succession of exploratory investigations by KAHN (KAHN, 1951 to 1956a) provided additional promises ^{of} to the potential usefulness of the test to differentiate normals from some psychiatric groups; namely organics and schizophrenics. Further support came from three unpublished MA. theses (BRODSLEY, 1952, ESTERLY, 1954, SZENAS, 1954). A provision for a theoretical rationale is reported in KAHN (1955b) and (KAHN & MURPHY, 1958) and first critical evaluation appeared by SHO BEN (1953). During this period, the test was developed by KAHN and associates in the U.S.A.F. Medical Corps where many studies were not submitted to ^{general} public publication.

POST-REVISION PERIOD (1956 -): The publication of the revised scoring and administration manual (KAHN, 1956b) supplemented by a clinical manual (KAHN, 1957) marked a new developmental phase

in the studies with the K.T.S.A. The new revision has simplified the test by reducing categories of abstraction from 17 to 9. In addition, scored items decreased from over one hundred to twenty-four. The original weighted scores, arrived at by t-ratio comparisons between normal and psychiatric groups (KAHN, 1950, FILS, 1950) were retained for simplification purposes and 'maintenance of original values' (elaborated in later sections).

The commercial distribution of the K.T.S.A.* gave rise to an increasing interest from a wide range of researchers and was no longer ^vconstricted to those associated with the U.S.A.F. During the last eleven years, over sixty studies with the KTSA have been reported in the professional channels. This included five Masters' theses and two unpublished PhD. dissertations. A group of studies explored the test's reliability; test-retest reliability, inter-scorer reliability and reliability of scorers of varying skill, and its validity; predominantly concurrent validity with psychiatric diagnosis. The clinical groups involved included mainly patients with cerebral dysfunction, schizophrenics, neurotics and character and behavioural disorders.

Several studies were conducted with children in an attempt to establish KTSA norms for lower ages (KENNY, 1962, 1965, ABIDIN, 1966b, 1966c). It was hoped that such developmental studies might also throw some light on the construct validity of the categories of abstraction used in the test. Some studies

* Published and distributed by Psychological Test Specialists, Box 1441, Missula, Montana.

employed emotionally disturbed children (FINK & KAHN, 1959, GUERIN, 1966, GUERIN & ABIDIN, 1967), juvenile delinquents (EVANS, 1958), and adolescents (BATES, 1960, WAGNER, 1963b). Criminality, particularly military offenders, receive some minor attention (GOULDING, 1958, HILL et al. 1963a). A few cross-cultural comparisons involving Germans and Vietnamese (THEINER & GIFFEN, 1964), Japanese (NAKANISHI, 1964, 1960) and British psychotics (KIPPER, 1967) were reported.

The applicability of the KTSA has been explored in several fields other than clinical psychodiagnosis. Among these are the usefulness of the test as a predictor of success in college (SCHILLER, 1964), with business and administration personnel (MARTH, 1963), in the school system (ABIDIN, 1966a), in counselling (WAGNER, 1963a) and as an aid to psychotherapy (KREIGMAN & KREIGMAN, 1965a, 1965b).

Some investigators explored the relationship of the KTSA with age and intelligence (CRADDICK & STERN, 1963). Sex differences on performance of the test were reported by WYMAN (1963). CRADDICK studied the performance on the KTSA under several experimental conditions such as a severe biodynamic stress (1964a) or under simulated 'psychosis' (1967).

Encouraged by the outcomes of these studies, Kahn has recently attempted to employ his symbol-objects in a new experimental Kahn Intelligence Test (KIT:EXP). The lack of sufficient information concerning this undertaking does not warrant any comment here.

THE TEST.

The relatively small amount of research conducted with the KTSA resulted in the fact that it was, apparently, not as widely used as some other psychodiagnostic instruments, hence the little familiarity with it. Under these circumstances it would be proper to present here the main highlights of the test's procedure, scoring principles and rationale. For further discussion and details the two published manuals (KAHN, 1956b, 1957) as well as KAHN & GIFFEN (1960) may be consulted.

The Test Materials.

The KTSA employs fifteen plastic symbol-objects and a specially designed strip. At a certain point in the administration of the test, the Record-Sheet serves also as a part of the test materials. (see APPENDIX II, p. 4).

Description. The plastic symbol-objects selected consist of four single objects and four groups of similarly shaped objects. The single symbol-objects are, an anchor, a circle, a cross and a parrot. The rest of the eleven objects are grouped as the following: two butterflies, varying in outline, size, width and colour; three dogs, varying in size and colour; three hearts, varying in colour, thickness, size and translucence; and finally, three stars, two of which are identical and the third varies in colour,

thickness, size and translucence. A felt strip, divided into fifteen squares, numbered from 1 to 15 is also provided. (See photograph, APPENDIX I). In addition, a geometric shape, a piece of a circle (code sign Y) is introduced for a minor use.

Procedure and Administration.

The KTSA consists of two distinct parts; a symbolization test and a sorting test. In the first part, the symbol-objects have to be arranged on the strip five times accompanied by reasoning and symbolizations. The arrangements vary from a free-choice placement to more structural arrangement, e.g. according, ^{to} liking and disliking _{the} the objects. Administration usually lasts for 20 minutes, and is easy to master.

Description: The five arrangements required in the first part of the test are described below in five steps. These explain the nature of the tasks required from the testee in each step. The exact instructions in details may be found in the scoring and administration manual.

- Step 1: (a) First arrangement: Testee is instructed to arrange the objects on the strip in any way he wishes. This will be followed by a reason for his arrangement.
- (b) Naming: Testee is asked to name each of the 15 objects

- Step 2: (a) Second arrangement: As in Step 1(a).
- (b) Symbolization: Testee is asked to state what each one of the 15 symbols stands for, represents or symbolizes.
- (c) Testee is required to place Y piece over any of the objects.
- Step 3: (a) Third arrangement: Testee is instructed to repeat the previous placement exactly.
- (b) Estimation: Before so doing he is asked to estimate the number of correct placements he expects. Estimation of the accuracy of correct placement is made following Step 3(a) as well.
- (c) Testee is instructed to place each of the transparent objects over any of the remaining ones.
- Step 4: (a) Fourth arrangement: Testee is instructed to arrange the objects according to his liking or disliking the symbols in a descending order.
- (b) Reasoning: Reasons for the first three likings and last three dislikings are recorded.
- Step 5: (a) Fifth arrangement: as in Step 1(a).

An additional arrangement 'to test the limits' may be introduced where previous responses were all of 'don't know' or 'naming' types. In this case the tester is supposed to encourage the

testee, sometimes by giving examples if necessary, in order to clarify whether previous responses indicate misunderstanding of the task, low abstract capacity or lack of motivation to comply with the instructions.

The second part of the KTSA is a sorting task. Here, all fifteen symbol-objects are to be sorted out into eight 'emotional and non-emotional' categories written on the back page of the KTSA Record-Sheet (see APPENDIX II)*

Criteria: For Selecting the Objects.

In order to secure an appropriate selection of symbols, a set of requirements was postulated. Most of the following pre-requisites represent the logical outcome of the test's rationale to be discussed later. The requirements for the inclusion of a given symbol-object in the test materials are minimal but essential for the purpose of the test.

- (1) Objects must be familiar and meaningful. The symbol-objects must be familiar to as many people as possible. It is also essential that the objects will possess some real, significant meaning. Pure geometrical shapes are too abstract and prove to be of little significance to some people. The real-life significance of an object was inferred by Kahn from the fact that individuals were prepared to pay cash money in order to possess such symbol-objects and to use them as lockets or for decorative purposes. Those which are sold most frequently in shops were presumed to meet such a requirement.

* This part of the KTSA is not scored according to the

- (2) Objects must possess a universal significance: An indication of the importance of a symbol may be inferred from the degree to which it is consumed and used by human groups, that is, the more universal is the symbol, the greater intrinsic value it possesses. Thus, such objects which may be found in a diversity of cultures are preferred to those which may be limited to a particular culture or civilization. It was alleged that an archeological, anthropological and historical analysis of the symbols chosen met this requirement to a great extent (KAHN, 1950).
- (3) "Similarity-with-difference" principle: Objects must permit projection of a large variety of patterns by allowing arrangements or symbolizations according to colour, mass, weight, size and content. Objects must, therefore, resemble each other in some respects and at the same time differ in others. For instance, all symbol-objects may be made of a similar material, yet differ in colour or size, etc.
- (4) 'Mutual exclusiveness of logical relatedness' factor: This principle follows the previous one. Granted that all symbol-objects resembles each other in some aspects, yet simultaneously maintain some differences, it is inevitable that when

abstract-concrete nature of the responses. Since the present research is concerned solely in that cognitive facet of the performance on the KTSA, the results of this sorting-task are not reported in the study.

forming associations or abstraction, some aspects of the objects must be sacrificed in favour of others. Thus when symbolizing a dog-object on an 'abstract' level, its colour or size must be overlooked. Similarly, when grouping the objects according to colour, for example, their shapes or their 'content' meaning have to be ignored.

- (5) 'Versatility and simplicity' principle: Objects must be simple in structure and easy to manipulate and handle. Simplicity of contour tends to eliminate irrelevant clues which may be detrimental to focusing the attention on the main propensities of the object. In addition, a pleasant design of the object increases the interest in the task and attracts co-operation with the instructions.

The symbol-objects finally selected for the KTSA were claimed to have met all these requirements. In addition, it was alleged that each object was tested with at least one hundred persons before its inclusion in the test material was ascertained.

Scoring Principles:

The scoring system suggested in the KTSA may be divided into two distinct types. Each pertains to ^a different class of behaviour observed in the performance of the test. One type of scoring is called ~~an~~ 'objective scoring' while the other is labelled as 'semi-objective' scoring'.

Objective-scoring: This scoring was called 'objective' because it does not involve a qualitative evaluation of the response. It rather comprises simple quantitative counting of the number of the times that a certain behaviour was observed in the Record-Sheets. Objective scoring may refer, for instance, to the direction of placing the symbol-objects on the strip in the five arrangements. In other words, it counts the number of times the objects were placed from the right end of the strip to the left end, and vice versa, or how many times placement of objects on the strip did not follow a distinct order (mixed), etc. This category includes also time spent for each arrangement, reaction time from hearing the instruction to the beginning of the required response, counting the number of objects placed in slanted or inverted position on the strip, etc. Similarly, the number of times similarly shaped symbols were placed together, or the proximity of contact with objects when referring to them verbally, all are scored 'objectively'.

The analysis^e of the performance on the KTSA sorting task belong to this type of scoring as well. Several formula were suggested, on the basis of the performance on that part of the test, which involves simple counting. An indication of 'emotionality' of the testee, for example, can be obtained by simply dividing the number of objects sorted into the 'emotional categories' (i.e. LOVE, HATE, BAD, GOOD, LIVING and DEAD) by the

number of objects sorted into the 'non-emotional categories' (i.e. SMALL and LARGE).

The psychodiagnostic significance of these 'objective scoring' indices are not clear enough and at times rather speculative. If any value can be attributed to them, it is probably of a secondary importance. It is the so-called 'semi-objective' scoring type which provide the most valuable information offered by the KTSA.

Semi-objective scoring: This scoring type resembles that common to many other psychological tests of the projective kind. It calls for some judgement, classification and evaluation, of the responses and thus cannot be claimed to be entirely objective. Each verbal response is evaluated according to the level of abstraction it appears to represent. The KTSA provides for nine levels of abstraction. It was alleged to represent 'semi' objective scoring, rather than 'subjective' one, because evaluation was guided by a set of principles which contributed toward a more unanimous and standardized scoring. HILL & LATHAM (1965, Pp. 27 - 37) present a systematic and elaborated set of principles which describes the distinct characteristics of each level of abstraction, including many rules for correct evaluation. Difficulties in scoring certain responses which were pointed out in several studies were considered. Following many suggestions in the KTSA literature, final formulation of differential rules was agreed upon by eight members of the psychological personnel at

the U.S.A.F. Hospital, Lackland, Texas, including Dr. Kahn, and were incorporated in HILL & LATHAM (op. cit.).

KTSA nine levels of abstraction. A ^D detailed and elaborated rules of scoring each of the nine levels of abstraction, suggested by Kahn, were laid down elsewhere (HILL & LATHAM op. cit.). For the sake of simplicity it was decided here, to avoid tedious presentation of all those scoring principles and their sub-rules. Therefore, only a general description of the nine levels of abstraction will be presented below.

Each level of abstraction is designated by a code capital-letter which ~~are~~ ^{is} presented in-brackets in the following. It might be advisable to be familiar with these code-letters, as they will be mentioned repeatedly throughout the following chapters.

(A) BIZARRE responses: Bizarre, illogical and inappropriate responses which have no relationship to the test material. Usually they are of an autistic or arbitrary nature, lack pertinence and may be rambling, confused, contradictory or neologistic, e.g. for Dog: 'a black dog is a mean person'.

(B) NO REASON responses: (B) is scored when no response is offered or when answer merely indicates 'I don't know' or 'Can't do it', e.g. for reason for arrangement: "Just pick them up as they came".

(C) REPETITIVE responses: (C) is scored for a repetitive response when the taster does or says "the same as before". This score can be applied only for repeating a previous response scored (E, F, X, Y or Z) (see below) (C) cannot be scored for responses in ^{the}liking and disliking task. In ^{the}symbolization task it can be scored for a repetition of a response inferred from similarly shaped objects only.

(D) NAMING & FUNCTIONING responses: There are two types of (D) responses; first, when the name of the object is indicated, and the second where the function of the object or its real-life counterpart is stated. The wisdom of grouping the two under one heading may be disputable. Nevertheless such a decision was adopted because of difficulties ⁱⁿ to provide ^{ing} a set of principles which will differentiate the two unequivocally, e.g. for Dog-object: "Scottish terrier" or "It barks at night^s".

(E) SHAPE responses: Responses based on the shape, material, look, appeal, beauty or design of the symbol-object are scored (E) e.g. in reason for arrangement "I think it looks nice that way", or "Dogs together, hearts together, etc".

(E) type of response may be scored also in addition to other scores, except for (B) response. Responses such as "A plastic dog" or "A beautiful terrier" will be scored both (D) and (E).

(F) COLOUR responses: (F) is scored when the presence or absence of colour is mentioned, or when a specific colour is named, e.g.

in reasons for arrangement, "I have put them down according to the colours". Similar to the case of the previous level, this type of scoring may be added to other scores, except for (B) response.

(X) CONCRETE ASSOCIATION responses: Associations which retain, more or less, the shape of the test object but refer to its real-life counterpart rather than the test symbol itself are scored (X). This may happen when, for instance, the shape is retained but the size differs, as in the case of a response "the sun" for the circle object on symbolization task. Other typical examples, for the Dog-object responses such as "Man's best friend", "household pet" or "Animal" are scored, (X).

(Y) TANGIBLE ASSOCIATIONS responses: Responses which do not seem to retain the particular shape of the test objects or their real-life counterparts, but produce concepts which are represented in a tangible form in reality. These associations are found in life in a form which may be perceived through the five senses. In other words, such associations have been emancipated from both the test object or its shape yet still retained some material aspect. They may be given in the form of either verbs or nouns, e.g. for Anchor "The Navy" for Dog, "Hunting" or "Whiskey".

(Z) INTANGIBLE ABSTRACTIONS responses: Responses which are intangible and maintain freedom from shape, material or substance are scored (Z). They rather stand for some quality which

does not seem to exist in ^{the} concrete e.g. for Dog-objects "Loyalty" or "Companionship".

It was claimed by Kahn and his associates that every conceivable response likely to be produced could be scored by one (or more) of the above qualitative levels of abstraction. It is feasible to regard these levels of abstraction as a continuum where each level differs in degree of 'cognitive sophistication' in an ascending order from (A) to (Z). Thus (Y) response is considered of a 'higher abstract level' than (D) response, for example. Furthermore, responses are also judged in terms of their appropriateness with ^{the} task required. Bizarre (A) type responses may, for instance, comply with most principles typical of (Z) - intangible abstractions except that they are inappropriate to the task of 'symbolizing a particular object'. Consequently they will be rated as belonging to the lower end of the continuum.

This continuum also represents the developmental progression of cognitive functioning from childhood to maturity, except perhaps, for (A) responses. In which case it is assumed that some of the nine levels correspond to phases of cognitive development of the child (see discussion, later).

The Symbol Pattern:

The KTSA 'Symbol Pattern' refers to the total assessment of the performance on the symbolization part of the test (first part).

It is based on evaluation derived by the 'semi-objective scoring' only. In fact, the 'Symbol-Pattern' consists of two elements; it has a quantitative representation, called 'Numerical-Element' (KTSA-NE, or simply NE), and a qualitative information called 'Letter-Element' (KTSA-LE, or simply LE).

KTSA-NE: This represents the total accumulated score derived from adding the weighted scores assigned to every level of abstraction. The twenty-four responses elicited by the KTSA are evaluated according to their level of abstraction, where in certain cases, more than one evaluation may be given to a single response (where (E) and (F) scores are added). The average number of qualitative evaluations derived from one test performance is usually twenty-five.

The weighted scores assigned to each level of abstraction runs from a low score for (A) response to a high level score for the genuine abstractions. Specifically, the following weightings were suggested; A = 0, B = 1, C = 1, D = 1, E = 3, F = 3, X = 4, Y = 6, and Z = 8.

Assuming an example, where a given testee has produced 24 responses on the KTSA; out of these, 6 were scored Z (intangible abstractions), 5 were evaluated as Y (tangible associations), 4 were rated as X (concrete), 3 scored E (shape responses), 3 evaluated as D (naming) and 3 responses were scored B (no reason). Transferring the code letters of the levels of abstraction into

their respective weighted scores the total of $(6 \times 8 + 5 \times 6 + 4 \times 4 + 3 \times 3 + 3 \times 1 + 3 \times 1 =)$ 112 is obtained. The KTSA-NE equals, therefore, 112.

KTSA-LE: The 'Letter-Element' provides qualitative information about the performance on the KTSA in two ways. First it indicates which of the nine levels of abstraction were used by the testee to form the final score (NE), and second, it shows which of these levels predominates.

The procedure of arriving at the LE involves counting the number of instances that every level of abstraction was scored. The letter (code for level of abstraction) most frequently appeared ^{ing} is written first, the one of the second highest frequency is written next to it, and so on for all the levels of abstractions (letters) appearing on the record-sheet.

Turning back to the previous illustration. (Z) response is most common (appears 6 times), Y is next most frequent (5 times), (X) is third common ^{ing} (4 times), etc. In cases where two or more letters seem to appear in an identical frequency (as in the illustration, where F, D and B, all were scored 3 times each) the one higher in the alphabetical order comes first. The 'Letter-Element' in this case equals to ZYXFDB. The whole KTSA 'Symbol-Pattern', including the above NE, is described as: 112 - ZYXFDB.

Both the NE and LE are evaluations of the same phenomenon and it is possible to approximate the one from the other with

some degree of accuracy. Since each element adds information which is not clearly revealed by the other, both are needed. So, the final assessment of a performance on the KTSA has to be inferred from the whole 'Symbol-Pattern'.

RATIONALE.

From the outset the idea of devising the KTSA was directed to the purely practical psychodiagnostic purpose, that is, to facilitate genuine differentiation between clinical groups, where theoretical considerations played but a secondary role. It is not surprising, therefore, that the absence of a link between the test and theory caused some misgivings among critical observers. Many have deplored the ambiguity of the test's construct validity and the consequent difficulties in interpreting the qualitative information revealed.

While not unaware of the lack of a-priori theoretical assumptions, Kahn was not disturbed by it. On the contrary, he argues that it is possible to distinguish between two methodological approaches in constructing psychological tests. The first, advocates that the formulation of theoretical predilection precedes the testing of the validity of the instrument while the other subscribes to the principle that:

"ideas and rational^l are held in abeyance until so-called empirical evidence accumulates with sufficient strength to permit a theory formulation" (KAHN & MURPHY, 1958).

Both methods are not uncommon in the tradition of constructing psychodiagnostic instruments and naturally have their own advocates and critics. The former approach seems to be ideal as it permits clear interpretation of the test's findings. On the other hand, pressures and practical demands often call for supply of such instruments with little patience to wait for the formation of a theory. Furthermore, at times, certain behavioural manifestations appear to possess significant psychodiagnostic clues without being referred to in the theories available. Some precedents of such instances may be found in the history of psychological testing. Therefore, the 'empirical' approach, though far from being ideal, ought not to be dismissed and deserves favourable appreciation under some circumstances.

Nevertheless, the ideas implemented in the KTSA were not formulated in a total vacuum. It is quite a common belief in psychological thinking that conceptualization (or symbolization)

is one form of expression of the perceptual constancies, and emerged from the individual's standardized evaluative predilections toward differentiated aspects of his external environment. Again the notion that symptoms of psychopathology and behavioural maladjustment may be revealed via symbolization is not exclusive to the psychoanalytic doctrine. This has been suggested often during the last half century by various researchers. Furthermore, it is quite remarkable that in spite of criticism on both theoretical and methodological grounds, the impact of the volume of clinical studies along the abstract-concrete dimension - particularly with brain-damaged patients and schizophrenics - has not faded away. One difficulty is the absence of a theory to account for the relationship between abstract and concrete functioning and behavioural maladjustment. (An attempt to provide such a theory was suggested in HARVEY et. al., 1961). Nevertheless, it appears that some psychologists are still impressed with the evidence that, at least, extreme forms of maladjustment, i.e. some psychoses and brain-damaged persons, are associated with lower abstract (or concrete) functioning.

Within this broad conception, a test of symbol arrangement (the KPSA) evaluated along the concreteness-abstractness dimension was devised.

The Construction of the Test-Rationale.

Concentrating on symbols: The idea of employing symbol-representations

in psychodiagnoses pre-occupied Kahn, long before the formulation of the KTSA. Symbols possess certain propensities which are either attracted or rejected by individuals. The motivating force responsible for such affinity or aversion has been described by FENICHEL, who suggested that:

"the interest in external objects exists because external objects represent either a threat or a potential gratification". (in HILL & LATHAM, 1965, p. 1).

Yet Kahn's approach was pragmatical and empirical. It was not so much the theoretical significance of symbols which guided his interest in symbols but more behaviour in real-life. He observed that certain symbol-objects serve as locket^s, placed next to the heart, ^{or may be} also used for decorative purposes. This phenomenon has alerted Kahn to the non-verbal (sometimes) emotional attraction of people to certain symbol objects. This appears to have justified a closer study simply, if nothing else, because such behaviour is so common. The essential question was: could such behaviour, the acceptance, rejection or the manner of handling such symbol objects, provide insightful information about the personality dynamics of an individual, his state of mental health, or his cerebral competence? The first task was to find stimuli which will elicit such meaningful attractions and rejections. This was believed to be found in objects frequently consumed in real-life rather than in artificial experimental geometrical designs, concepts, or proverbs rarely used in daily situations. In addition, such objects elicit as little disagreement, with regard to their meaning, as pointed out,

"Something had to be discovered which everyone from butcher to candlestick-maker, from boy scout to admiral of the fleet, would agree has meaning. Such diverse persons had to agree not only that meaning was there but that special meaning... was limited to a well defined area of thoughts and experience and that this was the same for them all". (KAHN & MURPHY, In HILL & LATHAM, 1965, p. 5).

Such an agreement may be found only where the meaning is conveyed through cultural infiltration. There, unanimity of interpretation can be expected.

Determining the significance of symbol-objects: Dedicated to his empirical and observational approach, Kahn was reluctant to include theoretical considerations in determining the significance of each symbol. No a-priori assumption as to the relative importance of a symbol, in terms of what it might represent, was made. The true test of significance ought to be found in reality. Some behavioural factors in real-life have to provide the criterion for the significance of objects.

"Living in a rather materialistic world we came to the conclusion that if people were willing to pay for something ..., the purchase represented a real need of some kind - real in the sense that the buyer believes it to be real. Few, if any, psychological test materials would be bought by the average man in the street for their intrinsic worth ... The job was to find some materials which had a-priori appeal by the fact that very many people were willing to lay out cash for them and that a cool-headed businessman was solvent because the demand for the objects was sufficiently large and universal to enable him to make a profit". (op. cit.)

After obtaining those symbol-objects most sold over a large geographical area (i.e. New-York, Boston, Los-Angeles), further

and final selection was made on the basis of the five criteria mentioned earlier.

The structural and projective features of the KTSA: The basic principle underlying the suggested test procedure is in line with the 'empirical' approach governing the rationale of the KTSA, that is, to recapture and repeat the highlights of the process of buying similar symbol-objects in real-life. Since the KTSA focuses on the perceptual and cognitive (conceptual) evaluation of such symbols, there was no interest in the commercial aspects of such transactions. Kahn claims that his test procedure combines both structural and projective features observed, in different forms and manifestations, in the hobby-shops.

Projection, as a technique of eliciting personality characteristics, is a cardinal feature of the KTSA. This is not achieved by the usual method of exposing the respondent to ambiguous visual stimuli. Such technique is common to most projective tests and the KTSA has no desire to compete with them. On the contrary, the KTSA employs structured symbol-objects (stimuli). This is not only an inevitable consequence of adhering to ^K/_h 'empirical' tenet, i.e. to employ symbols in their real-life forms, but perhaps most important of all, is the fact that the particular meaning of the symbols is determined by their distinct contour. Obviously they must retain their shape to maintain their identity.

The projective element does not rest, therefore, in the nature of the impinging visual stimuli (objects) but rather in the response

to the tester's instructions. Since the instructions call for rather unspecified reactions which usually involve free-choice responses, projections of personality factors is precipitated. The respondent will have to resort to his own experiences, perceptions and feelings as a guide for his actions and performance in the test situation.

This might be regarded as one asset of this technique which has retained, successfully, both ^{the} projective features of the test and still maintaining structured stimuli.

The strip: The rationale for introducing the felt strip is purely psychological and theoretical. Kahn's rationalizations of the 'meaning' and significance of the strip (HILL & LATHAM, 1965, KAHN & MURPHY, 1958) are far too speculative. Some of these will be discussed below, but this does not necessarily indicate agreement with the highly interpretative nature of the contention.

Kahn has produced the following rationale: To him, the strip provides the background, the medium for placing the objects. This, he thought, may be analogous to the function of the external environment in real-life situations, that is, the external environment, also serves as the medium for all behaviour and activities. Other features common to the strip, as used in the test, and the external environment in life are as the following^s: Both are structured, i.e. the strip has definite segments. Both cannot be easily altered by the actor, that is, the actor may manipulate the objects, but he cannot change the structure of the strip. In fact, this feature of

the strip serves as a restricting factor as it compels the testee to place the symbol-objects withⁱⁿ a definite frame of reference (i.e. the segments).

In addition, the strip was believed to convey another two features of reality. It represents (a) time and place, also (b) confronts the respondent with the need to develop a hierarchy of preferences. Similar to any action in real-life, placing the objects on the strip is confined to a place (the strip, the segments) and consumes time. Kahn claims that the notion of 'time' is conveyed by the consecutiveness of the numbers on the segments (see photograph, APPENDIX I) because one of the main characteristics of time is 'consecutiveness', i.e., that it runs consecutively. This appears to be along with the former rationalization, an oversophistication of what is probably a simple idea. The need to parallel the strip to 'reality' and the numbers to 'time' seems to be a complication and an over-exaggeration of the significance of the strip, and superfluous.

Another merit of the number on the strip is that it is believed to enhance, indirectly, the formation of a system of preferences. Undoubtedly, such a system could have been formed in any case, but, often, the digit 'one' suggests also 'first of all'. This may encourage the development of a hierarchy of evaluations of the importance of the symbols in the respondent's mind. The formation of such a set of preferences in free-choice tasks of the KTSA possess a projective value. It is also a typical feature of most

purchases^{imp} situations experienced in real-life.

Inability versus motivation: The distinction between lack of motivation and incapacity to perform in a testing situation is the foremost task of many psychodiagnostic instruments. Often such information can be obtained merely by inferences rather than through direct evidence revealed in the test. Since the KTSA is believed to measure both "willingness to accept and acknowledge abstractions predominant in the culture as well as one of capacity to abstract" (HILL & LATHAM, 1965), this task of differentiating motivation from ability becomes vital.

Theoretically it is defensible to assume that, often, motivation and ability to abstract operate simultaneously. Where, for instance, low abstract functioning is due to cognitive impediment, it is probably accompanied by unwillingness to pay attention to the tasks required. Similarly, high abstract performance is presumed to co-exist with a substantial willingness to assume such actions. In practice, however, it is often difficult to ascertain the precise cause of displaying low abstract functioning, that is, whether it is the result of incapacity or an attitude of evasiveness. It may be, correctly, argued that when assuming a defiant attitude to the test, no inferences with regard to ability to abstract can be formed. Under normal circumstances it is, however, not clear, why suspicion of a predominance of lack of motivation to comply with the task would be raised, particularly when the test situation or the purpose of the test

are non-threatening to the participants.

In any event, it is believed that the KTSA differentiates these two factors. The test's procedure imposes a gradual 'pressure' (or 'encouragement') to promote the ability to abstract in responding to the tasks. This is presumed to be achieved by providing, gradually, more specific instructions from free-choice arrangement, through naming and symbolizing, to a rather restricted placement according to liking and disliking the symbols. Where such a gradual pressure is exerted, without evoking antagonism, the chances to detect and obtain a typical performance which represents the daily cognitive functioning of the testee, are greater.

When in doubt, a 'testing the limits' arrangement is introduced. This task is specially designed to clarify whether the low symbolization behaviour observed was due to misunderstanding of the task, lack of motivation to co-operate with the instructions, or incapacity. The decision to add this 'testing the limits' task is indicated, as a rule, in all cases where the testee has produced unusual frequency of 'B - no reason', or/and 'D - naming and functioning' type of responses. It was observed, that an unusually large number of this kind of responses was evident among testees who were reluctant, rather than unable (unless brain-damaged) to comply with the test.

PRELIMINARY-PERIOD (1949 - 1956) STUDIES.

This section will review the pioneering studies with the KTSA, the early attempts at standardization and the establishment of

initial reliability and validity which were conducted during the first 'preliminary period' (1949 - 1956) of the test. Apart from some criticism, usually not unexpected for studies of an exploratory nature, the test has, generally, been welcomed and further research appeared to be justified.

Early Standardization: The first approach, clearly on an exploratory level, toward the standardization of the KTSA involved two groups of fifty participants each (KAHN, 1950, 1951a, 1951b, 1953). A group of 50 males, described as 'non-psychotic' on the basis of their M.M.P.I. protocols (presumably 'normals') with no clinical sign of brain-damage was matched for age, I.Q., occupational level, race and religion with a group of 50 males, diagnosed as 'brain-damaged psychotics'. Age, in the 'normal' group ranged from 22 to 82 years ($M = 52.2$, $S.D. = 12.13$), educational age ranged from 8 - 18 years ($M = 10.5$, $S.D. = 3.0$), with mean I.Q. of 108.1 ($S.D. = 17.0$).

The method employed in Kahn's pioneering studies (1949, 1950) was retested by FILS (1950, 1951). Again, a group of 50 'normal' males, seeking vocational guidance, with no pathological M.M.P.I. records, were compared with a matched group of 50 male, mixed schizophrenic patients for their performance on the KTSA. No significant difference between the mean of the seventy-two KTSA scoring variables was found between the two 'normal' groups of KAHN (1950) and FILS (1950) (t - value = 0.09). Consequently, both groups, scored on identical principles, were combined to

form an initial normative group. These were compared for their KTSA performance with the brain-damaged psychotics. A weighted score was assigned to each of those 72 KTSA scoring variables on the basis of the size of t - ratios of mean differences between the two compared groups. The mean of weightings obtained from KAHN (1950) and FILS (1950) was very close with $r = .79$ ($p < .01$).

Reliability: Of all 'preliminary period' studies, only two test-retest reliabilities were available (KAHN 1950, FILS, 1950). In each, a retest group of twenty-five participants, selected randomly from their original samples, was employed. The test-retest reliability coefficients obtained were $r = .95 \pm .021$ and $r = .95$, respectively. Inter-scorer reliability between two independent scorers used in KAHN (1950) yielded $r = .97$.

These high reliability coefficients appear to be very promising, considering that variability of behaviour is a common feature of the psychologically ill individuals who presumably participated in the retest groups.

Validity: The most typical method observed in the following studies was an attempt to ascertain the validity of the test through its discriminative power.

In his early study, KAHN (1950) found that 82 out of 197 variables of his test discriminated successfully ($p < .05$) the 'normals' from the brain-damaged psychotic group. FILS (1950) reported a successful differentiation of fifty normals from fifty

schizophrenics on the basis of 42 out of 113 KTSA variables ($p < .05$). Identification of epileptic children on the basis of their KTSA performance is reported in BRODSLEY (1952). Comparing 18 epileptics of both sexes with a group of 18 non-epileptics, matched for age and sex, but not for I.Q., it was found that nine out of 114 KTSA variables differentiated the groups beyond the .05 level of significance. SZENAS (1954) administered the KTSA to a group of 30 paranoid schizophrenics and to a group of 30 brain-damaged psychotics. Significant ($p < .05$) chi-square differences for seven out of eighteen KTSA variables was observed. His groups, however, differed significantly in age, intelligence and number of hospital admissions. ESTERLY (1954) found seven out of eighteen KTSA variables significantly ($p < .05$) differentiating a group of 30 chronic schizophrenics from a group of 30 various types of brain-damaged patients.

The extent to which the findings obtained by SZENAS and ESTERLY are authentic is questionable. It has been ^{sh}known that their groups differ significantly ⁱⁿwith age and intelligence. However, no evidence was provided to ascertain that their results were independent of these differences.

A cross-validation attempt to re-affirm the validity of a previously suggested range of scores associated with normalcy and brain-pathology is reported by KAHN (1955a). The KTSA scores of thirty brain-damaged patients were compared with those of a group of thirty non-brain-damaged, old-aged, social club members all

matched for age, I.Q., and educational level. KTSA scores differentiated significantly the means of the groups ($t = 11.10$, $p < .005$). Only 2 participants, one brain-damaged and one non-organic, failed to score within the previously suggested norms. In an attempt to refine these norms a new cut-off point was found whereby all normals from two studies (KAHN, 1950, 1955a) were identified correctly as well as 72% of the organics of previous study (op. cit. 1950) and 83% of ^{the} organics ^{who} participated ⁱⁿ of the present research.

In another study (KAHN 1954b, 1957) a group of 30 neurotics was compared with previous KTSA records of 90 'normals', 60 schizophrenics, and 90 brain-damaged patients. Each of the normal, organic and schizophrenic groups were further split into two equal sub-groups, to approximate the 'N' in the neurotic group. With the cut-off score of 54, "96.7% of the neurotics were separated from 92% of one group of organics and 100% of the others. The same cut-off score separated 96.7% of the neurotics from 77% of one group of schizophrenics and from 75% of the second group of schizophrenics". (KAHN, 1957, p. 109). The score 89 and above was reached by 48.8% of normals, 30% of the neurotics and none of the organics (KAHN, 1954b).

The discriminative power manifested by the KTSA in differentiating satisfactorily psychotic patients from normals is not evident when applied with neurotic and normal groups. There is a substantial overlapping between the performance of ^{the} latter groups

on the test. KAHN (1957) has suggested a few 'typical neurotic signs' which could be observed in the KTSA and may contribute toward a greater accuracy in detecting the neurotics. These signs are not represented in the sum total score (NE), but are rather qualitative manifestations evident in the test performance. Unfortunately, no statistical data concerning the level of significance at which these signs differentiate the neurotics from the normals were disclosed.

Critique: Several points of criticism have been raised against the KTSA. Many have criticised the test at various preliminary stages of its development. Notwithstanding their validity, most of them have been launched about a decade ago. Subsequent corrective measures have, already, been taken to refine the present form of the KTSA.

An important question concerning the problem of the base-rate was mentioned by SHAFFER (1957, 1959) against the psychodiagnostic differentiability of the clinical formula, suggested in KAHN (1957). Regretting the absence of considerations for that problem, SHAFFER (op. cit.) indicates that with a low base rate for psychotics, the test is likely to produce a large number of false positives. This objection is seconded by L'ABATE and CRADDICK (1965) who emphasized that the base-rate "...should be of prime consideration when evaluating the diagnostic ability of any test." (op. cit. p. 119).

The method of standardization adopted by KAHN (1953) was disapproved by JESSOR (1959). He questioned the adequacy of

standardization arrived at by (a) employing psychologically ill individuals, and (b) based on comparing performances of normals and psychotic patients. This was emphatically dismissed by L'ABATE and CRADDICK (op. cit.) on the ground that many tests consulted in contemporary clinical practice, such as the Rorschach, M.M.P.I. and others, were standardized in a similar manner.

On the other hand, these authors ^{agree} consent that some inherent weakness appears to be involved in employing a homogeneous, normative group like the one used by Kahn. The latter did not specify what types of persons participated in the criteria group. This should be supplemented by further information, with some operational definitions, as to the type of persons involved in the normative sample.

Some critics were concerned with the relationship between the KTSA and theory (LOEVINGER, 1959, CLARK, 1959). They have argued that there is a disturbing absence of a clear connection between the interpretations suggested by KAHN (1957) and theory. This makes it difficult to agree with what appears a rather speculative interpretation of the qualitative results obtained by the test.

LOEVINGER (op. cit.), for instance, was concerned with that difficulty and asked for a clearer exposition differentiating those aspects of the test in which considerations were guided by theory and which by data. Further studies for establishing the 'construct validity' of the concepts used in the KTSA were advocated by CLARK (op. cit.) in order to understand the conceptual properties of the test's variables.

An additional methodological imperfection refers to the use of parametric statistics, particularly the t - test. Indeed it is expected that where differences between groups means are substantial, their significance will be shown by any statistical test, but since a normal distribution cannot be assumed in the samples employed in previous studies, the need to consult non-parametric statistics is upheld (CLARK, 1959).

SHOBEN (1953) has pointed out the relative absence of experimental verification for many speculations concerning the clinical usefulness of the KTSA. His criticism, however, appeared in the initial phases of the development of the test and has, to some extent, been met in subsequent studies. Similarly, JESSOR's recommendations (1959) for further comprehensive research to establish the test reliability were followed. This author also deplored the omission of a human figure from the test's objects. Such a criticism does not seem to be defensible. In any event, L'ABATE and CRADDICK (1965) believed that such an object was deliberately excluded to avoid the creation of another version of the T.A.T. and M.A.P.S. tests.

It is true, that even at the contemporary stage of the test's development it has to be used with due caution. Kahn's suggestions ^{concerning} of the clinical usefulness of his test (1957), although subjected to some cross-validation studies, must be treated merely as hypotheses pending further experimental verifications.

On the whole, the KTSA was well received and welcomed. As early as in 1957, SHAFFER wrote "The test is clearly an interesting device for further research, but it is not yet ready for unqualified use" (p. 507). Eight years later L'ABATE and CRADDICK (1965) concluded that the KTSA may warrant routine administration within the usual armament of clinical psychologists:

"Objectively it might not be as useful as the WAIS, but it appears to possess sufficient strengths to be considered superior to other projective techniques of personality whose only usefulness still remains impressionistic, and consequently not as epistemologically additive and publicly communicable as the KTSA". (op. cit. p. 134).

POST-REVISION STUDIES (1956 up-to-date).

The revised form of the KTSA (KAHN, 1956b, 1957) is a shortened version of the old test. Albeit a clear linkage between the two versions, the latter is treated here as a separate test. Consequently, the new standardization, validity and reliability studies, and other studies will be discussed again in the following sections.

Since 1956, a larger body of research was conducted with the KTSA. Several of these studies dealt with more than one aspect of the test. Each contribution will be, therefore, reviewed in its appropriate context, separately, hence some repetitions of references.

New standardization: A new standardization group was formed (KAHN, 1956a) where the KTSA records of 500 subjects, some from 'preliminary period (1949 - 1956)' studies, were analysed. These included 453 males and 47 females, all 'normals' with no evidence of history of psychiatric maladjustment. The ages ranged from seventeen to eighty-seven years ($M = 31$ years, $S.D. = 11.9$), mean I.Q. was 103.0 ($S.D. = 9.5$) and mean for education was 10.3 years ($S.D. = 3.1$). Distribution for occupational levels was as the following: unskilled labourers 10.3%, semi-skilled 45.8%, skilled labourers 31.1% and 12.8% professionals. Nearly all participants (98%) were Christians. Results of the distribution of the KTSA performance for this group are presented on the front page of the KTSA record sheet (see Appendix II).

Although this attempt at standardization appears more adequate than the previous one, because of the employment of a larger sample and the exclusion of psychiatric cases, the composition of the normative group is far from being ideal. The presence of selective factors in the construction of the criteria group; many of whom were friends, relatives and students of the examiners, firemen and ambulance drivers who wished to participate in the study, cannot be overlooked. In addition the heterogeneity of the normative group has not been established clearly. Therefore, a cautious treatment of these results is called for. Even KAHN himself (1957, p. 112) advised adopting precautions in making interpretations on the basis of the KTSA psychogram alone.

The previous, 'preliminary-period' weighted scores were retained in the revised version for purposes of simplicity and what was called 'maintaining original values'. In the new context they might be regarded as being, to some extent, arbitrary weightings. But since results with the KTSA have shown that this system of scoring differentiate consistently some clinical groups it might be regarded as acceptable.

Reliability Studies: Only one study, among those devoted to investigate the reliability of the new version of the KTSA, ^{was} concerned with the test-retest reliability. Most studies, however, explored other forms of reliability, for instance, inter-scorer agreement between independent scorers, reliability of scoring each one of the nine

levels of abstraction by independent judges and the effect of the competence of the scorer on inter-scorer reliability.

A possible explanation for the paucity of test-retest, reliability studies may be that in view of the high coefficients for such reliability obtained previously there was little room to doubt the existence of such reliability. Furthermore, the consistent results obtained in the old version of the KTSA has shifted the attention (to the rather) very important question of the reliability of the scoring principles.

Test-retest reliability: A test-retest analysis conducted at the Wright Air Development Centre, Ohio, is reported in KAHN et. al., (1956). A group of 25 subjects was selected at random from a pre-tested sample of 120 testees, normals, schizophrenics and brain-damaged patients, 40 in each sub-group. Time interval between test and retest situation ranged from 10 to 210 days. A test-retest reliability coefficient of $r = .659$ was obtained. The relatively lower correlation, compared with that reported in earlier studies, is attributed by the authors to (a) the presence of an unfavourable atmosphere in the retest situation, where the test was administered under considerable duress, and (b) the fact that 28% of testees were hospitalized patients.

The inclusion of maladjusted individuals in test-retest studies does not seem to be adequate according to L'ABATE and CRADDICK (1965). These authors maintain that since variability of behaviour is a cardinal feature of the psychologically ill person, the inclusion

of such subjects in a retest situation introduces an additional detrimental factor in studying the consistency of the test over a period of time. In their opinion, however, there is "a dire need of doing test-retest studies with the normal 'S' ". (op. cit., p. 120).

Inter-scorer reliability of the KTSA-NE: The inter-scorer reliability of the KTSA receives attention in several studies. The number of independent scorers participated^{ed} in these investigations varied from one study to another between two ^{and} ~~to~~ seven.

KAHN et. al. (1956) reported an inter-scorer reliability of $r = .988$ between two independent scorers for 25 randomly selected subjects from a sample of 120 testees. In another study (KAHN, 1958), a group of 25 'genuinely depressed' U.S.A.F. hospitalized patients was compared with a group of 25 'characterological patients with guilt'. Inter-scorer reliability between two independent raters yielded $r = .96$. CRADDICK and STERN (1965) provided further support for the inter-scorer reliability of the KTSA. The agreement between two judges employed in their study for 40 KTSA protocols produced $r = .94$. ANDERSON and CLACK (1966) compared the ratings of five judges who scored, independently, 6 case protocols. The inter-scorer reliability obtained reached $r = .59$ which, although lower than these obtained in previous studies, was regarded by the authors to be satisfactory.

HEDLUND and MILLS's (1964a) study revealed an inter-scorer reliability which appears to be in conflict with earlier reports.

A group of 159 Air Force patients, participated in the study, was sub-divided into two groups of 79 and 80 subjects, respectively. One group was scored according to KTSA manual, while the other was rated following the authors' own tentative 'Supplemental KTSA Scoring Guide' (HEDLUND & MILLS, 1960). The inter-scorer reliability for two, independent scorers yielded correlations varying from $r = .60$ to $.79$, consistently lower than those reported with earlier studies.

The range of agreement for the same judges in score-recording reached 72% and 78% with correlation coefficients varying from $r = .79$ to $.85$.

In another study by the same authors (HEDLUND & MILLS, 1964b) inter-scorer reliability for three independent judges, who scored 100 KTSA protocols, yielded $r = .91$, $.81$ and $.88$ respectively. These coefficients appeared to resemble those frequently reported in the KTSA literature with studies of this kind. CLACK et. al. (1966) reported median rho coefficient of $.94$ for 180 KTSA protocols scored by six independent judges.

Inter-Scorer reliability of KTSA-LE (levels of abstraction): A point was raised that the difficulty in scoring each level of abstraction suggested by KAHN varies from one level to another, that is, some levels elicit greater agreement between independent scorers than others. HEDLUND and MILLS (1964a), for instance, have noted a special weakness in scoring the following levels: A - bizarre,

D - naming and functioning and X - concreteness. The index of agreement between their judges with regard to each of the nine levels of abstraction varied as the following: A = 52 - 46%, B = 83 - 91%, C = 81 - 83%, D = 53 - 62%, E = 75 - 78%, F = 84 - 89%, X = 61 - 70%, Y = 78 - 79% and Z = 83 - 87%. In a cross-validation study (1964b) the same authors employed 129 KTSA protocols of Air Force patients, where A - bizarre responses still appeared to be the most difficult response to identify.

CRADDICK and STERN (1965) reported similar observations. In their study, inter-scorer agreement for A responses and D responses was lower compared with the rest of the nine levels of abstraction. A similar lower consensus between different raters with regard to levels A, D, and X was observed by ANDERSON and CLACK (1966) where the judgement of five raters was compared. Median Phi coefficients for scoring the nine levels of abstractions were: A = .41, B = .58, C = .58, D = .52, E = .71, F = .86, X = .48, Y = .51 and Z = .67. In this study Y - tangible abstraction seemed to be difficult to score as well. The difficulties in scoring A, particularly, D and X levels was reported in two additional studies. CLACK et. al. (1966) rescored 20 KTSA protocols, randomly selected from 180 protocols of patients from a clinic. The mean age of the selected sample was 33.1 years (S.D. = 11.0), education achievement 12.2 years (S.D. = 1.9) and score-rescore time interval, M = 9.7 months. Median Phi coefficients for two independent scorers for the nine levels of abstraction revealed; A = .53, B = .91^{***}, C = .85^{***}, D = .59, E = .78^{**}, F = .88^{***}, X = .77^{**}, Y = .79^{***}, and Z = .84^{***} (where *) = .05 and ***) = .01 levels of confidence).

In scoring the protocols of 320 normal children aged 7 to 12 years old, ABIDIN (1966c), also mentioned difficulties in differentiating D - naming and functioning from X - concreteness type of responses. The weakness in scoring Y - tangible abstraction has not been supported in studies other than the one by ANDERSON and CLACK (op. cit), and thus is not considered a general phenomenon.

The results of all studies reviewed in this section pointed, in fact, to some deficiencies in the principles laid^{down} by Kahn for scoring some of the nine levels of abstraction. Particular weakness is probably evident with regard to A - bizarre, D and X type of responses.

A clearer and refined exposition of the scoring principles for each of the KTSA nine levels of abstraction appeared in a revised, unpublished manuscript by HILL and LATHAM (1965, pp. 27 - 37) where suggestions raised previously by HILL (1963), THEINER, (1963a) and THEINER and GIFFEN (1964) were incorporated.

The formulation of the revised principles of scoring followed a seminar set for that purpose with the participation of many authors mentioned in the foregoing. A special attention was paid to the discrimination between D - naming and functioning and X - concreteness levels. Furthermore, in order to increase unanimity of scoring an extensive 'dictionary of popular responses' for each symbol-object used in the test, for each task of the KTSA, namely, arrangements, symbolization and for liking-disliking arrangement,

and according to each level of abstraction, was compiled (HILL & LATHAM, op. cit. pp. 167 - 200). It was estimated that 75% of all symbolisation responses likely to be produced may be found, in one form or another, in that dictionary.

Since hardly any of the authors reviewed earlier consulted that manuscript their results could have been affected by the unclarity of the pre-revised principles. It is hoped that the new measures will add a valuable contribution toward reducing future discrepancies between independent scorers.

In any case, the scorer of the KTSA is called for extra attention when evaluating a certain response as A - bizarre or D or X type of abstraction.

Inter-scorer reliability of KTSA total 'Symbol-Pattern': The agreement between independent scorers with regard to the psychiatric classification of KTSA 'Symbol-Pattern' was studied by HEDLUND and MILLS (1964a, 1964b). In the first study, two groups of 79 and 80 U.S.A.F. patients were classified into psychiatric groups. One group was classified according to the rules laid by KAHN (1957) and the other according to the authors' own KTSA manual (HEDLUND & MILLS, 1960).

Inter-judge~~s~~ agreement for the two groups varied for 51% to 52% respectively. A similar, surprisingly low concordance of agreement of 49 to 56% between the raters participated^{ing}, was found for 129 Air Force patients in the second study (1964b). These low results are in conflict with most findings reported in the KTSA literature.

LATHAM and CLARK (In L'ABATE & CRADDICK, 1965, Pp. 121 - 122) have found some severe deficiencies in the two foregoing studies as reported in the literature. First, they argued that HEDLUND and MILLS failed to inform the reader that their KTSA protocols were gathered and scored according to the 1958 system, before the publication of refinements studies in the early 60's. Secondly, the purpose of their study was not a genuine cross-validation attempt of the KTSA, but rather a study to provide an alternative scoring system to that proposed by Kahn. Consequently, some of their findings, reported in the foregoing, refer to the reliability of their own system rather than to that recommended by Kahn. So that, in fact, they represent a criticism of their own scoring system. Furthermore, their scorers had to learn both the KTSA and the authors' own method of scoring simultaneously. This undoubtedly did not facilitate the task for the scorers. Finally, the scorers participating in these two studies varied in their skill and acquaintance with the KTSA. Therefore, the unusually low reliability findings obtained by HEDLUND and MILLS must be appreciated with due reservations and does not, necessarily, refute the reliability established earlier.

Inter-scorer reliability and scorer's skill: HILL et. al. (1963b) have studied the impact of the scorer's level of training and skill in sorting out KTSA 'Symbol-Patterns' into the correct psychiatric categories. Seven scorers, three psychologists, three psychological technicians and Dr. Kahn were presented,

independently, with 20 KTSA 'Symbol-Patterns'. These were to be sorted out into the following classes: (1) Schizophrenia (2) Border-line schizophrenia (3) Brain-damaged psychosis (4) Non-psychotic brain-damage (5) Character and behaviour disorders (6) Obsessive-compulsive (7) Hysteria and (8) Depression. Total interjudges agreement reached 65.7%, but varied among the sub-groups of scorers. Agreement among the three psychologists was 73.3% and that between Dr. Kahn and the psychologists, 71.6%. The agreement between the three technicians was as low as 56.6% of the cases. Surprisingly, HILL et. al. (op. cit.) tend to interpret these results as a confirmation of KAHN's claim (see also MURPHY et. al., 1958) that the test is simple enough to be handled, reasonably well, by psychological technicians. It is more likely, however, that these findings support CRADDICK's assertion (1964b) that psychological knowledge and proficiency combined with a substantial experience and training with the KTSA is required for adequate evaluations of the test's results. In the latter's view, the KTSA requires at least as intensive a training and experience as other psychological tests, e.g. the WAIS, and differences in the competence of the scorer may affect the degree of inter-scorers' agreement.

Validity Studies:

The validation studies conducted during the 'post-revision' period can be divided into two major groups, the first establishing the validity of the KTSA as measured by the discriminative

power of the test, and the second, by studying its degree of concordance with independent psychiatric diagnosis.

Discriminative power: KAHN, HARTER et. al. (1956) have formulated 'differential diagnosis formula' for normality, schizophrenia and brain-damage on the basis of KPSA 'Symbol-Pattern' produced by 40 normals, 40 schizophrenics and 40 brain-damaged patients. The mean KPSA-NE for normals was $M = 92.88$ (S.D. = 18.77), for the schizophrenics, $M = 53.92$ (S.D. = 20.48) and for the brain-damaged $M = 33.40$ (S.D. = 12.68). The Numerical-Element (score) alone was not sufficient to provide the best discrimination because the high variance caused a great overlap between the distribution of scores for each of the three groups. Consequently, the performance of each group was, in addition, characterized by the typical Letter-Element observed. The following 'differential diagnoses formulae' were arrived at:

Normality	NE:	90+ or 50 - 90.	No A (bizarre) letters
Schizophrenics			
(a)	NE:	50 - 90.	A present.
(b)	NE:	40 - 49.	A in first two places, B, D or X not all in first five letters. 6 or more letters.
(c)	NE:	0 - 39.	B, D, or X not all in first five places, five or more letters.
Brain-damage.			
(a)	NE:	40 - 49	B, D, or X in first five letters. A not in first two, five or fewer letters.
(b)	NE:	0 - 39	B, D, or X in first four letters, and/or four letters or less.

These formulae have identified correctly 86.6% of the 120

subjects participated in the study. A further cross-validation study of these suggested formulae employed 44 normals, 30 neurotics, 45 schizophrenics and 51 brain-damaged patients and yielded 71.8% correct classification of the testees into their respective groups. Only six subjects out of 114 normals and neurotics (74 of the cross-validation group and 40 of a previous group) were labelled erroneously as schizophrenics, but none as organic. When classifying all participants into the dichotomy, psychotics and non-psychotics, 85.9% were identified correctly. GIFFEN et. al. (1960) pointed out that the effectiveness obtained in this and other studies may be reduced when the base rate is considered. By chance alone 33.3% of the cases would have been classified correctly.

In any event, on the whole, KAHN, HARTER et. al. (op. cit.) have differentiated correctly 122 out of 170 testees, or 71.7% of their total sample. The figure of 28.3% misclassification calls for further refinements of the above suggested formulae. Such a refinement of the 'differential diagnoses formulae' was provided in KAHN, FERRIMAN & FERRARO (1956) as follows:

Normalcy	NE: 90+	Z and Y in the first three letters, C (repetition) follows any two of X (concreteness), Y (tangible abstraction) or Z (intangible abstraction).
Neuroticism (a)	NE: 90+	C preceding any two of X, Y or Z, and Y precedes Z.
(b)	NE: 70 - 90	Y precedes X and Z.

Character disorder	NE: 50 - 70	X precedes Y or Z.
Borderline schizophrenia		
(a)	NE: 60+	A (bizarre) in first five letters and precedes Z.
(b)	NE: 40 - 60	Two of B (no reason), C, D (naming) or F (colour) in first two places, Y or Z preceding X.
Psychosis (a)	NE: 40 - 60	A present, not in first three letters.
(b)	NE: 0 - 40	Any combination of letters.

A sample of 50 normals, 50 psychotics and 20 borderline-schizophrenics (all, records from previous studies) and additional 28 neurotics and 20 character and behavioural disorders was employed. On the basis of the above criteria, 94% of the psychotics and borderline-schizophrenics were detected correctly. The greatest difficulties in correct classification appeared among normals, neurotics and character disorders. Many normals were misclassified as neurotics and vice versa. This difficulty is a not uncommon phenomenon in clinical practice. In fact, differentiation between these groups is known to be delicate.

Borderline schizophrenics were also difficult to identify. Thus, almost half of these cases (48%) were misclassified, but 20% were regarded as psychotics. L'ABATE (1962) reported 66% correct identification for the schizophrenics and organics participated in his study.

Additional nosological indices for better classification were suggested by McLEOD (1967). It was found that in a group of 171

patients (mean age 32 years).

- (1) 69% of the psychotics were characterized by 3 or more A responses (bizarre) or 5 and more D responses (naming and functioning).
- (2) 36% of the character and behaviour disorders produced 4 or more B (no reason) responses.
- (3) 71% of the neurotics were characterized by 5 or more C responses (repetition) or 4 and more Y responses (tangible abstraction).

When both signs typical of psychotic and neurotic groups were considered, the figure of percentages given above decreased.

GIFFEN, et. al. (1960) found that neurotics are characterized by the predominance of Y, B, C or D type of responses, and lowering of Z responses, character and behaviour disorders produced predominantly C and X responses whereas A, B and D type of responses marked the schizophrenics. Brain-damaged patients produced typically B, D and some X responses.

It is hardly expected that one type of response will possess sufficient discriminative power, and although it may provide important 'differential' clues, discrimination must be arrived at on the basis of the whole 'Symbol-Pattern'.

The diagnostic validity of the KTSA 'Symbol-Pattern': The common method adopted in the following studies was to compare a 'blind KTSA diagnosis' based on the 'differential diagnoses formulae' with that of an independent psychiatric diagnosis.

MURPHY et. al. (1957) reported 79.2% correct identifications of 48 patients employed in their study into four classes; neurotics, character and behaviour disorders, schizophrenics and organics. All 4 organics were detected, 11 out of 17 neurotics, 15 out of 17 character disorders and 8 out of 10 schizophrenics. KIPPER (1967) compared KTSA 'blind diagnosis' with that of a psychiatric hospital for 24 British psychotics. The tester knew nothing of the order of testing and had no information about the patients. Overall agreement between the two diagnostic criteria was 83.3%. All 6 organics and 10 schizophrenics participating in the study were identified as well as 3 out of 4 paranoids ($p < .01$, binomial test for each category). Misclassification was evident in one case out of two obsessive-compulsive, one depressive and one character and behaviour disorder.

A lower rate of diagnostic agreement was reported by WHITE and McLEOD (1963) and HEDLUND and MILLS (1964b). The former report only 49% of concordance between independent diagnosis and KTSA 'Symbol-Pattern' for three groups of neurotics, character and behaviour disorders and psychotic, 50 testees in each. HEDLUND and MILLS (op. cit.) report 29 - 30% of such concordance for 3 normals, 14 neurotics, 50 character and behaviour disorders, 58 schizophrenics and one manic-depressive employed in their study.

In interpreting the significance of the last two studies some points of reservation must be raised. The low rate of agreement manifested in WHITE and McLEOD is not unexpected. These authors

employed two groups known to be most difficult to discriminate by the KTSA, i.e. neurotics and character and behaviour disorders. In addition it is not known whether they have consulted the revised manual (HILL & LATHAM, 1965), in its first edition 1962, where more refined 'differential diagnoses' are presented.

The studies by HEDLUND and MILLS were criticised in an earlier section. In addition, L'ABATE and CRADDICK (1965) quote LATHAM and CLARK (in press) who revealed that the 'final psychiatric diagnoses' referred to in that study were, in fact, but tentative diagnoses made by non-psychiatrically trained physicians in U.S.A.F. Hospital, Wiesbaden, Germany. The final psychiatric diagnoses for those cases were made in America, following their transference to their own country.

It is not surprising, therefore, that the following conclusion was suggested by THEINER (1963a) "... the KTSA is at least as accurate at delineating different personality types as the other commonly employed projective devices". (p. 28).

Validity of the KTSA for Special Groups:

A critical appreciation of the KTSA reveals that the usefulness of the test as a diagnostic instrument varies from one clinical group to another. This section will summarize the present knowledge of the KTSA with regard to some distinct maladjusted groups.

Cerebral dysfunction: Only 13.3% out of 40 organics participated in KAHN, HARTER et. al. (1956) reported to have been misclassified and to have shown 'Symbol-Pattern' other than NE = 40 - 49, LE = B, D and X (no reason, naming and concreteness) in the first four places, and five or fewer letters. MURPHY et. al. (1957) identified successfully 4 organics from 48 all sorts of patients. L'ABATE et. al. (1963) reported that a group of males and females brain-damaged patients produced KTSA-NE, significantly lower ($p < .01$), than non-organics controls. Typical Letter-Element for organics included high incidents of A - bizarre, B, D and lower Z (intangible abstraction) responses. The same group gave less X and Y (concreteness and tangible) responses than controls ($p < .01$, $p < .05$, respectively). This confirms KAHN's earlier suggestions (1957) except that A - bizarre type of responses was not considered characteristic of the organics.

In addition, L'ABATE et. al. (op. cit.) suggested 'eight KTSA signs' other than these revealed by the KTSA total score or its Letter-Element. THEINER et. al. (1962) have differentiated significantly 40 brain-damaged patients from 40 schizophrenics ($p < .001$) and have also mentioned some of the 'eight KTSA signs' for organicity as being helpful in correct identification. The usefulness of the KTSA 'Symbol-Pattern' in detecting brain pathology is discussed by NACEWSKI and BYRNE (1965).

Almost all studies with the KTSA involving brain-damaged persons indicate the strength of the test to detect that sort of pathology. It is not unexpected that cognitive impediment

may be associated with such pathology, therefore, a test of 'symbolization' like the KTSA detects very well this form of maladjustment.

Schizophrenia: It would appear somewhat redundant to summarize again all those studies already mentioned earlier pertaining to schizophrenia. Most of KAHN's studies employed schizophrenics. Among other investigators of the usefulness of KTSA 'Symbol-Pattern' in detecting schizophrenia are THEINER et. al. (1962) who differentiated schizophrenics from organics ($p < .001$) and L'BATE et. al. (1962) with 66% of correct identification. The latter reaffirmed the predominance of A - bizarre response in this group. Similarly, correct identification of schizophrenics is reported by MURPHY et. al. (1957) who detected 8 out of 10 schizophrenics, and by KIPPER (1967) who identified all 10 schizophrenics from a sample of 24 subjects, as well as some other studies.

Nearly all findings pertaining to schizophrenia, including those of the 'preliminary period' strongly suggest that the KTSA is especially sensitive to respond to schizophrenic reactions.

Neurosis: The few KTSA studies conducted with neurotic testees do not provide unequivocal results with regard to the ability of the test to detect this form of maladjustment. The revised 'Symbol-Pattern' suggested for neuroticism (HILL & LATHAM, 1965) reads: NE = 80, LE = Y - tangible association precedes Z - intangible abstractions.

Whereas KAHN (1957) and MURPHY et. al. (1957) reported some success in diagnosing neurotics, conflicting findings were found by KAHN, FERRIMAN and FERRARO (1956) and by WHITE and McLEOD (1963) who obtained rather meagre results.

It is suspected that the paucity of studies, in this context, is ^{to be} attributed to the fact that most clinical studies conducted with the KTSA were confined to hospitals whereas most neurotics, in the U.S.A., are frequently treated in out-patient clinics. In addition it is also possible that a test of abstract-concrete thinking like the KTSA cannot differentiate neurotics as distinctly as schizophrenics, for example. In any event, further studies with neurotic testees are undoubtedly needed.

Criminality: Criminality received some minor attention during the post-revision studies with the KTSA. There are four reports dealing with various types of offenders. The first attempt of this kind was reported by EVANS (1958) who compared, in an unpublished M.A. thesis 35 juvenile delinquent males of Federal Correction Institute, mean age 19.1 years (S.D. = 1.5), with 46 non-delinquent controls (M = 16.9 years, S.D. = 0.9). Army Beta I.Q. scores for delinquents yielded M = 102.9 (S.D. = 6.0) and for the control group; M = 107.1 (S.D. = 5.6). The groups differ significantly in terms of their Letter-Element rather than other indicators. Delinquents had more A - bizarre, B and D type of responses whereas non-delinquents produced more Y - tangible associations. EVANS also observed other signs which

differentiated the two groups. Controls placed more objects of a similar shape together in their arrangements, have had better recall in the third arrangement, and had longer reaction time. On the sorting part of the test delinquents place more objects in 'LOVE' and 'DEAD' categories whereas controls have had more objects sorted out into 'LIVING and 'LARGE' categories.

The author suggested that it was feasible to formulate a pre-delinquent KTSA profile to predict adolescent adjustment.

GOULDING (1958) explored, in an unpublished Ph.D. dissertation, the possibilities of predicting recidivism. In his terms the study was aimed to 'predict the overt acceptance of the regulations of the parole board by parolees from a maximum security prison' on the basis of their KTSA 'Symbol-Pattern'. A group of 60 inmates of Trenton State Prison, N.J., U.S.A., who applied for parole were given the KTSA. The testees were described as 'native born, Caucasian or Negroes, convicted of grave offences'. Six months following their release questionnaires of their parole behaviour were completed by their supervising parole officers. Twenty subjects, of the sixty, picked by random sampling, were compared on the null hypothesis with the other forty subjects. (The reason for this division is not clear to the writer). The statistical analysis upheld the null hypothesis of no relationship between the two indices. Chi-square results, comparing behaviour on the parole and the KTSA performance, yielded non-significant value ($p = .51$) for the

group of forty ex-inmates and $p = .22$ for the others. Biserial correlation indicated 72% agreement between the two measurements for the larger group ($p = .28$).

These results do not support the author's conclusion of "a definite trend" in the ability of the KTSA to predict behaviour on ~~the~~ parole. The method used in that study also seems to be too primitive. A more rigorous study is needed to test the usefulness of the KTSA in predicting adjustment of ex-convicts to the non-criminal way of life.

Two other studies concerned with groups of military offenders. HILL et. al. (1963a) reported, in an unpublished paper, an unsuccessful attempt to differentiate 40 U.S.A.F. prisoners, non-AWOL offenders, from a group of 40 prisoners convicted with AWOL offences and desertion. The former group was regarded as "active anti-social" offenders, whereas the latter ~~as~~ "inactive anti-social" types. Age, I.Q. education, prior military and civilian criminal history, army ranks, etc. were equated for both groups. Results revealed a remarkable similarity in the performance of the two groups on the KTSA. Differences ($p < .05$) between the groups ~~was~~ obtained for 4 variables (out of an hypothesis for expected difference on 77 variables) of the KTSA*) but were dismissed as a 'chance difference'. Diagnostically, both groups were described

* 'KTSA variable' is a term referring to each behaviour observed on the record-sheet which is scored either by 'objective' or 'semi-objective' scoring.

as 'neurotics with characterological features'. The authors' conclusions were that psychological characteristics, as measured by the KTSA, do not seem to be a significant factor in determining the type of crime committed by military offenders, provided they are crimes of the common unspectacular type. It appears that the environmental, rather than the personality factors, serve as 'crime catalyst'.

GRAVES and HILL (1963) studied the KTSA 'Symbol-Patterns' of 36 Air Force prisoners described as 'somewhat more disturbed than the average prisoner'. They have compared the KTSA protocols of this group with both psychiatric diagnoses and with the assessment of the restoration board. KTSA findings agreed with the psychiatric evaluations in 69% of the cases and in 76% of the prognoses made by the restoration board. Quantitative analysis confirmed the findings reported in HILL et. al. (1963a), that is, clinically, the prisoners of this study were diagnosed as 'neurotics with characterological features'. It was also observed that those regarded as 'passive-dependents' and 'alcoholics' responded to the KTSA with marked indecision. To these testees, transparent objects caused some concern and while colour responses were observed on the KTSA, they were absent on the Rorschach test. In conclusion, these authors believe that criminal activity is not a function of a dynamic drive toward psychological homeostasis, but a matter of chance interaction between weak personality and poor environmental conditions.

The last two studies employed military offenders which do not represent the common criminal, that is, they add but a minor contribution, if/at all, to the understanding of criminality or to the possibility of identifying the typical criminal. Furthermore, GRAVE and HILL (1963) even admitted that their subjects were more disturbed than the average military offender and, presumably, do not represent even that type of lawbreaker. The only attempt to use adult civilian criminals was made by GOULDING (1958). His study, however, did not employ non-criminal controls and rather concentrated on a special hypothesis of predicting behaviour on parole. No study, so far, has ever set out to find out the possibility of differentiating the common, 'genuine', criminal from the non-criminal individual on the basis of the KTSA 'Symbol-Pattern'. Such an undertaking is still required.

Character and behaviour disorders: It was already mentioned earlier that character and behaviour disorders is one of the clinical groups most difficult to identify satisfactorily by means of the KTSA 'Symbol-Pattern'. Studies with this group are so few that no conclusive evidence is feasible. McLEOD (1961) has studied the performance of three groups on the KTSA of which one was described as a 'character and behaviour disorder' group. Only 36% of the cases in that group showed a typical performance characterized by 4 or more B - no reason responses (in fact 33.3% of the whole sample would have been expected to be differentiated

by chance alone). GIFFEN et. al. (1960) reported the predominance of C - repetition and X - concrete responses in their character and behaviour disorder sample. They have interpreted these findings as an 'inability to cope with more than the concrete, tangible aspect of experience' and as having difficulties to 'comprehend moral values'.

Whereas MURPHY et. al. (1957) reported successful identification of 15 out of 17 character and behaviour disorder patients of their study, results by KAHN, FERRIMAN and FERRARO (1956) have shown poor correct detection of such patients.

Further refinement of the KTSA 'Symbol-Pattern' for this group is needed in order to eliminate future misclassifications.

Pathology of affect: The knowledge of the usefulness of the KTSA in identifying the 'depressives' and 'manic-depressives' is meagre indeed. Only one study was reported to have used the KTSA with such individuals (KAHN, 1958).

A group of 25 'character and behaviour depressives' produced higher Numerical-Element (score), where $M = 85$, $S.D. = 7.3$, compared with 25 'genuine depressives' with mean $KTSA = 74$, $S.D. = 5.5$ ($p < .01$). In addition, it was observed that the latter arranged the symbol-object slower and placed the objects on the strip in slanted positions. In the sorting part of the test they put more objects in 'HATE' category. Kahn has concluded that the feeling

of hostility and acceptance of anger played a greater role in their behaviour than any of the KTSA variables.

In the absence of any confirmation or refutation, the suggested 'Symbol-Pattern' for depression cannot be considered more than an interesting speculation.

KTSA Studies with Children:

As a test of abstraction, the KTSA, is expected to show an association between a gradual progression of the ability to conceptualize abstractly and growth with age. Such relationship may contribute to the theoretical validity of some of the KTSA nine levels of abstraction which are believed to represent concreteness and abstractions. The following will discuss some attempts at establishing KTSA norms for children and explorations to verify the differentiability of the test with regard to normal and emotionally disturbed children.

KTSA and child development: In a series of two intensive studies, ABIDIN (1966b, 1966c), has provided KTSA norms for children. In the first study (1966b) KTSA sorting task were established where a group of 340 children, dependents of U.S.A.F. personnel were employed. These were seven groups, corresponding to school grades 1 - 8 (6 to 14 years of age), 20 boys and 20 girls each. The mean I.Q. (Otis Quick Score) for the group was $M = 107.3$ (S.D. = 12.8)

while cultural background varied. The main results revealed: (a) sorting the symbol-objects into the eight categories was not at random, and (b) the performance of boys did not differ significantly from that of the girls. 'Heart' objects were consistently associated with 'LOVE' (571 sortings against 107 expected by chance), 'butterflies' were associated with 'LIVING', and 'anchor', and the transparent objects with 'LARGE', categories. Emotionally disturbed children frequently placed 6 or more objects on 'HATE', 'BAD' and 'GOOD' categories, and the greater the placement, the greater the pathology. Pathology was also associated with the absence of objects in 'LOVE', or with sorting 8 or more objects into one category. Generally, the mean of the number of symbol-objects sorted into each of the eight categories by the children appeared to be in agreement with the adult norms (KAHN, 1957).

Note, that the cultural meaning associated with certain symbol-objects, namely, 'hearts', 'butterflies', and others, was already observed among young children.

Norms for the KTSA 'Symbol-Pattern' for children were provided in the second study (ABIDIN, 1966c) where a group of 240 children aged 7 to 13 years of age was employed. This was divided into 6 groups, corresponding to school grade 2 to 7, 20 boys and 20 girls each. The mean I.Q. (Otis Quick Score) for the whole group was 103.8 (S.D. = 12.4). No significant differences in I.Q., age or sex within each group observed. Results

revealed the KTSA Numerical-Element (score) increases with age, except for a slight drop in the ages 12 - 13, owing to an increase in the frequency of B - no reason responses. This, possibly, could be attributed to a decrease in co-operation and the predominance of an antagonistic attitude, typical of early adolescent children.

The Letter-Element reflected the progression along the cognitive dimension together with growth with age. The predominant levels of abstractions produced at the age group 7 - 8 were D and X (naming and functioning, and concreteness). Coming toward the age, 11 - 12, these responses decreased in favour of Z - intangible abstraction. C - repetition responses were also reduced while E - shape and F - colour types of responses increased. The differences between the frequencies of B, C, E, F and Z responses used in each age group were significant ($p < .05$).

This clearly demonstrates the growth of the ability to abstract from childhood toward adolescence.

KTSA with normal and disturbed children: KENNY, is an unpublished Ph.D. dissertation (1962), also in (1965), employed a group of 120 children, dependents of U.S.A.F. personnel in Germany. This group comprised of three sub-groups, 40 children each, corresponding to school grades 5 - 6, 7 - 8 and 9 - 10, who were compared for their KTSA protocols with 96 maladjusted children from a clinic. All participants were between 11 to 15 years of age and had I.Q. of 85 and above. The whole group was further divided according to

the degree of adjustment. Thus, 91 were 'normal children', 51 'intermediate adjustment' and 64 'maladjusted children'. (16 subjects who did not comply with the eligibility requirements were eventually rejected from the sample). The 115 children of the last two sub-groups were sub-divided into 'acting out group' (N = 48), 'withdrawn group (N = 35) and a 'habit formation group' (N = 32).

The composition of these sub-groups in terms of their sexes was as ~~the~~ following^s: the 'normal group' included 34 boys and 57 girls, the 'intermediate group' - 35 boys and 16 girls, and the 'maladjusted group' comprised ~~of~~ 38 boys and 26 girls. There were significantly more maladjusted boys than girls (chi-square = 15.02, df = 2, $p < .001$).

Further analysis revealed that in the age group 11 - 12 years of age 32 subjects were 'normals', 16 'intermediates' and 27 'maladjusted' (total = 75). In the age group 12 - 13 years of age, 19 participants were 'normals', 14 'intermediates' and 17 'maladjusted' (total = 50). The age group 14 - 15 comprised ~~of~~ 30 'normals', 21 'intermediates' and 20 'maladjusted' children (total = 71) four of those did not complete the study). Chi-square analysis between the age groups and the sub-groups of degrees of 'adjustment' failed to elicit significant relationships.

Results of the study are reported as the following:

- (a) Maladjusted children produced more D - naming responses and less Z - intangible associations. X - concrete type of responses precedes Y - tangible associations.
- (b) Normal children had less than five letters in their 'Symbol-Pattern' ($p < .02$).
- (c) Children from 'habit formation group' over-estimated their memory ability (third arrangement) compared with the other sub-groups ($p < .05$).
- (d) Boys, generally, over-estimated their anticipated memory performance in the third arrangement, more than girls ($p < .01$).
- (e) In the sorting task of the test, maladjusted children sorted more objects into 'GOOD', 'BAD', 'HATE' and 'DEAD' categories. This observation was also confirmed later in ABIDIN (1966b).

Most major observations reported in this study are compatible with other studies reported. Thus, it was found that KTSA-NE (score) increases with age; moreover, norms obtained in this study were similar to those reported subsequently by ABIDIN (1966c). KTSA-NE decreases with maladjustment (see also FINK & KAHN, 1959). Also, the number of A - bizarre responses decrease with age but increased with pathology.

KENNY concluded that maladjusted children tend to be more concrete in their thoughts and expressions and this is clearly

revealed in their KTSA 'Symbol-Patterns'.

In an earlier study, FINK and KAHN (1959) compared 49 emotionally ill children, mean of age = 10 years, attendants of a child guidance clinic with a group of 148 'normal' public school children of comparable age. 'Normalcy' was determined on the basis of teachers' ratings or according to psychological records, when available. Correlation coefficient (product-moment) between KTSA-NE and Chronological Age for normals was .53 ($p < .01$) and for the emotionally ill $r = .18$ (not significant). KTSA-NE was also correlated with I.Q. scores, where $r = .46$ ($p < .01$) was obtained for 77 'normals' and $r = .29$ ($p < .05$) for the emotionally ill children. The authors reported a lower KTSA Numerical-Element and a greater frequency of D - naming, responses, typical of the disturbed children (but no statistical evidence was available to the writer). On the whole, the authors observed that disturbed children dealt with symbols in a manner typical of the performance of normal children three years younger.

GUERIN and ABIDIN (1967), following an unpublished M.A. thesis (GUERIN, 1966), compared a group of emotionally ill and normal children, all between 7 - 10 years of age, with comparable I.Q. (between 95 - 100). Physical handicap or brain pathology was ruled out. Emotionally ill children produced significantly more B type responses ($p < .01$). B - no reason type of responses are suspected to occur when the respondent is either unwilling

or unable to produce 'better' associations. Since I.Q. was similar in both groups participating in this study, it was inferred the B responses, predominant in the emotionally-ill group, was motivated by attitude of evasiveness, fear and defiance. The 'normals', on the other hand, produced more X - concrete responses ($p < .05$) which indicate greater willingness to meet new situations with adaptive attitude. Not surprisingly, D - naming responses did not differentiate the two groups (as in KAHN, 1957), since this type of response is a common developmental characteristic of that age group. The apparent contradiction, with regard to D responses, between this and findings reported by FINK and KAHN (1959) was attributed to the employment of older children in the latter.

The effect of prolonged hospitalization on the cognitive performance of children as reflected by the KTSA, was studied by MANN(1967). A group of long-term hospitalized children, in a general hospital, confined to their wards for two years was compared with a group of short-term, children patients. The former produced lower KTSA Numerical-Element, more A - bizarre, B, C - repetition and D - naming and functioning type of responses, while the latter gave more X - concrete and Y and Z (abstract) symbolizations.

Three studies with adolescent testees were reported in the literature (EVANS, 1958, BATES, 1960, WAGNER, 1963b). EVANS's

study with juvenile delinquents was discussed in an earlier section (see: 'Criminality' section). BATES (1960) reported, in an unpublished M.A. thesis, that the 28 adolescents participating in his study produced significantly more A, B and C type of responses and less X - concrete and Y - tangible abstractions compared with the norms for adults. It is clear that the small sample employed in this study does not permit generalization.

Summary: It was shown that the developmental progression in the ability to think abstractly in children was demonstrated by means of the KTSA 'Symbol-Pattern'. The hypotheses that growth in age is associated with increase of KTSA score, and with producing more abstract responses, i.e. X, Y and Z levels, was upheld. This may, also, reflect on the construct validity of some of the nine levels of abstraction employed in the KTSA. These developmental studies confirmed that B, C and D types of responses are associated with conceptualization at low chronological age, where cognitive ability is believed to be restricted. The more abstract responses, i.e. X, Y and Z types, predominated in adulthood where cognitive capacity has reached its climax. This trend is upset with the presence of severe emotional disturbances.

Some criticism based on statistical methodology was raised against the above studies. Thus L'ABATE and CRADDICK (1965) regret the use of parametric statistics. They also felt that

KENNY's study (1962, 1965) ought to use more sophisticated analysis of variance rather than simple chi-square computations, and the use of unclear terms, such as 'statistical tendencies'. On the whole these studies appear to be promising and indicate the possibilities ^{of} identifying emotionally disturbed children by means of the KTSA.

KTSA and age: This section will summarize the present position with regard to performance on the KTSA as a function of age. The studies reviewed in the previous section support the assertion that, in normalcy, the KTSA Numerical-Element increases with age up to young adulthood, (18 years of age), with a temporary drop in the period of early adolescence. Between 18 and 50 years of age the 'Symbol-Pattern' is independent of age. From the 50's and up, the correlation becomes negative; i.e. KTSA-NE decreases as age increases. For this age-group, a correction formula for the KTSA-NE was suggested by KAHN (1957).

With disturbed children and adult pathology, the relationship between age and KTSA-NE may be positive though not as clear as in the case of normals. In addition, the independence of KTSA-NE and age between the ages 18 to 50 was not observed with the mentally ill.

KTSA and Intelligence:

The I.Q. tests most frequently correlated with the KTSA were the Wechsler, Otis Quick Score and Army Beta.

During the 'preliminary period', FILS (1950) reported $r = -.16$ (N.S.) between I.Q. and the KTSA for 50 normals. KAHN (1954a) obtained correlations for 50 'normals', 30 'normals', 50 'brain-damaged' and another 30 'brain-damaged' all over 52 years of age of $r = -.11, -.34, -.26$ and $-.01$, respectively. KAHN (1957) reported correlation between his test and I.Q., for 25 presumably 'normal' testees, of $-.16$ (no level of significance was available for Kahn's coefficients).

KTSA and intelligence with children: I.Q. and KTSA-NE correlate positively and significantly with children. FINK and KAHN (1959) obtained correlation of $r = .58$ ($p < .01$) for normal, and $r = .29$ ($p < .05$) for disturbed children ($N = 49$). ABIDIN (1966c) reported $r = .73$ ($p < .01$) between Otis Quick Score and the KTSA-NE for 240 children aged seven to twelve.

KTSA and intelligence with adults: L'ABATE (1962) and L'ABATE et. al. (1963) compared a group of organics (16 males and 15 females) with a group of general medical patients (21 males and 15 females). Rank correlation coefficients between I.Q. and KTSA-NE of $\rho = .47$ ($p < .05$) for control males, and $\rho = .66$ ($p < .05$) for organic females were reported. CRADDICK & STERN (1963) studied the correlation between KTSA and WAIS, Verbal, Performance and Full scale I.Q. of 40 males, U.S.A.F. personnel. The mean of age was 25.6 years (S.D. = 5.6), mean for education 13.8 years (S.D. = 2.88),

and Full Scale I.Q. yielded ($M = 111.9$, $S.D. = 18.88$). No significant correlation between KTSA and WAIS, Verbal, Performance or Full scale I.Q. were found. Participants were divided, also into sub-groups, high KTSA-NE (over 90), 21 individuals, and low (90 and below) KTSA-NE ($N = 19$). WAIS [?]eleven subscale did not correlate significantly for either sub-groups. Similarly, no correlation was evident between WAIS 'similarities' subtest, which presumably measures verbal abstraction, and the KTSA-NE. The authors felt that their results do not offer conclusive evidence of any relationship between KTSA and I.Q. KAHN, HARTER et. al. (1956) did not find a significant correlation between I.Q. and the test for 40 normals and the 40 brain-damaged patients employed. However, a significant negative correlation ($r = -.51$ $p < .01$) was found for a group of forty schizophrenics.

KAHN (1957) has explained that "Theoretically, such a correlation (positive) exists only among "well adjusted" normals ... Since the symbol pattern is sensitive to emotional stress and the I.Q. is relatively insensitive to it, a comparison between the two may indicate the amount of stress that is present". (p. 140).

KAHN (op. cit.) has suggested a formula to estimate the amount of loss of efficiency due to the emotional stress, as the following:
 Loss of efficiency (in %) due to emotional stress equals
 $100 - \frac{KTSA-NE \times 100}{I.Q.}$, where the second portion of the formula represents the "I.Q.% utilized by the testee while performing on the KTSA". Using this formula KAHN and GIFFEN (1960) and L'ABATE et. al.

A high correlation between the KTSA and other personality projective test is not desirable, and will challenge the genuine contribution of the former. Some positive correlation coefficient is expected, similar to the results mentioned by THEINER (op. cit.).

(1963) found significant differences in the amount of deterioration displayed by small groups of brain-damaged patients compared with controls. At present, this formula possesses merely a speculative value and is in dire need to be confirmed experimentally.

These conflicting studies indicate that the relationship between intelligence and the performance on the KTSA is not clear enough. Kahn's theoretical explanation should be carefully and critically analysed. Of course it is possible to argue that the symbolization task, evaluated along the abstract-concrete dimension, is not entirely synonymous with all the propensities measured by the intelligence test, hence the absence of a clear correlation. Nevertheless, ordinarily, some positive relationships between the two indices would have been expected at least with young children.

Again and comparable with the relationships observed with age and the KTSA, when psychopathology is involved, the relationship between intelligence and the KTSA-NE is rather ambiguous and unpredictable.

Cross-cultural studies:

The KTSA was not claimed to be a 'culture-free' test. Quite on the contrary, the cultural influence in making associations on the basis of the symbol-objects was openly admitted. Furthermore, it was thought to be an essential feature of the test. Nevertheless, it was alleged that some of the symbol-objects selected,

possess a universal significance. The extent to which the KTSA is restricted to one culture, i.e. the American, where it was created, or whether it has some validity across-cultures is examined in the following.

THEINER and GIFFEN (1964) compared three groups of native Vietnamese (N = 35), native Germans (N = 40) and 50 native Americans. The subjects were controlled for age, non-verbal I.Q., formal education, motivation, training in English and military rank. Results for the KTSA-NE revealed lower, yet not significant, score for Germans compared with the Americans and higher score for the Vietnamese, in spite of their slightly lower formal education. On the whole the 'Symbol Patterns' were well within (± 1 S.D.) the American norms, albeit small cultural nuances ("cultural residuals") were observed.

The authors concluded that the KTSA provides a unique method of analysis ⁱⁿ ~~in~~ assessing health and pathology across cultures.

Naming and symbolization tasks of the KTSA were studied in some cultures in the Far-East (NAKANISHI, 1964, 1960, NAKANISHI & TAKEI, 1960). Generally, they have confirmed the conclusions of THEINER and GIFFEN (op. cit.) where only minor deviations from the American norms were reported. Studying Japanese subjects, NAKANISHI compared the KTSA naming and symbolizations of 28 boys and 28 girls aged 3 - 5, a group of 25 boys and 9 girls aged 12 - 13 with a group of 47 females, college students. 'Naming' did not

differ markedly from the American norms, with the exception of difficulties observed with the 'parrot' and 'anchor' objects. In ^{the} 'symbolization' task ('parrot' object omitted) 'hearts' objects were often associated with 'playing cards', 'circle' object with 'completeness' and 'self control' and 'dogs' shapes with 'dishonourable, fruitless death'. This author believed that the KTSA offers interesting opportunities for studies with Japanese subjects.

The applicability of the KTSA 'differential diagnosis formulae', compiled in the U.S.A., for British psychotic patients was reported in KIPPER (1967). The overall correct diagnosis compared with those of the psychiatrists, was 83.3% for 24 patients of various psychotic illnesses. The hypothesis that cultural differences between England and the U.S.A. will not impede the usefulness of the KTSA, was, generally, upheld.

It appears that some confirmation of the claim, that most symbol-objects employed in the KTSA possess cardinal significance across cultures, was sustained. However, when using the KTSA in cultures, other than that predominant in the U.S.A., the researcher ought not to rely totally on the American norms before establishing their appropriateness in the new circumstances.

Sex differences: The only study which assumed sex differences to affect the performance on the KTSA is an unpublished M.A. thesis by WYMAN (1963). KAHN, L'ABATE and other investigators employed

freely testees from both sexes. KENNY (1962) reported that with children between the ages 11 to 15, boys (a) produced more D - naming and B - no reason, ~~type-of~~ responses compared with girls who responded with more C - repetition and Z - intangible abstractions, (b) Boys favoured most 'anchor' objects and disliked the 'circle' while girls preferred most 'cross' and disliked the 'parrot' (no statistics available), (c) Boys also overestimated their recall ability in the third arrangement more than girls ($p < .01$).

WYMAN (op. cit.) study employed 32 male and 32 female students. The two groups took the KTSA under two conditions. First, each subject responded to the KTSA in his own natural way. Secondly, a 'sex role' was played where every testee was required to respond to the KTSA, again, but the way he/she expects the other sex to do so. The order of the two conditions was changed for each half of the total sample. In addition, all participants were divided according to high and low score ^{on the} of M.M.P.I., Mf (Masculinity-femininity) subscale.

The main results of this study revealed no significant differences between taking the KTSA under the two conditions; but females obtained significantly higher KTSA-NE ($p < .005$). They also placed fewer 'hearts', 'dogs', and 'butterflies' objects in the first eight segments of the strip in liking-disliking arrangement ($p < .05$). Effeminate males and females (Mf) scored higher on their own performance compared with either high or low Mf

subgroups under the 'sex role' condition.

This study not only suggested that females score higher on the KTSA, but also some differences associated with the presence of ^{an} effeminity ^{ac} trend. Effeminate males and females tended to exhibit greater emotional control, judged by a medium speed in arrangements, and artistic sensitivity, as revealed by E - shape and F - colour responses. This last conclusion was also supported by KTSA standardization for females (L'ABATE et. al., 1962).

It was also observed that, while simulating the female role, males placed more 'dogs', 'hearts', and 'butterflies' objects in the first eight segments of the strip. This confirmed KHAN's theorizing (1957) that these objects represent 'tender emotions and fragility'. Therefore, they were assigned to the cultural stereotype of the effeminate woman. ?

WYMAN's study assumes that the emotional and personality make-up of women in the American culture differ from that of men. L'ABATE and CRADDICK (1965) were not convinced that such a hypothesis is tenable, or is supported by other studies.

A possible explanation for the difference in the KTSA-NE obtained in WYMAN's study is related to the difference in the psychological maturity of the samples employed. It was stated that all subjects participated ^{ing} were of comparable age, yet it might be alleged that female college students might be more matured than their male contemporaries. Thus the higher KTSA score is

not the result of sex differences but of greater emotional maturity.

THEINER (1965) found that the sex of his testees, 72 female and 56 male college students of comparable age, did not have a significant effect on the overall abstraction value of the KTSA results. He had pointed out some minor differences in the Letter-Element pattern between the two sexes where females produced more B - no reason, and Z - intangible, whereas males responded with more X - concrete and Y - tangible abstractions.

KTSA and other personality tests: The difference between the KTSA and other personality tests of the projective kind was expressed in KAHN (1955b):

"... tests like the Rorschach and the T.A.T. are more apt to reveal the nature and strength of a given subject's dynamic drives, whereas the symbol arrangement test is uniquely suited to reveal how these drives are expressed in terms of overt actions". (p. 436).

KAHN (1952) compared the diagnosis of neuro-psychiatric patients as described by the KTSA and by the Rorschach, T.A.T., Draw-A-Person Test and the Wechsler. Agreement was observed in 89% of the cases (N = unknown). THEINER (1963b) obtained low, yet significant correlations ($p < .05$, $p < .01$) between 26 variables derived from 10 MMPI scales and the KTSA (N = 167). The author concluded that the performance on the one test does not predict the nature of performance on the other, but the two play a complementary role in the clinical assessment.

SUMMARY AND DISCUSSION.

The original diagnostic technique discussed in this chapter appears to be a promising, empirically constructed psychological device. Administration is relatively^{ve} brief. Scoring is readily mastered. The tasks required are easy, non-threatening and elicit co-operation.

The statistical requirements of a psychodiagnostic instrument have, generally, been met satisfactorily. The performance on the test was found to be consistent over a short period of time. The reliability of scoring certain types of responses, namely, A, D and X was questioned, but some corrective measures were adopted subsequently by HILL and LATHAM (1965). The suggestion for further provision of more extensive standardization and test-retest reliability with normal populations does not necessarily challenge the basic reliability of the test in its present stage of development.

As a psychodiagnostic tool, the KTSA was found to have an impressive concurrent validity in detecting severe pathology, especially cerebral dysfunction and schizophrenic trends. Milder forms of maladjustment, such as neuroticism and character and behaviour disorders are not as distinctly differentiable. It has not been established yet whether this is due to a deficiency in the test or the result of insufficient information and research.

It has been shown that performance on the KTSA correlates significantly with age and intelligence during childhood and adolescence. It is relatively independent of these factors in

adulthood. In the case of mental illness, differentiation between some forms of psychopathology and 'normality' by means of the KTSA is better than that produced by intelligence tests alone. It is possible that the KTSA measures some qualities which are not emphasized in the common intelligence tests (see also below).

Some indications were made that the test is not as 'culturally biased' as ~~it~~ might have been expected. When employed with caution the KTSA may be applicable in societies and civilizations other than that of the U.S.A. At any rate, the test seems to be suitable in societies where 'Western' and Christian cultures predominate.

At this stage of knowledge with the KTSA, some reservations ought not to be ignored. It is evident that the amount of research carried out with this test is relatively moderate. The test in its revised version is available since 1956, but only about sixty studies were conducted during that period, with a substantial percentage of exploratory unpublished researches. It is not entirely correct to suspect that the paucity of research indicates a lack of confidence in the new technique. In view of the great competition between various psychological tests and considering the vast repertoire of psychodiagnostic instruments, a new test will be readily incorporated in practice only when it has shown a clear superiority over existing tests. Such an advantage was manifested by the KTSA mainly concerning the identification of some pathologies. Therefore, at the moment, it can be expected to be con-

sulted chiefly in those cases. In addition, it must be remembered that the KTSA is still in a stage of exploration. Under these circumstances it is not yet suitable for incorporation in routine psychological testing. This predomin^{ant}~~ate~~ attitude is, however, in contrast to the opinion held by L'EBATE and CRADDICK (1965) who deplored, what seemed to be an 'over-cautious' attitude. They maintain that the KTSA has demonstrated sufficient strength to be administered in routine psychodiagnosis.

The validity of the interpretations made on the basis of the KTSA is a problem of great controversy. Ordinarily, a test is expected to throw some light on the personality dynamics of the respondent, beyond and above the test's discriminative power. While the latter requirement was fulfilled, interpretation of the KTSA results are not clear enough. This is directly related to the question of what ~~is~~ is measured by the KTSA. To KAHN, this is a test of adjustment. The difficulty in this contention is that the theoretical link between cognitive functioning and maladjustment has not been established unequivocally. The impressive volume of an elaborated theorem of conceptual systems and personality organization by HARVEY et. al. (1961), where abstract and concrete functioning is directly related to personality and adjustment, has not been substantiated yet.

On the other hand, the assumption that the KTSA measures concreteness and abstraction seems to be tenable. First, by

definition of its scoring criteria, i.e. the nine levels of abstraction, the test seems to evaluate the abstract propensity of the given responses. That is, the responses are evaluated according to whether references were made to the actual test objects or some of ^{their} ~~its~~ physical attributes, according to ^{than} ~~its~~ resemblance to other real-life counterparts, or according to an intangible common attribute abstracted from the latter. Since other variables, such as socio-economic status, culture or education did not appear to account for the test results, it is possible to assume that, by definition, the KTSA measures levels of abstraction. Furthermore, studies with children have demonstrated a gradual increase in the frequency of the 'abstract' levels of the KTSA with age. Assuming that by virtue of their operational definition, these levels represent different degrees of abstraction, these findings are in harmony with theories of the cognitive development of the child. Thus, the developmental progression of the child from concrete to abstract functioning is clearly demonstrated in some of the KTSA nine levels of abstraction.

The question of what is precisely measured by the KTSA, while not fully exhausted, is also related to the power of the test to differentiate between the impact of lack of motivation and inability to symbolize abstractly. It was suggested that the KTSA measures both unwillingness to accept culturally determined concepts and ability to abstract. The two are believed to operate

simultaneously except for extreme instances where it might be justifiable to suspect that the two do not coincide. In such cases, a special measure to clarify which factor predominates is applicable.

The advantage of the KISA original technique as displayed in some special forms of psychopathology, e.g. in detecting schizophrenic tendencies and brain-pathology, might suggest exploration of this test in other maladjusted groups. Although the association between the test results and some forms of maladjustment is not explained, it does exist. This is expected to be clarified in subsequent studies.

CHAPTER: 4THE SYMBOLIZATION TEST FOR CRIMINALS (THE S.T.C.)Introduction:

The Symbolization Test for Criminals (the S.T.C.) is a test of abstraction devised by the writer for the special purpose of identifying adult criminals.

It is, probably, not accidental that the majority of psychological studies in criminology have focused the attention on juvenile delinquent populations. The belief that criminal tendencies are formed in early stages of life is shared by many theorists, hence the assumption that the earlier the detection of such proclivities, the better are the chances for correction and subsequent crime prevention. Indeed, statistics of crime rate for juveniles suggests an immediate and urgent need for adopting effective, imminent preventive measures.

In a rather striking contrast, a relative paucity of rigorous studies with the adult criminal has been observed. There is good reason to suspect that this is largely motivated by feelings of pessimism with the prospect of the prognostic and rehabilitative chances of these individuals. Indeed, the relative inadequacy of the therapeutic methods available may justify the formation of such attitudes, but this should have resulted in intensive research rather than in negligence.

Furthermore, the magnitude of the problem of the adult persistent offender is illustrated in the report of the HOME OFFICE, Prison Department (1967) for the year 1965. No less than 20,509

new prison receptions, or 68% of the total receptions (29,871) of adult criminals, were offenders with 4 and more previous proved convictions (Adapted from Table D.1, op. cit.) Facing such an alarming figure, it seems that society cannot afford to neglect the adult, habitual offender.

Opinions with regard to the significance of the role of psychological factors in the formation of criminal behaviour vary considerably. However, it is generally agreed that criminality has to be treated in a multi-factorial approach (COHEN 1962), that is, that no single factor can be expected to be responsible for such conduct. The predominant belief was expressed in (GRAVES & HILL 1963) who concluded that lawless behaviour, in their case as manifested by military offenders, is a combination of general weak personality and poor environmental conditions. In fact, this implied that no particular personality deficiency associated with that maladjustment was specified. The multi-dimensional feature of criminality affects the efficiency of psychological tests in characterizing the 'genuine' criminal. Such difficulties were illustrated in the preceding chapter. This was, in addition, evident in another classic study (GLUECK & GLUECK 1956, based on GLUECK & GLUECK 1950). These authors claimed that they could dispense with the psychological indices, derived from the Rorschach and psychiatric interviews, without affecting the efficiency of their delinquency predicting tables. While the GLUECK's assertion may be correct with regard to the two psychological measurements employed in

their study, this cannot be accepted as a conclusive generalization for all psychological tests. Unless all psychological devices have been explored thoroughly, such a conclusion appears to be rather premature.

Furthermore, it has been already suggested earlier that criminality is not necessarily synonymous with psychopathology. A new psychological approach to the identification of the criminal - not necessarily the psychopathological - may provide better clues for further research in characterizing the criminals as a group.

The Purpose of the S.T.C.

The S.T.C. was devised in order to differentiate between the 'genuine' offender and non-criminals. The technique adopted represents an exploitation of the typical performance of criminals observed with the KTSA, and aimed, deliberately, to maximize the differences between these two populations. It was hoped that such an adoption would possess sufficient validity to provide, eventually, a workable tool for that purpose.

The decision to focus the attention on the cognitive dimension of personality in the S.T.C. was not an arbitrary choice. Although, it is clear that this aspect of behaviour has attracted a negligible number of previous studies with criminals, this is probably due to the absence of a sound theory which provides a linkage between, say, abstract and concrete functioning and psychopathology. However, previous observation (GLUECK & GLUECK 1950) revealed that juvenile delinquents tend to display direct

and concrete attitudes rather than symbolic, intellectual expressions, and are less methodological in their approach to problems.

The introduction of the KTSA aimed at testing the hypothesis that adult, habitual criminals will reveal a lower level of abstraction in symbolizing culturally determined objects, when compared with non-criminal groups. The S.T.C. attempted to capitalize on this hypothesis by exploiting that tendency. In other words, the test confronts the criminal with test situations which resemble those real-life situations where conflicts with the law and with society are most ^{evident} eminent. It was hypothesized that under such circumstances the presumed cognitive deficiency of criminals, as would have been expected from their performance on the K.T.S.A., will differentiate them from the non-criminals.

Furthermore, the introduction of the S.T.C. in addition to the KTSA was indicated for two main reasons. First, it must be remembered that the latter was originally constructed as a psychodiagnostic tool with the explicit purpose of differentiating normals from psychopathological groups. Hence, the test results are interpreted in terms of psychiatric nomenclature. The present study was designed to avoid such interpretations. There was little interest to assess^{is} whether criminals are 'normotics' (normals), neurotics or psychotics. Indeed, it is possible to evaluate the results obtained through the KTSA, independently, with no clinical implications, but the apparent association between the test and psychopathology caused some uneasiness. On the other hand, the S.T.C. has no known relationships with other

forms of behavioural maladjustments and do^{so} not claim any except with criminality. Secondly, the KTSA was not designed, originally, as a test of criminality. Therefore, it is not, necessarily, sensitive to such behaviour assuming that criminality can be detected by means of psychological factors. The S.T.C. represents the testing of a new hypothesis, that is, that psychological deficit observed on general tests may be exploited and adopted in such a way that it will possess special sensitivity to criminal behaviour.

HISTORY AND DEVELOPMENT.

The idea of devising the S.T.C. in its present form sprang from the discovering of the technique used in the KTSA. This was preceded by a series of unsatisfactory attempts to promote a test of abstraction for the specific purpose of differentiating criminals from lawful citizens.

The first succession of attempts moulded itself after the classical works in characterizing maladjusted groups by means of abstract and concrete functioning, notably the techniques employed by HANFMANN and KASANIN (1937, following VIGOTSKY 1934), GOLDSTEIN and SCHEERER (1941), Wechsler W.I.S.C. and W.A.I.S., 'Similarities' subtest (RAPAPORT et. al. 1945) and BRUNER et. al (1956). The method of ^{the} 'paper and pencil' test as used in the Proverbs Tests (GORHAM 1956, or a Swedish version, e.g. BRATTEMO 1965) was not deemed to be appropriate in this context (see below: 'Principles of the S.T.C. (a)').

In one attempt, a chromatic pictorial representation of

twelve pairs of concepts, adopted from the WISC and the WAIS 'Similarities' subtests, was made. Technical difficulties in obtaining satisfactory pictures were responsible for the decision to abandon this course. It was found that (a) some concepts, e.g. 'alcohol', were difficult to represent in the concrete without adding irrelevant factors (such as 'a bottle of whisky'), that is, the shape of a bottle added distracting clues in forming similarity with the other half of the pair. Also, (b) in spite of the use of highly skilled photographers the colours of the pictures came out less clear than expected (after a few trials). Many responses, in pilot trials, appeared to be complicated by this fact. In addition, it was found that a trichotomous classification of 'inadequate', 'concrete or functioning' and 'abstract' responses was not sophisticated enough to include all answers produced by 15 student testees.

The next attempt was a further step toward improving the above technique. The pictorial stimuli were replaced by both chromatic pictures and small models representing a series of concepts from the WISC and WAIS 'Similarities' subtests, and others. Fifteen such concepts were formed. These were presented to the testee in groups of three with the instruction to state 'In which way two of these are alike and the third different! Again it was found that a more elaborated scoring system was needed. In addition, the idea of including concepts with special relevance to criminal behaviour in the impinging stimuli, was developed. At this stage of the experimental explorations the Kahn Test of Symbol Arrangement was discovered. Striking simi-

larities between the considerations contemplated within the case of the special test for criminals and in both the rationale and technique of the KTSA were observed. This has encouraged a research of the appropriateness of the latter in the British population using psychotic patients. (KIPPER 1967). The results of that small validation study have justified further study with the test. In addition a 'supplementary test (the S.T.C.)' was introduced. This has followed the same technique offered by the former. The KTSA has also provided the most elaborate scoring system known for tests of abstract and concrete thinking. This system of nine levels of abstraction was adopted, with two exceptions (see section 'categories of abstraction', below), in the new S.T.C.

At the moment, the S.T.C. represents an extension of the KTSA; therefore, the two tests form one unit. Future studies may assert the independent validity of the S.T.C. This could involve adding more tasks to the latter, e.g. 'memorizing arrangements', sorting tasks', etc. (see section 'rationale').

THE TEST MATERIALS.

The S.T.C. consists of twelve symbol-objects or toy models. These have to be arranged in various ways on a special strip and to be followed by reasoning and symbolization tasks. The selection of the particular objects and the special design of the tasks were guided by a set of principles, discussed below.

Principles of the S.T.C.

In the following, a set of four principles concerning the nature of the tasks required on the S.T.C. is presented. These postulates are not, necessarily, unique to the S.T.C. They might be applicable to other psychological tests of this kind. However, they are believed to have a particular significance in the case of testing criminals and offenders.

a) Performance versus paper-and-pencil tests: From the onset of the idea to devise a special test for criminals, the decision was in favour of a performance type of test. The advantages of the paper-and-pencil tests were not overlooked. True, such a test is usually brief, involves simple and straight-forward questions and answers, and is scored rather objectively. Yet, in the present case, additional factors particular to the nature of the criminals, ought to be given ample consideration. Thus, owing to a typical history of irregularities in school attendance, criminals may find themselves at a disadvantage when confronted with assignments which require reading and writing abilities, irrespective of how easy they might appear. The effect of such handicap, namely, slow reading, was demonstrated in lowering the scores yielded by delinquents on the W.A.I.S. (GRAHAM & KAMANO 1958). In addition, written questions may have unexpected connotations and are liable to be interpreted incorrectly by the testee without the awareness of the tester. Furthermore, it is not unlikely, that tasks which require reading and writing ability might be

associated, in the criminal's mind, with schooling. This, inevitably, may reduce the motivation to co-operate, and spontaneous personal involvement in the tasks. It might be argued that the significance of the foregoing considerations has^e been over-emphasized and exaggerated. But on the other hand, it is felt that complete ignorance^{ing} of their existence involves a great risk of obtaining unreliable responses. ^{The} Performance type of test has the advantage that they appear easy to comply with and often playful and pleasant. Furthermore, in such tests every response is scored and thus the effect of cheating or ambivalent and undecided responses has no detrimental consequences. Since such tests do not reveal their true purpose, the effect of a possible 'social desirability' factor is reduced greatly.

On the other hand, a performance type of test is not free from disadvantages. Perhaps, the most important drawback is that the responses obtained on such a test are qualitative and must be assessed or evaluated by means of quantifying methods. Traditionally, this involves a technique of devising weighting score systems. Thus, the chances of the interference of subjective assessment and interpretations increase.

Realizing all these difficulties it was felt that the pro's in favour of a performance test, in the present case, outweigh the con's.

b) Non-threatening feature of the tasks: The tasks suggested on the test should avoid the provocation of excessive anxiety or fear. Otherwise, the testee may be deterred from giving full

co-operation. In addition, undue anxiety might result in developing defense mechanisms which suppress 'genuine' responses. This lessens the likelihood of obtaining reliable information. It might have been noticed that some of the symbol-objects chosen, e.g. 'a pair of handcuffs', 'a knife', etc. might arouse tension any way, since they are probably associated, for criminals, with unpleasant past experiences. Under such circumstances, the rule that the tasks devised should be non-threatening, is of a particular significance.

Indeed, it is probably impossible to avoid the intervention of defense mechanisms or defensive attitudes in producing responses to the tasks required. This holds particularly when dealing with criminal populations who are known to possess feelings of distrust toward authority, and often are characterized as displaying hostility and negative attitude toward ~~the~~ non-criminals. Therefore, the task of reducing the threatening feature of the test requirements is very important in such circumstances.

On the other hand, a certain amount of anxiety is necessary in order to facilitate projections. The anxiety arousing nature of some of the S.T.C. symbol-objects appears to fulfil this purpose.

In any event, the criminal^s should be free from suspecting that they might lose as a result of their performance, or that the results are going to be used to their disadvantage.

c) Simplicity and attraction: The test should be easy and

simple to perform, that is, the tasks should not impose undue strain or extra-effort to comply with the instructions. This maxim is important for it may lead to significant consequences with regard to the reliability of the responses. Often, where the testee feels that he is likely to fail, he develops defensive attitudes which may be expressed in the form of avoidance and indifference. One way to cope with such possible attitudes is to introduce rewards, e.g. money, marks, favourable comments. Another, is to construct the test in such a way, that the subject is always left under the impression that he is doing well and thus his feelings of success are constantly gratified. The simplicity of the tasks is one factor which is conducive to such an aim.

In addition, attractive test objects have an impact on the increase of genuine involvement in the performance and often result in positive co-operation. True, it might be presumptuous to claim that simplicity and attraction alone guarantee truthfulness and reliability of the responses, but their contribution toward greater spontaneous co-operation with the instructions is indisputable.

d) The test should not reveal its true purpose: In order to avoid the effect of 'social desirability', the real purpose of the test should not be disclosed. It is also advisable that this would not be communicated to the testee even in an indirect way through the nature of the tasks required. As a rule, any possible factor which might influence the reliability of the

responses in an undesirable direction must be avoided.

On the other hand, the respondent must be given some explanation of what he is required to do. This explanation must be general and 'neutral' so that it would not call for an attitude of 'social-desirability'. Subjects usually respond very well to such explanations provided they are simple and clear.

In the case of the S.T.C. the subjects were told that they were required to state what they thought the symbol-objects might represent. Consequently, they believed that they were tested, as some of them have said: "Which object I like best" or "What do I think of the police", etc. This may result in producing more favourable attitudes toward objects normally defied by criminals ('social desirability'), but it does not, necessarily, affect the level of abstraction of their symbolizations. Since the respondent is unlikely to realize that his ability to abstract is under study, the likelihood of producing deliberate^{ly} distorted responses here, is small.

Criteria for Selecting the S.T.C. Objects.

Most principles for selecting the symbol-objects advocated for the KTSA (see pp.82-84) were retained in the case of the S.T.C. However, slight modifications were necessary due to the particular circumstances of the latter. In addition, new criteria for selecting these objects were postulated. These, and the modifications, mentioned above, will be discussed in the following sections.

1) Pertinence to criminal way of life: A test of criminality is expected to be highly sensitive to this peculiar behaviour. It was thought that such sensitivity, might be enhanced if the test materials had some association with typical features of criminal conduct. The idea was to select objects which are associated with daily-life situations relating to crime and lawlessness. This was achieved by the following procedure. A list of situations beginning with violence and crime (i.e. accident or robbery) followed by the usual consequences, that is, the appearance of the police, detention, arrest, trial, imprisonment and discharge, was made. Independent raters made separate lists of objects which are most commonly observed in each of these situations and thus may represent them. Those objects agreed upon by all raters and which were available in small models in toy shops, were chosen to be included in the test materials.

No assumption or inquiry with regard to the universal significance of the objects were made. Some, undoubtedly, may be found in a number of societies. However, it was important to secure that all the objects selected were familiar to any person of sound mind living in this culture.

2) Miniature representation in reality: The significance of the symbol-objects chosen was inferred from two sources of observation. First, all these objects were available to the public in a miniature form, i.e. toy models. This was considered an important feature of the significance of the objects. It is

known that in their original form in real-life most of such objects are not acquired by the ordinary person but rather belong to a small group of people associated with crime and lawlessness. On the other hand, when these objects are produced in a miniature, symbolic form they are acquired by many people who are not, necessarily, connected with such detective agencies particularly children. It was hypothesized, therefore, that the general interest in such miniature objects ipso-facto reveals a positive and meaningful appreciation of such symbols. Furthermore, in our materialistic society, money seems to be an important criterion of what the public regards as meaningful and meaningless. Thus both facts, that people are willing to buy such objects for their children to play with and that businessmen are motivated to manufacture such objects for their livelihood, seem to indicate the significance of such symbols. Again, it is reasonable to assume that parents realize the educational and symbolic propensities of such objects, which add to their readiness to obtain them for their children.

All symbol-objects used in the S.T.C. are standard models. The majority may be found, in an identical form, in shops, except for two objects. The 'pair of scales' and the 'truncheon', were too big in comparison with the other models, and had to be reproduced in a smaller form for the purpose of the test.

3) 'Similarity-with-difference' principle: Generally, this principle, explained previously with the KTSA (see pp. 83), was retained here as well. However, a few violations of this rule

were observed in the S.T.C. Two such exceptions should be pointed out. First, in the case of the KTSA, special attention was paid to the shape and colour of the symbol-objects. The test does not employ the original objects as found in reality. These, were reproduced for the purpose of the test as plastic representations where the contour of the objects was simplified and colours were plain and unified. Furthermore, most colours were matched so that they appear more than once with different objects. The simplification of both contour and colours have the advantage that it reduces the chances of producing responses based on irrelevant minute differences, and it increases the probability of directing the attention to the shape and colour attributes of the symbol-objects. In the case of the S.T.C. such simplification was absent. In this initial stage of the experiment, it was decided to avoid any modifications in the original form of the objects. Following, the first attempt to establish the significance of these objects to serve adequately the purpose of the S.T.C. such refinements were thought to be indicated. On the other hand, some colours do appear more than once on the S.T.C. An inevitable consequence of this decision was that the chances of obtaining responses based on shape and colour in the S.T.C. were reduced (see Table 7). These shortcomings of the test will have to be eliminated in the future. Secondly, the KTSA employs groups of symbol-objects having a similar shape, e.g. three hearts, three stars, etc. (see photograph, APPENDIX I). Such similarities have also encouraged responses based on shape. This phenomenon is not evident in the S.T.C.

None of the objects chosen in the test display an identical shape. Thought^s ought to be given to introduce^d this feature of the test material in subsequent studies (see also discussion on this point in the latter part of this volume).

Description of the S.T.C. Materials.

The twelve symbol-objects selected for the S.T.C. vary in material, size, mass, colour, shape and content. These objects are (see also photograph, APPENDIX I) 'an ambulance (A)', 'a bulldozer (B)', 'a cigar (C)', 'a gun (G)', 'policeman's helmet (H)', 'a knife (K)', 'a motorbicycle (M)', 'a car (N)', 'a pair of handcuffs (OO)', 'police patrol-car (P)', 'a pair of scales (S)', and 'a truncheon (T)'. (The letters in brackets are code signs for quick recording. They will not be used in the test to avoid confusion with other code signs. However, the reader will find them useful for reading Table 9).

A special felt strip, similar to that employed with the KTSA, with segments numbered consecutively from 1 to 12 is provided.

ADMINISTRATION AND SCORING.

Procedure of administration.

The procedure of administering the S.T.C. is a shortened version of that used in the KTSA. It consists of a symbolization test only. The KTSA uses five different arrangements including 'Symbolizing task', whereas the S.T.C. has adopted three such arrangements only. These are described below in three steps. Administration is simple, usually takes 15 minutes and is easily mastered.

Description: The steps of administering the S.T.C. are almost identical to some described earlier with the KTSA. In order to avoid unnecessary repetition the reader is advised to consult pages of this text.

Step 1: As step 1(a) and (b) of the KTSA (Free arrangement, and naming.)

Step 2: As step 2(a) and (b) of the KTSA (Free arrangement, and symbolizing)

Step 3: As step 4 of the KTSA (Liking-Disliking arrangement.)

A detailed description of the S.T.C. procedure including specification of the instructions, may be found in APPENDIX V. A copy of the S.T.C. scoring-sheet may be found in APPENDIX III.

Scoring Principles.

The method of scoring the S.T.C. followed the 'semi'-objective scoring of the KTSA, described earlier (see pp.84 -87) Again, the final result for each testee is represented in the form of an S.T.C. 'Symbol-Pattern', which is identical to the idea of the KTSA 'Symbol-Pattern'. Moreover, computing the S.T.C. 'Numerical Element' (scores) and 'Letter Element' follows the same principles and methodology observed in the KTSA.

S.T.C. levels of abstraction: The S.T.C. provides for ten levels of abstraction, of which seven are identical to those employed in the KTSA. These seven levels are: (A) - bizarre responses, (B) - no reason, responses, (E) - shape, appearance responses, (F) - colour responses, (X) - concrete associations, (Y) - tangible abstractions, and (Z) - intangible abstractions. The rule specifying the characteristics of each of these levels are laid down elsewhere (HILL & LATHAM 1965 pp. 27 - 37).

Two of the nine levels of abstraction used in the KTSA, namely, (C) - repetition, and (D) - naming and functioning responses, have been omitted. The (C) type of responses was replaced by another level and (D) - type of responses was split into two separate levels.

Since the S.T.C. does not employ objects of identical shape, (C) type of responses is not admissible. Instead, a new kind of repetitive responses was introduced. This was coded as (K) and indicates 'narrowness of the range of concepts', that is, the range of different concepts produced by the testee during the test situation. In fact, ~~that~~^{is} is not a level of abstraction but rather a measurement of 'conceptual rigidity'. However, it was presumed that the more abstract a person the greater is the range of conceptual performance. The rules for this (K) type of responses are as ~~the~~^s following:

(K) NARROWNESS responses: (K) is scored whenever a previous response is repeated, verbatim, irrespective of the shape and the nature of the stimulating object.

(1) (K) is not scored in Liking-Disliking arrangement.

Since the objects are arranged in hierarchial order, it is implied that one object is evaluated differently from the other, in spite of identical reason given.

(2) When a response "the same as before" is given, the tester must inquire "How do you mean?". If in reply, the respondent repeats a previous answer, verbatim, or points at a previous

object and states "the same as this one",

(K) is scored.

- (3) When the respondent states "the same as before", but upon further elucidation, produces a different response, scores other than (K) should be given.

The second point of divergence with the levels of abstraction suggested in the KTSA, is the (D) type of responses. In the KTSA, this includes two types of responses, i.e. naming and functioning. It was claimed that it was difficult to distinguish between these two. In the S.T.C., an attempt was made to differentiate between naming (D) and functioning (d) responses. The following principles were postulated to facilitate the scoring of these type of responses.

(D) NAMING responses: Responses which merely name the test object.

1. (D) is scored whenever the response can serve as an adequate answer to the question 'What do you call this test object?'
2. In the Symbolizing task only, giving a description of the size, shape, material or colour of the object is scored (D).
3. On Liking-Disliking, poorly explained responses which refer to impersonal importance or value of the object are scored (D), e.g. 'It's good to have them, policemen's helmet'.
4. Whenever, both naming response and 'don't know' response are given to one object, (D) is scored

rather than (B), e.g. "Why it's a truncheon, I don't know".

5. Responses beginning with the paradigm "It is a " or "It could be " followed by a description of the object are scored (D)

(see also, HILL & LATHAM 1965, pp. 31 - 33).

(d) FUNCTIONING responses. A response which states what people do with such object or its real-life counterpart, is scored (d).

1. In Symbolizing and Liking-Disliking, a response beginning with the paradigm "It is for " or "For ", is scored (d), e.g. Response for 'truncheon' "For protection".
2. In Liking-Disliking a poorly explained personal attitude toward the test object is scored (d), e.g. "I hate a motorbicycle" or "I like a cigar".
3. When a response uses the plural, (X) is scored rather than (d) or (D). (see also HILL & LATHAM, op. cit.).

Weighting the levels of abstraction: The task of assigning weighted scores for each of the ten S.T.C. levels of abstraction ~~was~~ met with certain methodological difficulties. Ideally, proper standardization should have preceded the weighting procedure. In other words, the typical frequency of responses for each level of abstraction, as might be evident in the general population should have been studied. This would have involved administering

the test to large, representative samples of criminals and non-criminals controlled for age, intelligence, socio-economic status, demographical factors, education, and the like. However, under the circumstances of the present exploratory study, this was impossible. Normally, standardizing a test which is administered individually, is a time consuming task which would, undoubtedly, exceed the time allocated for this research. The burden of such a project is usually shared by a team of researchers rather than the sole responsibility of a single individual. Furthermore, difficulties in easy access to readily available resources, particularly, obtaining criminals, testees, inmates, parolees and probationers would have complicated such an undertaking.

Since the KTSA was not devised as a test for measuring criminals, using the weightings suggested for that test would be as arbitrary as using new weighting scores. Under such circumstances it was decided to provide a new temporary, weighting scale for the purpose of the present research only. Pending the results of this exploratory study, thorough standardization and weighted scoring would be recommended in the future.

Weighting method: The ratios between the total responses for levels K, d, X, Y and Z, as produced by the Rehabilitees (the 'control group') were computed. These were found to approximate the ratios between the scores 2, 1, 4, 6 and 7, respectively. The table below provides the results of these computations where the figures without brackets represent the ratios (in percentages) for the frequency of responses, yielded and those

within brackets the ratios (in percentages) for the suggested scores.

Level:	d	K	X	Y	Z
Score:	(1)	(2)	(4)	(6)	(7)
d(1)	-	50.5	22	15.9	14.3
	-	(50)	(25)	(16.7)	(14.3)
K(2)		-	43.5	31.5	28.3
		-	(50)	(33.3)	(28.6)
X(4)			-	72.4	65
			-	(66.6)	(57.1)
Y(6)				-	89.8
				-	(85.7)

This method of determining the weighted scores was not appropriate with regard to the remaining five levels of abstraction. In order to arrive at such weightings other factors ought to be considered. Thus, it was already mentioned earlier that the criteria for choosing the S.T.C. objects have reduced the chances of eliciting (E) - shape and (F) - colour responses. In fact, the results confirm this supposition, (see Tables 7 and 8). The criminal and rehabilitation groups produced 25 and 13 (E) type of responses, respectively, on the S.T.C. compared with 64 and 91 responses, on the KTSA. A striking difference was observed in the case of colour (F) responses. On the S.T.C. each group produced only 2 responses compared with 55 (F) responses given by criminals and 42 by rehabilitees on the KTSA. Therefore, the frequency of responses could not serve as an adequate criterion in assigning weighted score for these two levels. Thus, it was decided to assign arbitrary weightings for (E) and (F) levels, by borrowing the same weightings observed in the KTSA, namely, 3 points each.

It was observed that, by definition, (A) - bizarre responses and (B) - no reason responses are the lowest on the abstract-concrete dimension. Thus they ought to have the lowest weighted scores. However, (A) unlike (B) is characterized as 'inappropriate, illogical, bizarre' type of response. To denote that this is an undesirable response a negative weight of -1 (minus), was assigned. The (B) type of response was given a weighted score of '0', i.e. greater than (A) but smaller than (d). The remaining (D) level was given a similar weighted score of '=0', partly because it is rated between (B) and (d), and partly to maximize the differences between the two groups.

It might be argued that the suggested weightings magnify ¹ deliberately and artificially the differences between the groups participated^{ing}. To support such a claim it is possible to show that the criminals have produced far more (B) and (D) types of responses than the rehabilitees (see Tables 7 and 8), yet both are scored zero. Thus, any difference between the mean of scores for criminals and that of the rehabilitees might be an artifact of the weighting system rather than a genuine difference.

This possible objection is not as sound as it might appear. First, it is not entirely true that the above weighting system is all in favour of the rehabilitees. The criminals have produced appreciably more (d) responses (129 compared with 49 of the rehabilitees) and these are scored 1 point each.

But, perhaps, the best answer to the above possible objection is the following. The argument that the difference between the two groups is an artifact of the scoring system suggested

cannot be upheld if that difference is likely to be produced by another arbitrary scoring system.

An attempt was made to score the S.T.C. by using the weights employed in the KTSA (see Table 10). This gave as arbitrary a set of scores as any other system because it has no relationship to the frequency of responses yielded by the S.T.C. and has no special relationship to criminality. The following chart demonstrates the comparisons of the group results yielded by the two scoring methods, the one suggested here and that used with the KTSA.

Criminals.	Rehabilitees.
1. Self method: M = 72.30 (S.D. = 19.20)	M = 98.67 (S.D. = 13.37)
2. KTSA method: M = 78.14 (S.D. = 18.58)	M = 103.08 (S.D. = 16.07)

Both methods have produced substantial and significant differences between the means of the two groups (Mann-Whitney U-test). The self-method yielded a difference of 26.37 points ($p < .01$), and the alternative, arbitrary, system produced a difference of 24.94 points ($p < .01$). (In fact, similar differences were obtained with other arbitrary scoring methods, but for the purpose of illustrating the point, one example seems to be sufficient). It is safe to conclude, therefore, that while the self-method of weighting indeed maximizes the difference between the two groups, it does not create the difference. Since the S.T.C. aims at distinguishing the criminals from the non-criminals, it was reasonable that the method which provided the best differentiation would be adopted.

In short the temporary weights, employed in the S.T.C. for

this exploring^{my} study are: $A = -1$, $B = 0$, $K = 2$, $D = 0$, $d = 1$,
 $E = 3$, $F = 3$, $X = 4$, $Y = 6$ and $Z = 7$.

RATIONALE.

The resemblance between the S.T.C. and the KTSA is not solely confined to the technique used in both tests. As mentioned earlier, striking similarities were observed between the considerations which have inspired KAHN to devise his test and those contemplated, independently, prior to the construction of the S.T.C., hence the sharing of the rationale of both tests.

Beyond this kinship, two points deserve further discussion: ^fFirst, the rationale for selecting special 'criminal' objects for the S.T.C.; and secondly, the justification for shortening the KTSA technique as practiced in the S.T.C.

1. The choice of 'criminal' symbol-objects: There are three identifiable methods of introducing stimuli in psychological tests. One method, a 'deliberate approach', advocates the presentation of stimuli specially designed, or a-priori determined, according to logical or theoretical considerations. Such an approach is common to many psychological tests, particularly the questionnaire type. The other, a 'pragmatic approach', introduces into the test situation those stimuli common in counterpart real-life situations. This is typical of role-playing techniques. A third method, far less frequent, employs stimuli found by accident to have discriminative value, e.g. the Rorschach. Whatever method is adopted, the ultimate value of a psychological test rests in the significance and quality of the information it provides, and in its success in solving psychological difficulties which the

practitioner encounters. Often, the 'deliberate approach' is favoured if it maintains a coherent linkage with theory, and thus may provide a greater scope for reliable interpretations. On the other hand, previous experiences have shown that the so-called 'pragmatic approach' displayed sufficient strength to mitigate pressing difficulties experienced in the practice of psychodiagnosis. The advantage of such an approach was particularly evident in cases where comprehensive theory has not been formulated and where theories were too general and conflicting. Ideally, of course, the combination of all the merits of the above methods is desirable.

In the case of criminality, adherence to the so-called 'deliberate approach' involves serious difficulties, particularly, in the construction of a psychological test. First, psychological theories vary in their explanation of the criminal phenomenon, and thus, it is difficult to decide which a-priori predilection should be adopted. In any case, it involved unnecessary commitment which affects the design of the stimulus. This is particularly difficult in a situation where theories are even conflicting. Secondly, since criminality is a multi-dimensional phenomenon, the 'deliberate approach' seems to be most useful only when all aspects of this behaviour are considered, i.e. social, psychological, and otherwise. This was demonstrated in the predictive and discriminative instrument devised for juvenile delinquents (e.g. GLUECK & GLUECK 1950). Under such circumstances it was thought that a safe approach to the construction of a

psychological test is the 'pragmatic' method.

Furthermore, all previously reported accounts of devising special tests for criminals have introduced their stimuli according to the principles of the so-called 'deliberate approach'. Yet, their success was rather moderate. This has tempted the writer to seek an alternative approach in the search for more successful results.

The idea of what has been called here 'a pragmatic approach' is that the criteria for selecting the stimuli must be separated from the criteria ^{for} of evaluating the responses. Evaluation may follow a certain hypothesis or any preferred theoretical conception. The selection, on the other hand, must be guided according to the sensitivity of the stimuli to the factor under study. Such sensitivity, or in other words the ultimate test of discrimination, rests either in stimuli which cause apprehensive and ambivalent responses in different individuals or to stimuli which give rise to inconsistent behaviour in real-life. The former were introduced into psychological testing in the form of ambiguous stimuli (Rorschach for example). The latter is advocated in the present study.

The first claim is that the test stimuli must be related to real-life situations. This is observed in the questionnaire type of tests where questions are generally related to concrete, familiar real-life incidents. This maxim is not observed in some of the projective type of tests. The greater the association between the stimuli and typical real-life situation^s, the more

meaningful the test to the respondent. In other words, the model for constructing psychological tests, according to this approach, is real-life situations.

But a relationship to real-life in itself is not enough. The test must provide such real-life situations where ambivalent or conflicting behaviour is evident.

The case of the symbol-objects chosen for the S.T.C. may serve as a good illustration to this principle. It was noticed that many of these objects in real-life would deter the ordinary person, that is, he would be inclined to remove himself away from them. Yet, when such objects are produced as toys or decorations, they will attract the attention of many such individuals.

This apparently 'inconsistent' attitude was believed to indicate some 'conflicting' , perhaps, interesting behaviour for further investigation.

2. Shortening the KTSA procedure: Although the S.T.C. employs a short version of the procedure advocated in the KTSA, the main tasks of the latter have been retained. The S.T.C. has retained three out of the five steps used in the KTSA. The two steps omitted are the third arrangement of the latter, which measures 'memorizing ability' and an 'objects-over' task, and the fifth, a free choice arrangement.

The reason for excluding the KTSA third arrangement was to avoid unnecessary redundancy. It must be remembered, that the S.T.C. is regarded as a supplementary test to the KTSA, that is, both tests should be administered together when used with criminals. There was, therefore, a little benefit in introducing twice the same measurement of 'memorizing'. The omission of the 'objects-over' task of step 3 (see p.81) was decided because this particular operation did not prove to possess any discernable significance in the discriminative power of the KTSA.

The fifth arrangement of the KTSA was excluded for the purpose of maintaining an even number of tasks and symbolization responses. The KTSA calls for a minimum of 24 responses. These are derived from 3 free arrangements, 6 responses in liking-disliking reasoning, and 15, in symbolizing tasks. The S.T.C. in its present form requires a minimum of 20 responses; that is, 2 from the two free arrangements, 6 in liking-disliking reasoning, and 12 responses on symbolizing task. With the inclusion of the fifth step of the KTSA, the minimal total of S.T.C. responses would have been 21. Furthermore, with the

exclusion of that fifth step, the S.T.C. contains an even number of tasks (above). This may facilitate inter-comparisons between tasks.

Indeed, statistical computations do not require an even number of tasks or responses. Comparisons can be made for any number of tasks. Yet, on the other hand, there is no real reason why an even number of such tasks and responses should not be maintained. ?

RELIABILITY AND VALIDITY.Reliability.

The data for the reliability of the S.T.C. is given below for each group separately and not for the combined, pooled sample. Such a division was necessary owing to the highly selected nature of the samples. The two samples participating represent extreme groups in the total population. The first group comprised ~~of~~ heavy criminal recidivists, i.e. with means of 9.24 previous convictions, 11.86 years of 'criminal career, and 62.4 months of imprisonment, and the second group were non-criminal rehabilitees. The latter were persons who have experienced severe work difficulties, not necessarily due to physical injury. It was erroneous to claim that these groups represent the general population. Moreover, they also do not represent all shades of criminal involvements, but rather a dichotomy of habitual and non-criminals. Therefore, it was not advisable to combine them.

The split-half reliability coefficients (odd-even) for the S.T.C. scores yielded product-moment correlations of $r = .87$ ($p < .01$) for the criminal group, and $r = .68$ ($p < .01$) for the rehabilitees (after Spearman-Brown correction). The difference between these two reliability coefficients is highly significant (U-test $Z = 2.639$, $p < .008$), but this does not permit the formation of any definite conclusion. It was suspected that the lower coefficient obtained for the rehabilitees is the result of a smaller range of scores observed for that group. It was

noted that the range of S.T.C. scores for the rehabilitation group is almost half (55) the range of scores evident in the criminal group (91). Given a greater range of S.T.C. scores for the former, the size of the correlation coefficient might have increased. (McNEMAR 1962, pp. 144 - 145). Unfortunately, it was impossible to estimate the 'true' correlation coefficient for the rehabilitees in the absence of a standard deviation value for an uncurtailed, non-selected, range of S.T.C. scores. Further standardization of the test should provide such information.

In evaluating the significance of the obtained reliability coefficients the nature of the test must be taken into account. The S.T.C. falls into the category of the projective test. It possesses the main features of such tests as described in 'Typology of tests, projective and otherwise' (CAMPBELL 1957). That is, every response is scored, the test does not reveal its true purpose to the testee, and it uses unstructured responses. It is generally agreed (GUILFORD 1946) that the projective test is often expected to produce lower reliability coefficients compared with those yielded by the more objective tests. Hence, the decision of accepting reliability results depends on the type of the diagnostic tool concerned, projective or otherwise. The above mentioned S.T.C. reliability coefficients appear to be satisfactory for a projective type of test (GUILFORD, op. cit.).

APPENDIX VI, represents a step toward facilitating future scoring of S.T.C. answers. At the moment, the 'dictionary of responses' is meagre, but eventually it might contribute toward

* See Anderson & Clack (1966), Clack et. al. (1966).

reasonable inter-scorer reliability.

Validity.

The S.T.C. is believed to measure the degree of 'arrested cognitive development with regard to understanding social concepts relating to crime'. In other words, it reveals the typical cognitive perception, in terms of the level of abstraction, as observed by symbolizing objects associated with lawlessness. In the absence of an equivalent measurement, validating the S.T.C. was sought in two directions. First, in establishing a network of relationships with other factors associated with cognition and criminality, and secondly, through the discriminative power of the test. This is in line with VERNON (1964) who has pointed out that:

"Fundamentally, then, a test measures itself, and its further validity rests on its established relations to other behaviours. It is the network of its relations to other variables and to real-life situations that gives it meaning." (op. cit. p. 218).

Therefore, the correlations with three variables recorded in this study were sought first. It was expected that the S.T.C. would correlate significantly, but not highly, with the KTSA. The two tests are presumed to measure the degree of 'arrested cognitive development, in terms of levels of abstraction', yet, in different areas of behaviour. The KTSA is believed to pertain to general personality and the S.T.C. to lawlessness. The product-moment coefficient between these two measurements yielded $r = .436$ ($p < .01$), for the criminal group and a non-significant $r = .186$, for the rehabilitees. The latter result is not clear enough.

However, it is believed to be affected by the low range of both KTSA and S.T.C. scores produced by the rehabilitees rather than representing a genuine value. The range of the KTSA scores for the rehabilitees is 64 compared with 98 for the criminals. On the S.T.C., the former had almost half the range (55 ~~scores~~) produced by the criminals (91 ~~scores~~). Consequently, lower standard-deviations for the rehabilitation group were obtained, that is, 13.34 against 19.20 for criminals on the S.T.C. and 16.35 versus 18.02, on the KTSA. This is expected to introduce an adverse effect on the size of the correlation coefficient obtained. Again, in the absence of data for the S.D. in the total population for either test, a 'true' estimate of the correlation for uncurtailed range of scores was impossible. However, that the curtailed range of scores is justified^{ably} to be held responsible for lowering the correlation coefficient, can be illustrated in the following. If it is assumed, for the sake of the illustration, that the S.D. for hypothetical uncurtailed S.T.C. range of scores for the rehabilitees is say, at least equivalent to that of the criminals, then the approximated correlation between the S.T.C. and the KTSA for that group will increase from $r = .186$ to $r = .262$ slightly short of an acceptable level of confidence. (McNEEMAR 1962, pp. 144 - 145).

As mentioned above there is no attempt to defend the legitimacy of such an operation or to estimate the 'true' correlation between the S.T.C. and the KTSA for the rehabilitation group.

Furthermore, the distribution of the criminal scores on both tests tends to be bimodal (see FIGURE 3, 4) and thus their S.D.'s might be a poor approximation of those of the rehabilitees. The only purpose of the last computation was to illustrate the effect of the small range of S.T.C. scores on lowering the correlation coefficient between this and the KTSA for the rehabilitation group. Given the 'true' S.D. for both tests in the general population, it is reasonable to assume that a significant correlation coefficient will be obtained.

A similar pattern of relationship was evident in the case of intelligence, as measured by the AH4 test, part II. The correlation coefficient between the S.T.C. and intelligence yielded $r = .359$ ($p < .05$) for the criminals, but $r = -.060$ ($p > .5$) for the rehabilitees. The range of intelligence scores for the two groups was similar, slightly higher for the rehabilitees (45 versus 44) with S.D.'s of 8.89 and 9.65 respectively. These S.D.'s are believed to resemble those of the general population. The AH4 manual provides S.D. only for the whole test (= 19.37) and not for each of the two parts, separately (HAIM p.13). But the S.D.'s reported above for the AH4, part II are about half of the figure given by HAIM. In that respect, the two groups³ seem to be similar. As mentioned earlier they do differ in their range and S.D.'s on the S.T.C. However, in view of the negligible relationship ($r = -.060$) obtained, it is doubtful whether, in this case, the curtailed range is responsible for the low correlation. Given the 'true' S.T.C. standard deviation for the rehabilitation

group it is hardly conceivable that this correlation will reach an acceptable level of significance.

This partial relationship between intelligence and S.T.C., that is significant for the criminals and unknown for the rehabilitees, is in harmony with the tentative conclusion arrived at in the case of the KPFA. There, it was also reported that no definite relationship between I.Q. and the test score, for normal adults, was observed. However, ^a significant relationship - yet, unpredictable in direction - was evident with the maladjusted individuals.

Only one index of criminality from those recorded (see Table 13), correlated significantly with the S.T.C. An $r = .296$ ($p < .05$) was obtained between the test and the 'length of criminal career', that is, the period that a given offender is known to have been engaged in criminal activities, from first conviction to the present date. (The implication of this finding will be discussed later).

The second criteria^{on} of the validity of the S.T.C. concerns the discriminative power of the test. A cut-off point of S.T.C. NE = 90 was found to differentiate the group best. This has identified correctly 39 out of 49 (79.6%) criminals and 38 out of 49 (77.5%) of the rehabilitees. A chi-square analysis yielded a value of 29.76 ($df = 1$, $p < .001$). A phi-correlation coefficient of .57 ($p < .001$) was obtained.

The above results tend to support the hypothesis, that the S.T.C. is sensitive to those individuals who have demonstrated persistent criminal tendencies and hence are incarcerated. The test has shown a reasonable power in identifying the majority of such persons participating in the sample under study. Furthermore, the relationship between the performance of the criminals on the S.T.C. and the KTSA, and intelligence provide some confirmation of the assumption that the former is associated with insufficient cognitive development.

These initial results appear to justify further exploration of the appropriateness of the S.T.C. test in differentiating criminals from the non-criminal population.

THE EXPERIMENTAL DESIGN.

The experimental design used in this research was set to compare the performance of two selected groups, namely, incarcerated criminal recidivists and trainees in a rehabilitation centre, on the KTSA and the S.T.C. Both groups were treated identically; they were given the same tests, in an identical order, and were scored with the same scoring methods.

All participants were equated for their socio-economic status, formal level of education and race. Other factors which were believed to have a possible influence on the performance on the tests were recorded for subsequent statistical treatment. Among these were age, intelligence, two indices of 'imprisonment', two indices of 'recidivism', age at first offence, and marital status, (these will be elaborated later).

The design was devised to answer the following questions:

1. Does the performance of criminals on the KTSA differ significantly from that of the rehabilitees?
2. Do criminals display any distinguishable KTSA pattern?
3. Does the performance of criminals on the S.T.C differ significantly from that of the rehabilitees?
4. Do criminals reveal any typical way of responding to the S.T.C.?
5. Are there any similarities between the performance of criminals on the two tests?
6. What are the relationships between intelligence and the performance on the KTSA and the S.T.C. for either group?

7. Is the performance of criminals on either test related to age or to any of the 'criminality indices' recorded?

THE SAMPLES.

The Criminal Group.

The first task encountered in the selection of the 'criminal group' was to provide a set of characteristics which would define 'who is a criminal'. The principles listed below were postulated to serve as an 'operational' definition for such a purpose. It should be emphasized that these are not supposed to act as a general, all-inclusive definition of all criminals. Quite on the contrary, the criteria below are for the purpose of this study only, and represent a definition of what one may call a 'genuine criminal', that is, people whom no one, regardless of his conception of 'crime', would dispute that they are criminals.

Psychologically, all such criminals have one characteristic in common. They all manifest a consistent form of behaviour; illegal, anti-social activities, over a substantial period of time. Whether or not these manifestations are attributed to psychological deficits, is a question which the 'criminal psychologist' will eventually have to answer.

Criteria for selecting the criminal group: The following list specifies the requirements for the inclusion of a given offender in the 'criminal group' of the present study.

- 1(c). All the participants must be over 21 years of age.

This prerequisite implies that this study is concerned only with those people who are considered

as adults by the law. In fact, it also implies that this study deals with offenders who upon conviction, may be sentenced to imprisonment.

- 2(c). Persistency of criminal behaviour. All the participants must have, at least, five previous convictions since their 17th birthday.

The figure, 5 previous convictions was chosen arbitrarily. It is obvious that with such a record it is reasonable to assume that a tendency toward committing illegal conduct is evident. The specification of the age 17 was because this is an age which permits an English judge to send a convicted offender to a detention centre.

- 3(c). Severity of the offence. All the participants must have a record of previous imprisonment, the first not exceeding 12 months of incarceration.

The insistence on having previous imprisonment experience meant to serve as a rough indication of the severity of the offence committed. Obviously, imprisonment is imposed for crimes of considerable magnitude and severity. At the same time this principle rules out people who have committed one, extremely grave offence, (e.g. 'crime passionnel') for which they are incarcerated for a long period. There were no restrictions on how long a given person has spent in prison provided his first sentence did not result in more than 12 months of incarceration.

- 4(c). All the participants must have a record of a variety of types of offences (excluding sexual offenders, drunkenness and murderers).

It was assumed that though many of the 'genuine criminals' often specialize in one type of criminal activity, they also commit other forms of offences. Indeed, a small inquiry ^{into} of criminals' records supported this assumption. Three groups of offenders, those who typically commit sexual offences, habitual drunkards, and murderers were excluded. The first two were considered as primarily individuals with psychological abnormalities (see rule 5 (c)). Murderers were excluded because they do not represent the typical criminal recidivist, and because of rule 3(c) above. In any case these three groups represented less than 6% of the new prisoners received in English prisons during 1965, the year this study was conducted (HOME OFFICE, 1967, table D1).

- 5(c). All the participants must not suffer from a definite psychiatric illness.

Usually, offenders who are found to suffer from psychiatric illness are sent to mental hospitals rather than to an ordinary prison. Nevertheless, the prison's medical officer was consulted to verify that the participants were not known to suffer from a gross psychiatric illness (e.g. psychosis).

6(c): All the participants must be volunteers.

This requirement was set by the prison authorities as a condition in order to permit the testing of the inmates on the prison premises. Furthermore, the prisoners were tested anonymously, that is, though some prisoners revealed, spontaneously, their names no names were taken down. Thus, subsequently all names were forgotten. The testees were aware of this and thus could respond to the tasks without any fear that the results would affect them personally in any way.

The method of selecting the subjects for the 'criminal group' was the following. The prison registrar was given the above set of rules with the instruction to select 100 records which would comply with the requirements. From these, 50 records were selected at random to form the 'criminal group'. In case of a refusal to take part in the study, (5 cases were reported to have refused), replacements from the remaining 50 records were made, again at random selection. The registrar knew nothing of the purpose of the selection, apart from the set of rules given to him.

From the 50 subjects tested, one had to be subsequently, excluded because of a technical error, (i.e. he wrote his answers to the intelligence test in the wrong place on the answer sheet which made it impossible to score. Retesting was impossible because of rule 6(c)). Finally, the results of the performance of 49 testees comprised the 'criminal group'.

Description of the criminal group: The description of the 'criminal group' in terms of the above principles and other characteristics (see also Table 2) is as ~~the~~ following^s:

- a. Age: The age (in years) of the criminals selected ranged from 23 - 35, $M = 28.35$ ($S.D. = 2.98$). Incidentally, though no claim was made that the present sample represents most incarcerated criminals in England, it was interesting to learn (HOME OFFICE, 1967, table D₁) that 53% of all new prisoners during 1965 were between 21 and 29 years of age and about 72% between the ages 21 - 39. It is safe to assume that the range of age of the present 'criminal group' is similar to that of about two-thirds of all new prisoners in England during 1965.
- b. Previous convictions: The number of previous convictions (see rule 2(c) above) of the criminals participating in the study ranged from 5 - 17, with $M = 9.24$ ($S.D. = 2.56$). Again, it was found that about 62% of all new prisoners in England during 1965 (HOME OFFICE, op. cit.), have had between 5 ^{and} 20 previous proved convictions.
- c. Length of actual accumulated imprisonment: This index was arrived at by adding all periods of actual incarceration (discounting early discharges for 'good behaviour') up to the date of the testing. Thus, the length of imprisonment (see rule 3(c) above) experienced by the criminals tested ranged from 11 to 148 months, with $M = 62.4$ ($S.D. = 35.8$).

Other characteristics of the 'criminal group' are as ~~the~~ following:

- d. Percentage from 17th birthday: This index of 'imprisonment' illustrated how much of the criminals' adult life was spent in prison. This was computed by dividing the length of actual imprisonment by the time (all in months) from their 17th birthday ^{to} and their present age. The results are presented in percentages. Thus, the range of time spent in prison during adulthood ranged from 6 - 96%, with $M = 45.57$ (S.D. = 22.76).
- e. Length of criminal career: This is another index of 'recidivism' (in addition to 'previous convictions') arrived at by counting the length of time (in years) elapsed from the age of first conviction to the present date. Thus the length of criminal career ranged from 3 - 21 years, with $M = 11.86$ years (S.D. = 4.33).
- f. Age at first offence: The age at which the criminals committed their first proved offence ranged from 8 - 24 with $M = 16.53$ (S.D. = 3.58 years).
- g. Intelligence: Intelligence score was arrived at from the AH4 part II (see HHEIM 1955). This test was selected because it was standardized ^d on an industrial population. Part II was administered because it does not involve formal knowledge, arithmetic or a substantial reading ability. It requires similar ability to that of the Raven Progressive Matrices, only simple tasks. Intelligence score ranged from 4 - 48

with $M = 26.12$ (S.D. = 9.65).

- h. Marital status: The marital status of the criminals participating in the study was as ⁵the following:
 20 married ('M', in Table 2), 20 singles ('S', in Table 2) and 9 separated or divorcees ('D', in Table 2).

The following chart summarizes the characteristics of the criminal group, discussed above:

Variable.	Range.	Mean.	S.D.
Age.	23-35	28.35	2.98 (yrs.)
AH4 part II.	4-48	26.12	9.65
Indices of 'imprisonment'.			
a. Length of imprisonment.	11-148	62.4	35.8 (mths.)
b. % from 17th birthday.	6-96	45.57	22.56 (%)
Indices of 'recidivism'.			
a. Previous convictions.	5-17	9.24	2.56
b. Length of criminal career.	3-21	11.86	4.33 (yrs.)
Age at first offence.	8-24	16.53	3.58 (yrs.)

The Rehabilitation Group.

Criteria for selection: Ideally, the control group should have been matched with the 'criminal group' in all 'non-criminal' variables. Technically, under the present circumstances, this was almost impossible. It was very difficult to get ~~an~~ easy access to testees who would comply with all such requirements. Therefore, it was necessary to select a 'control group' from a place, an institution, where such individuals are easy to get. This, inevitably, would compel the researcher to make a decision as to which requirements were indispensable and which, under such circumstances, should be controlled by subsequent statistical treatment rather than experimentally. It was decided that the first four principles of

the list presented below are indispensable for the nature of this study.

The following list specifies the requirements for the inclusion of a given person in the 'control group'.

- 1(R) All the participants must match the socio-economic status of that of the criminals.

This principle was decided upon since it was believed that the socio-economic status was related to the chances of dealing with abstract tasks. The higher the socio-economic status the greater are the chances to be familiar with 'abstract tasks'. The social class was arrived at according to the classification of the person's occupation.

- 2(R) All the participants should not have formal education exceeding elementary educational level.

Again, it was believed that higher educational level provides greater chances for training in abstract tasks. To avoid the interference of such external factors it was decided that all the participants should have only formal elementary ~~education~~ schooling.

- 3(R) All the participants should not have any known criminal record.

The simplest way to decide the 'innocence' or lawfulness of a person is by asserting that he was never apprehended by the police or convicted in court. Indeed, this criterion may be rather 'naive' because it implies that

a person who was never caught in a crime is a person who has never committed a crime. But, on the other hand, no better criterion for asserting the absence of lawlessness was found.

4(R) All the participants must not suffer from a definite psychiatric illness.

Similar to rule 5(c) (above) this principle postulates that this study rules out mentally-ill individuals. Indeed, this rule does not imply that the participants must be 'normals' as conceived of in the psychiatric nomenclature. Quite on the contrary, there is room to believe that the subjects who have formed the 'control group' indeed have some 'adjustment difficulties'. They were all people who experienced 'work difficulties' and had to be retrained in a rehabilitation centre. But, none of them was abnormally disturbed. The latter was asserted from the report of the local psychologist.

A sample of people who have complied with the above four requirements was found in a rehabilitation centre which provides services for the North of England. This centre has two divisions; one a rehabilitation unit for people who due to illness or an injury had to undergo vocational rehabilitation, and a second unit for people who were redundant in their jobs and had to be retrained (i.e. ex-miners, unskilled labourers, lorry-drivers, etc.)

Under these circumstances two additional conditions were ruled.

- 5(R) All the participants must be from the retraining unit, rather than from the rehabilitation division.

This principle was laid down because it was not known whether individuals from the rehabilitation unit were not 'accident prone' people. It was preferred to exclude such persons (may be 'careless' individuals) and to concentrate on those who were admitted to the retraining unit because of unfortunate and unfavourable external socio-economic conditions (i.e., a closure of a pit or a factory).

- 6(R) All the participants must be selected by a random method

It is expected that people who are admitted to such a centre will be of a higher age compared with that of the 'criminal group'. Therefore, it was difficult to match the criminals in respect of age. The best method, under such circumstances, was to allow for a random selection which would provide a substantial range of age.

The centre has a limited intake capacity. Every three weeks a new group is admitted. The vocational psychologist was given the list of requirements and chose at random from each new intake ten testees (approximately). Finally, a group of 49 rehabilitees (trainees) comprised the 'non-criminal, control group'.

Description of the 'rehabilitation group' (the 'control group'):

The description of the 'rehabilitation group' in terms of the above principles (see also Table 1) is as ~~the~~ following^s:

- a. Age: The age (in years) of the rehabilitees selected ranged from 17 - 44 with $M = 31.96$ (S.D. = 7.80).
- b. Socio-economic status: Over 73% of the rehabilitees, namely 36 out of the 49 participants were classified as belonging to the two lowest social classes, i.e. category IV and V, part-skilled and unskilled labourers. The remaining^{der} belonged to class III, that is, skilled occupations (according to the GENERAL REGISTER OFFICE (census 1961)).
- c. Intelligence: The range of intelligence scores as arrived at by the same AH4, part II test spread from 12 - 57 with $M = 32.24$ (S.D. = 8.98).
- d. Marital status: The marital status of the rehabilitees participating in the study is the following: 28 married ('M', in Table 1), 21 singles ('S', in Table 1), and no case of divorce or separation.

The chart below summarizes the variables which were controlled experimentally and those which had to be controlled by statistical methods (e.g. correlation coefficients, etc.)

Variable.	Experimental Treatment.	
	Group 'A'.	Group 'B'.
Variables controlled experimentally.		
a. Criminality.	: Criminal recidivists.	Non-criminal rehabilitees.
b. Socio-economic status	: Equal.	
c. Educational level	: Equal.	
d. Number of subjects	: Equal.	
Variables to be controlled statistically.		
a. Age (Not equal)	:	(Higher)
b. Intelligence (Not equal)	:	(Higher)

Ideally, the experimental design should have been devised ^{said} in a way ^{that} where both age and intelligence were matched and kept equal as well. Unfortunately, under the circumstances this was impossible, due to limited resources of subjects. On the other hand, the fact that these two factors were not kept equal should not be regarded as a serious handicap. It is always possible to find some clues as to the effect of these factors on the performance on the two tests (the KTSA and the S.T.C) by means of statistical treatment. Furthermore, previous studies with the KTSA have shown that, normally, age does not correlate significantly with the performance on the test for adults, i.e. within the ages 20 - 50, approximately. The present study was conducted under the assumption that age, within the above-mentioned range, plays a non-significant role in the performance on both the KTSA and the S.T.C. (^{and} assumption which was upheld subsequently, see next chapter).

With intelligence, the case is slightly different. Indeed,

it is possible to argue that it is not inconceivable that criminals will display, if not a lower mean of intelligence, an equivalent mean to that of the general population, but with a larger range. Therefore, to match them with a non-criminal group for intelligence means introducing an additional selective criterion, that is, including highly intelligent criminals only, to an already highly selective^{ed} criminal group. Yet, from a pure 'experimental design' point of view it would have been interesting to match the group on intelligence. This might provide some information concerning the advantage of the KTSA and the S.T.C. beyond the general intelligence score. Again, technical difficulties in obtaining sufficient testees did not permit such a design. Therefore, the role of intelligence in performing on the two tests had to be analysed by means of statistical methods.

Another reservation could be raised against the decision to employ two extreme groups only. It could be argued that 'criminality' is a continuous rather than a dichotomous, discrete 'trait'. In reality, people are not classified as either 'genuine criminals' or 'non-criminals' at all. There is an intermediate group of 'accidental' or 'petty' offenders. Thus, the experimental design should have included a third, intermediate group, say, a group of 'first offenders', 'probationers' or parolees' which would add to a more adequate representation of the distribution of 'criminality' in the sample under study.

This point was not overlooked in the planning of this study. Quite on the contrary, it was decided to exclude such a group from the experimental design. (The reasons for that deliberate exclusion and the problems involved in the introduction of such a group will be discussed in Chapter 7). At the present pioneering stage of the investigation, two extreme groups, which give maximal chances for (bimodal) discrimination, were selected. Borderline cases, however important, would have only complicated the issue. The investigation of the latter must, therefore, be postponed for future studies.

The Tests Used in the Study.

A battery of three tests was used in this study. This included the Kahn Test of Symbol Arrangement (the KTSA), an original test, the Symbolization Test for Criminals (the S.T.C.) and an intelligence test, the AH4; a group test of general intelligence, part II.

The KTSA: The KTSA (see photograph, APPENDIX I) is an alleged general psychodiagnostic test which offers a unique approach to the assessment of human behaviour. It has shown some strength in differentiating some special psychiatric groups such as cerebral dysfunctions and schizophrenia. On the other hand, it has never been used before as a test for discriminating civilian 'criminal' from 'non-criminal' groups. This study was set to investigate the possibility of the KTSA ~~to~~ ^{my} act as a test for identifying the 'genuine' criminal. Furthermore, it was believed that, in addition, this test might provide some clues to the

nature of the 'arrested development' of criminals, (chapter 7).

THE S.T.C.: The S.T.C. (see photograph, APPENDIX I) is an original test devised by the writer, for the sole purpose of differentiating 'genuine' criminals from 'non-criminals'. In addition, this test was constructed to test and validate the usefulness of the technique involved in the KTSA. It was thought that the moderate success of general personality tests to differentiate criminals from 'non-criminals' could be interpreted as an indication for devising a special test for criminals. The S.T.C. represents such an exploratory attempt.

Generally, both tests use the same technique and an almost identical approach. Therefore, both are acting as a unit where the one is complementary to the other when testing criminals is concerned.

The AH4, part II: The AH4 is a group intelligence test which was standardized on an English industrial population. It seemed, therefore, to be appropriate as some measure of intellectual capacity of the samples under study. This is a simple, quick and adequate test which is used fairly often in this part of the country.

The second part of the test was chosen because it does not require specific knowledge, such as arithmetic, spelling or general knowledge. It rather seems to measure the ability to form (abstract) relationships between 'concepts' represented in geometrical shapes. The AH4 does provide separate norms for its first and second part. It might be true that the second part of the AH4 does not provide a general intelligence score. But since

all the participants were given this part of the test, it provided a standard criterion which was believed to involve 'abstract' operations, a component of general intelligence, against which the performance of every testee could be evaluated.

There is one important difference in the administration of the test between the latter and the KTSA and the S.T.C. While the AH4 is a 'group-test' the two others are administered individually. It was necessary, therefore, to adopt a testing procedure which will comply with these aspects of the test employed. This, and other features of the testing procedure will be described in the next section.

The Testing Procedure.

The following was devised as a standard procedure for every tester. The two groups were treated in an identical manner. The only difference was that when testing the criminals, a prison officer was always present in the room. (This is apparently the prison^a regulation that no inmate can be left alone with non-member of the staff). However, necessary precautions were taken that the guard should sit at a distance (about 15 yards from the testee) where he would be unable to hear the testee, and not be noticed.

The following procedure was adopted: The first testee took the KTSA (first step), then the S.T.C. (second step), and then the AH4 (third step). The second testee took the AH4 (first step, together with the former testee, third step), then the KTSA (second step), and finally the S.T.C. (third step). This

procedure was repeated for the subsequent testees. Thus the third subject was given the tests in the same order as the first, and the fourth took the tests in the same order as the second testee, and so on.

It might be noticed that this procedure has retained both the 'individual testing' and the 'group-testing' features of the tests as the following:

- (a) The KTSA and the S.T.C. were given individually where the KTSA always precedes the S.T.C.
- (b) The AH4, part II, was administered to small groups, i.e. pairs.
- (c) The AH4, part II, was taken by one testee after the other tests and by the following testee, before the others.

This order was adopted because of technical difficulties in gathering the criminals in larger groups, especially for administering the AH4, part II. Therefore, they were given this test in small groups (i.e., pairs). There, the role of motivation, in terms of 'success in competition', was still preserved, though may be less than that expected in larger groups. There was no reason to suspect that the different order for each pair of testees of taking the AH4, part II, would have any effect on either scoring on this test or on the performance on the remaining tests.

The S.T.C. as a supplementary test, was always administered following the KTSA. It was noticed that when confronted with the S.T.C. symbol-objects, the testee was already familiar with the tasks required. Thus, while with the KTSA 'first arrangement' the testee did not know why he was asked to arrange the objects on the strip, with the S.T.C. 'first arrangement' he already knew that this should ^{be} follow^{ed} by a reason for his performance. Similarly, faced with the S.T.C. symbol-objects the testee could have anticipated the subsequent tasks. This, of course, was true for all the participants from both groups.

The procedure of administering the three tests lasted about 90 minutes for each testee. This included time for establishing rapport with the subjects, hearing their comments, etc.

CHAPTER 6:THE RESULTS.

Seven questions were raised in the preceding chapter concerning the performance of the criminal-recidivists on the tests employed in this study as compared with that of the non-criminal rehabilitees. The following are the answers to these questions in the form of the statistical results. The data below ^{are} arranged in three sections. First, further statistical characteristics of the samples employed will be presented. This will be followed by the main results, and finally, further analysis of the statistical findings will be discussed.

THE SAMPLES:

The main characteristics of the samples employed ($N = 49$, each) were already presented in the preceding chapter (see also Tables 1 and 2). In addition, the following points ought to be made before proceeding to the main statistical findings.

Age: The two groups tested differed in both their means of age (Tables 1 and 2), and the ranges of age (being 12 years for the criminals and 27 for the rehabilitees, see Figure 2). The mean age for the criminals was $M = 28.35$ years ($S.D. = 2.98$), and for the rehabilitees, $M = 31.96$ years, ($S.D. = 7.80$). Since age is distributed normally the t - test for the difference between the means was used. This difference was found to be highly sig-

nificant ($t = 3.03$, $df = 96$, $(p < .01)$).

Intelligence (AH4 part II). The two groups also differed in their scores on the AH4 part II test (Tables 1 and 2). The mean for the criminals was, $M = 26.12$ scores (S.D. = 9.65), and for the rehabilitees, $M = 32.24$ scores (S.D. = 8.98). Again, for the same reason mentioned above the t-test, for determining the significance between these means, was used. This difference was found highly significant ($t = 3.20$, $df = 96$, $p < .01$). The S.D.'s for both groups were similar and so were the ranges of AH4 part II scores, (the latter slightly higher for the rehabilitation group, see Figure 1).

The AH4 manual (HEIM, 1955) provides five grades of performance on the test. These are classified as A = upper 10%; B = the next 20%; C = the middle 40%; D = the next 20% and E = the bottom 10%. The distribution of the participants according to their AH4 part II scores, on the norms for that part of the test are as the following:

	A	B	C	D	E	N
	65 - 38	37 - 31	30 - 20	19 - 12	11 - 0	
Criminals:	6	11	21	7	4	49
Rehabilitees:	12	14	20	3	0	49

It is observed that the mean score for the criminals (26.12) falls into the middle grade C, i.e. the middle 40% of the population. Therefore, the criminals, as a group, have produced

an AH4_{II} score well within the average of the general population. Furthermore, the AH4 provides a mean score for the whole test only. This mean, i.e. 47.17 falls in the upper half of grade C, similar to the performance of the criminals on Part II of the test.

The mean for the rehabilitees, on the other hand, falls in the lower B grade, that is, slightly higher than the average for the whole test.

It is fair to conclude, that although the criminals revealed a significantly lower mean AH4 part II score compared with that of the rehabilitees, their performance was not exceptionally low compared with the norms of the general population.

Socio-economic (social) class: The occupations of all the participants were classified according to their respective social-class (GENERAL REGISTER OFFICE, 1961). All the participants' occupations fell into the social classes coded III (intermediate class), IV (part-skilled labourers), and V (unskilled labourers) as the following:

	<u>Class III.</u>	<u>Classes IV and V.</u>	<u>Total.</u>
Criminals	5	44	49
Rehabilitees	<u>10</u>	<u>39</u>	<u>49</u>
	15	83	98
	=	=	=

A 2 x 2 chi-square analysis yielded a value of 1.2, a non-significant difference ($df = 1, p < .20$). Thus, indeed, the two groups did not differ significantly in 'social class'.

THE MAIN RESULTS.

The main results are arranged below as answers to the questions raised in the preceding chapter.

- a. The criminal, as a group, have produced an average KTSA-NE (score) significantly lower than that of the rehabilitation group.

Table 3 shows the results of the performance of the two groups on the KTSA as represented in terms of the KTSA 'Symbol-Pattern'.

The average KTSA-NE (score) for the criminal group was $M = 79.98$ (S.D. = 18.21), and for the rehabilitation group, $M = 98.65$ (S.D. = 16.57). The significance of the difference of 18.67 scores between the two means was determined by a non-parametric statistical test to avoid the assumption of normal distribution, and was found highly significant (Mann-Whitney U Test, $Z \geq 4.64$, $p < .0003$, SIEGEL, 1956, Pp. 116 - 127). It was also observed that this difference between the means was larger than the highest S.D. (that of the criminal group), i.e. $18.67 > 18.21$. In other words, about two thirds of the criminal population scored less than the mean of the KTSA- NE of the rehabilitees.

b. The criminals have shown a typical KTSA 'Symbol-Pattern'.

The analysis of the KTSA results as shown in Table 3 revealed typical characteristics of the performance of the criminals on this test. The criminals can be typified on both the Numerical-Element (scores) and the Letter-Element (levels of abstraction).

NE: A cut-off point of KTSA-NE = 90 was established. This differentiated the participants in both samples as the following:

	<u>90 and below.</u>	<u>91 and above.</u>	<u>Total.</u>
Criminals:	37	12	49
Rehabilitees:	<u>15</u>	<u>34</u>	<u>49</u>
	<u>52</u>	<u>46</u>	<u>98</u>

In other words, this cut-off point identified correctly 72.5% of all the participants. A 2 x 2 chi-square analysis yielded a value of 18.06 (df = 1, $p < .001$).

It is observed that there are more 'false negatives' (i.e. rehabilitees who scored like 'criminals') than 'false positives' (i.e. criminals who scored like the 'non-criminal' rehabilitees).

Indeed, though ideally no 'false' cases should be observed, in practice no psychological test has fulfilled this ideal. Thus, morally, it is undesirable to have 'false negative' rehabilitees. From a practical and pragmatic point of view, a test of criminality should have fewer 'false positives' (criminals) than other 'false' cases. This is particularly true if such a test should contribute toward protecting the public from the menace caused by criminals.

The decision of choosing KTSA-NE = 90 as a cut-off point was arrived at by observing that at this point, or precisely at the point 89.7 the ordinates of the curves for the criminal and the rehabilitation groups were equal (see Figure 3)*. Also, it was noticed that the KTSA norms (HILL & LATHAM, 1965, p. 106) provided the figure NE - 90, as the lowest point which differentiates the so-called "average normalcy" from the "low normalcy".

LE: As already mentioned (chapter 4), the discriminative power of the KTSA is best when both NE (scores) and the 'pattern' of the Letter-Element (levels of abstraction) are considered. Thus, the comparison of the means of the frequency of the responses given for each level of abstraction by each group (see Tables 5 and 6, and Figure 5) showed that the groups differed in the levels Y, Z and X (in this order, and higher for the rehabilitees), and B, D and C (in that order, and higher for the criminals).

* This was derived from the formula:

$$\text{Ordinate } x = f \left(\frac{x - M_1}{\sigma_1} \right) = f \left(\frac{x - M_2}{\sigma_2} \right)$$

$$\text{where: } x = \frac{M_1\sigma_2 + M_2\sigma_1}{\sigma_1 + \sigma_2}$$

The study of the Letter-Element 'pattern' of the individual criminals (Table 3) revealed the following: C - repetition responses, were often given more frequently than other levels of abstraction where Z - intangible abstractions,, and Y - tangible abstraction types of responses were usually not most frequent - often not even in the second place of the letters' hierarchy. On the other hand, two of the following levels of abstraction; B - no reason, C - repetition, D naming and functioning and X concrete associations, appeared in the first three places of that hierarchy. Altogether, the criminals produced typically six or seven different kinds of letters (levels of abstraction).

To summarize; the following KTSA 'Symbol-Pattern' was found to be characteristic of the majority (38 cases) of the criminals.

NE: 90 and below.

LE: C prominent, in the first two places;
 Z or Y not in the first letter, usually
 not in the second place and not adjacent
 to each other in the first three letters.
 Two of B, C, D or X in the first three
 places; six or seven letters altogether.

Only one subject of the criminal group (Table 3, No. 48) showed a Letter-Element typical of criminals, yet his score was above 90, i.e. 91. Indeed, it might be argued that in this type of a test there is no need to have an absolute cut-off point (i.e. 90) and a more flexible range of scores (say, between 88 - 93, for example) should be allowed, provided the Letter-Element shows typical criminal 'pattern'. Therefore, a difference of one point does not justify an exclusion from those criminals who were

identified correctly. On the other hand, in the case of this study, a decision was made to adhere, rigidly, to this rule for the purpose of having clear categories of 'criminals' - 'non-criminals', and to avoid a third category of 'doubtful 'Symbol-Patterns' (although such a category might exist). Therefore, this above-mentioned case was considered as 'false positive' and his performance was disregarded as a 'non-criminal' one. ~~In any case,~~ had this case been counted as a 'criminal' KTSA 'Symbol-Pattern', the discriminative power of the test would have been increased.

- c. The criminals, as a group, have produced an average S.T.C.-NE (score) significantly lower than that of the rehabilitation group.

Table 4 shows the results of the performance of the two groups on the S.T.C., represented in terms of the S.T.C. 'Symbol-Pattern'.

The average S.T.C.-NE (scores) for the criminal group was, $M = 72.30$ (S.D. = 19.20), and for the rehabilitation groups, $M = 98.67$ (S.D. = 13.37). The significance of the difference of 26.37 between the two means was determined by the non-parametric Mann-Whitney U test (SIEGEL op. cit.). This difference was found highly significant ($Z \geq 6.38$, $p < .0003$). Again, similar to the case of the KTSA, this difference between the two means was larger than the highest S.D. (that of the criminal group) i.e. $26.37 > 19.20$.

This implied that about two thirds of the criminals scored less than the mean of the S.T.C.-NE for the rehabilitation group.

d. The criminals have shown a typical S.T.C. 'Symbol-Pattern'.

The analysis of the S.T.C. results as shown in Table 4 revealed typical characteristics of the performance of criminals on this test. Again, the criminals were typified on both the Numerical-Element (scores) and on the Letter-Element (levels of abstraction).

NE: A cut-off point of S.T.C.-NE = 90 was established. This differentiated the participants in both samples as the following:

	<u>90 and below.</u>	<u>91 and above.</u>	<u>Total.</u>
Criminals:	39	10	49
Rehabilitees:	<u>11</u> 50	<u>38</u> 48	<u>49</u> 98
	<u> </u>	<u> </u>	<u> </u>

In other words, this cut-off point identified correctly 78.6% of all the participants. A 2 x 2 chi-square analysis yielded a value of 29.76 (df = 1, $p < .001$).

S.T.C.-NE = 90 was chosen as a cut-off point for the following reasons. It was found that the point at which the ordinates of the curves for the criminal and the rehabilitation group were equal was 88 (i.e. 87.8, see also Figure 4). Only one subject (Table 4, No. 25 of the rehabilitees) scored between 87 and 90 (his score was 89). This offered a remarkable opportunity to

set an S.T.C. cut-off point which was identical to that of the KTSA. (The only difference that the above-mentioned case could have made had an S.T.C. cut-off point 88 been decided upon, would have been that the number of 'false negative' for the rehabilitees would have dropped from 11 to 10, thus increasing the value (and the significance) of the chi-square).

The advantage of having an S.T.C. cut-off point identical with that of the KTSA is that when a 'combined KTST (KTSA + S.T.C.) score is made, ~~point~~ 90, remains the cut-off point.

LE: The criminals revealed a distinct Letter-Element (levels of abstraction) on the S.T.C. The comparison of the means of the frequency of responses given to each level of abstraction by each group (Tables 7 and 8, and Figure 6) showed that the groups differed in their frequency of responses to levels Z, Y and X in this order, and higher for the rehabilitees), and in D, comprising 'd' and (D), and B, in this order, and higher for the criminals).

The study of the individual Letter-Element 'pattern' for each criminal (Table 4) showed the following characteristics; Z - intangible abstraction was not, usually, prominent in the first place of the Letters' hierarchy. In any case, both Z - , and Y - tangible abstraction responses did not appear together in the first three places, and were not adjacent to each other. On the ^{other} hand one or two of the B - no reason, (D) - naming,

d - functioning, and X - concrete, responses appeared in the first three places of the Letters' hierarchy.

To summarize; the following S.T.C. 'Symbol-Pattern' was found to be characteristic of the 'criminal recidivists' employed:

NE: 90 and below.

LE: Z and Y, not in the first two places, usually not present in the first three places, not adjacent to each other. One or two of B, (D), 'd' or X, in the first three letters. K ('narrowness' type of responses) do not precede ZY combination.

- e. The criminals have shown a similar typical 'Symbol-Pattern' on both tests.

The comparison of the 'Symbol-Pattern' typical of criminals as presented above, showed similar characteristics which enabled the formation of a 'combined (KTSA plus S.T.C.) profile'.

NE: Both groups had a cut-off point of 90 where those who scored 90 and below were considered 'criminals'. It was, therefore, decided to add the individual scores on both tests to obtain a 'combined Criminal NE' for performance on both symbolization tests.

Table 11 shows the 'combined KTST scores' for each participant. (In order to leave point 90, as the cut-off score for the 'combined score', the latter was computed from the following formula:

$$\text{KTST ('combined score')} = \frac{\text{Total KTSA-NE} + \text{Total S.T.C.-NE}}{2}$$

The mean of the 'combined score' for the criminals was $M = 76.20$

(S.D. = 16.02), and for the rehabilitees, $M = 98.93$ (S.D. = 11.47).

The significance of the difference of 22.73 points between the two means was determined by the non-parametric, Mann-Whitney U test (SIEGEL, 1956) to avoid the assumption of normal distribution (unknown in the case of the S.T.C.). This difference was found ^{to be} highly significant ($Z \geq 6.508$, $p < .0003$). Again, the difference was larger substantially than the highest S.D. (that of the criminal group), i.e. $22.73 > 16.02$. This implied that about two thirds of the criminals scored less than the mean of the 'combined score' of the rehabilitees.

The cut-off 90 for the 'combined score' differentiated the participants in both samples as follows:

	<u>90 and below.</u>	<u>91 and above.</u>	<u>Total.</u>
Criminals:	43	6	49
Rehabilitees:	<u>14</u> <u>57</u> =	<u>35</u> <u>41</u> =	<u>49</u> <u>98</u> =

In other words, this cut-off point identified correctly 79.5% of all the participants. A 2 x 2 chi-square analysis yielded a value of 32.8 ($df = 1$, $p < .001$). This cut-off point for the combined scores, correctly identified the participants better than each test separately (79.5% compared with 72.5% for the KTSA-NE, and 78.6% for the S.T.C.-NE). Furthermore, it has produced the lowest rate of criminal 'false positives', that is, criminals whose score was typical of the 'non-criminals'. In this case,

only 6 persons (12.2%) out of the 49 criminals were 'false positives' compared with 12 in the KTSA-NE, and 10 in the case of the S.T.C.-NE.

Again, the discriminative power of the 'combined score' cut-off point showed more 'false negatives' rehabilitees (who scored like the criminals) than 'false positives' criminals.

LE: There are some similarities between the Letter-Element 'patterns' of criminals on both tests. Since the two tests have used some different levels of abstractions (i.e. K instead of C, (D) and 'd', instead of D, in the S.T.C.), the two LE 'patterns' could not have been identical. However, in both tests the criminals have produced consistently less Z and Y types of abstractions and more B, D and X responses. Consequently, both 'Symbol-Patterns' were typified by the predominance of the lower abstract type of responses as represented by the B, D and X responses.

On the other hand, a striking difference between the LE of the KTSA and that of the S.T.C. was observed, where the criminals have produced more Y type responses on the latter. (see Figures 5 and 6).

f. The relationship between intelligence (as measured by the AH4 part II) and the performance on the KTSA and the S.T.C., vary from one test to another.

The significant difference between the intelligence scores for the two groups indicated the need to investigate the relation-

ship between intelligence and the performance on both tests. Hence, the following results were observed:

KTSA: Table 13 showed (Row 3, column 2) that the KTSA-NE for the criminal group did not correlate significantly with intelligence scores. The product-moment coefficient obtained was $r = .092$ ($p > .50$). Similar results were observed for the rehabilitation group (Table 14, row 3, column 2) where intelligence and KTSA-NE yielded a non-significant correlation or $r = -.045$ ($p > .50$ Ns).*

Thus, it was concluded, that intelligence, as measured by

* When 27 subjects from each group were matched ex-post facto (pair-matching) for intelligence, the criminals produced a KTSA-NE mean of 83.14 (S.D. = 20.40) and the rehabilitees, $M = 99.24$ (S.D. = 17.80, see Table 12). These means were very similar to those obtained for the whole groups (see Table 3), and differed significantly (Mann-Whitney U test, $Z_{\alpha} \geq 2.94$, $p < .001$).

The correlations between intelligence scores and KTSA-NE for the 27 matched subjects were not significant; $r = -.141$ ($p > .20$) for the criminals, and $r = -.252$ ($p < .10$) for the rehabilitees.

It was noticed that the range of KTSA scores for the rehabilitees in both samples, i.e. the matched groups and the whole samples, was about two thirds of that of the criminals. This could have affected the lower correlation coefficients values obtained for the rehabilitees. In the absence of knowledge about the 'true' S.D. in the total population, an estimate of the 'true' correlation between the AH4, part II and the KTSA-NE was not feasible. However, in view of the very low coefficient value for the rehabilitees (the whole sample), it was doubtful if the 'correction' would have resulted in a significant correlation.

the AH4 part II, did not correlate significantly with the performance on the KTSA for either group. In other words; there was no reason to believe that the significant difference in intelligence scores observed between the two groups was responsible for the difference in their performance on the KTSA-NE.

S.T.C.: Table 14 (Row 4, column 2) showed that the S.T.C.-NE for the rehabilitation group did not correlate significantly with intelligence scores ($r = -.060$, $p > .50$), a similar coefficient to that was obtained for the KTSA-NE, see above. See also footnote p.227 where the point in the last paragraph is true for the S.T.C. as well. However, a significant product-moment coefficient was obtained for the criminal group, where $r = .359$ ($p < .02$) (see Table 13, row 9, column 2).

Further inquiry into the nature of that significant positive correlation between intelligence score and the S.T.C.-NE for the criminals revealed the following:

a). The criminal group was divided into two sub-groups of low and average and above intelligence scores. It was found that the product-moment coefficient between the intelligence scores produced by 19 criminals who scored 23 and below and their respective S.T.C.-NE scores was $r = .427$ ($df = 17$, $p < .08$). The correlation for the 30 criminals who scored 24 ^{or} AH4 part II scores and above and their S.T.C.-NE was $r = .195$ ($df = 28$, $p < .20$).

The difference between the two correlation coefficients was significant ($z \geq 1.91$, $p < .03$, McNEMAR, 1962, Pp. 139 - 140).

Thus, although the correlation coefficient for the low intelligence score and S.T.C.-NE (for criminals) failed to reach a significant level of confidence there was, however, a tendency which indicated that the positive correlation between intelligence scores and S.T.C.-NE was mainly typical of the low intelligence criminals.

b. The results for the S.T.C. as shown in Table 12, lent support to the above interpretation. There, 27 subjects from each group were matched, ex-post facto, (pair-matching) for intelligence. With intelligence held constant, the S.T.C.-NE means for the two groups were as follows (compared with those obtained for the whole groups, see Table 4):

	Criminals.	Rehabilitees.
Matched pairs (N = 27):	72.70 (S.D. = 16.75)	99.22 (S.D. = 12.81)
Whole group (N = 49):	72.30 (S.D. = 19.20)	98.67 (S.D. = 13.37)

The difference between the S.T.C.-NE means for the matched criminal and rehabilitation groups was highly significant (Mann-Whitney U Test, $z \geq 5.06$, $p < .00003$). It was also noticed that these means were very similar to those obtained for the whole groups. (Incidentally the t - test for the difference between the AH 4 part II for the whole groups and that of the matched

groups yielded non-significant differences of $p > .10$). Thus, when intelligence scores were held constant by means of pair-matching technique for 55% of all participants (27 pairs), the respective performance levels on the S.T.C.-NE yielded means identical with those obtained for the entire groups ($p < .0003$).

Furthermore, the product-moment coefficients between AH4 part II scores and S.T.C.-NE for the selected matched samples (Table 12) yielded $r = .252$ ($p < .10$) and $r = -.216$ ($p > .20$) for the rehabilitees. However, the correlation coefficient for the remaining criminals was highly significant ($r = .545$, $N = 22$, $df = 20$ $p < .01$). The latter group included 14 out of the 19 criminals who produced ^{scores of} 23 AH4 part II scores ~~or~~ below. This was in accord with the ^{suggestion} assumption that low intelligence ~~or~~ scores tended to correlate positively with the S.T.C.-NE.

However, that the relation between intelligence score and the performance of the criminals on the S.T.C. differed from that observed on their performance on the KTSA, and that observed for the rehabilitees, was shown in the following. The correlation between the performance of criminals on the KTSA, and that of the rehabilitees for the matched group were all negative in direction (i.e. $-.141$, $-.252$ (KTSA rehabilitees) - $.216$ (S.T.C. rehabilitees), respectively), whereas the correlation obtained between intelligence and S.T.C. for the criminal was positive, $= .252$ ($p < .10$).

The case of the relationship between intelligence and the S.T.C.-NE, in view of the significant differences in AH4 part II performance of the two groups, calls for an analysis of covariance. Such an analysis will provide information as to whether the significant differences obtained on the S.T.C. performance are over and above the differences in intelligence scores.

TABLE 20 reveals the analysis of covariance for intelligence scores and S.T.C.-NE for the two groups. The value of F for the covariance (estimated Y) = 350.61 was highly significant (df's 1 and 95, $p < .001$, McNEMAR, 1962). This meant that the two groups differed significantly on their S.T.C. performance in spite of their respective intelligence score, and that the S.T.C. difference observed was not attributable to chance factors (i.e. errors in sampling, etc.). It also implied, that had the two groups been matched for intelligence, the difference in their performance on the S.T.C. would still have been observed.

g. The performance on the tests was not related to age. Only one test, the S.T.C., has shown some relationship to the 'Length of criminal career'.

Age: It was shown earlier that the two groups differed significantly in age (higher for the rehabilitees). The following results shows the relationship between age and performance on the two tests.

Table 13 showed that neither the KTSA-NE nor the S.T.C.-NE yielded a significant correlation with age for the criminal

group (Column 1, rows 8 and 9). The product-moment coefficients obtained were; .076 ($p > .50$) for the KTSA, and $r = .231$ ($p < .10$) for the S.T.C. A similar pattern was observed on the performance of the rehabilitation group. The correlation between age and the KTSA was; .206 ($p > .10$), and that between age and the S.T.C., $r = .052$ ($p > .50$), all non-significant coefficients (Table 14, column 1, rows 3 and 4).

This tends to suggest that the significant difference of age between the two groups does not account for the significant differences observed for the performance of the two groups on both the KTSA and the S.T.C.

KTSA-NE and the characteristics of 'criminality': Table 13 shows the correlation coefficients between the KTSA-NE and the five measurements of 'criminality' recorded in this study (see Pp. of this text). As expected, this test did not correlate significantly with any of these measures as it was not designed, originally, as a test for criminals. The correlation coefficients obtained for the KTSA-NE and 'criminality' characteristics (Table 13, row 8, columns 3, 4, 5, 6, 7) were: with 'length of imprisonment', = $-.002$ ($p > .50$); with 'percentage of time spent in prison from 17th birthday', = $.026$ ($p > .50$); with the 'number of previous convictions', = $-.176$ ($p > .10$), although not significant the direction is, as expected, negative, that is, the more previous convictions, the lower the KTSA-NE). The correlations

between the KTSA and 'length of criminal career' was $.118$ ($p > .10$), and with 'age at first offence', $-.190$ ($p > .10$), which, although not significant, indicated a negative direction, namely, the older at first offence, the lower the KTSA-NE. This point will be discussed later).

Thus, although none of the correlations reached an accepted level of significance, two i.e. concerning the 'number of previous convictions' and the 'age at first offence', have shown interesting (negative) directions.

S.T.C.-NE and the characteristics of 'criminality'. Since the S.T.C. was believed to be related to 'criminality', some significant correlations between this test and the measurement of 'criminality' were expected to be found. In fact, only one i.e. the 'length of criminal career correlated significantly, yet positively with the S.T.C. ($r = .296$, $p < .05$).

Table 13 (row 9, columns 3, 4, 5, 6, 7) presents the correlations of the S.T.C.-NE and the five measurements of 'criminality'. Thus, the S.T.C. correlated with; 'length of imprisonment' $r = .200$ ($p > .10$); with 'percentage of time spent in prison from 17th birthday' $r = .141$ ($p > .10$); with the 'number of previous convictions' $r = -.089$ ($p > .50$, again a negative direction, but an extremely low coefficient). The correlation with the 'length of criminal career' was $r = .296$ ($p < .05$, significant) and with 'age at first offence', $r = -.156$ ($p > .10$). The latter coefficient,

similar to that obtained for the KTSA, although not significant is negative implying a tendency that the older the person at the first offence the lower the S.T.C.-NE. This point will be discussed later).

An Interim Summary.

The two groups participating in this study (N = 49, each) differed significantly in their means of age and intelligence scores, being higher for the rehabilitation group. Nevertheless, apart from some indications that low intelligence score correlated positively with S.T.C.-NE, these differences did not seem to have a direct impact on the performance of the two groups on the tests employed.

The criminals have produced lower scores on both the KTSA and the S.T.C., compared with the rehabilitees. This consistent performance of the criminals was evident not only in a substantial difference of total performance score, but also in the pattern of their abstract responses, i.e. the predominance of the more concrete responses over the higher abstract associations. A typical 'criminal differential formula' was established for each test with 72% successful identifications for the KTSA, and 78% for the S.T.C. (all highly significant chi-square, $p < .001$). The two 'criminal differential formulae' were so similar that a 'combined' score was established with a cut-off point which identified correctly 80% of all participants.

The S.T.C. correlated significantly with one measurement of 'criminality', namely, a positive product-moment coefficient with the 'length of criminal career'.

FURTHER STATISTICAL FINDINGS.

The relationships between Age, AH4, and the levels of abstractions used with the KTSA and the S.T.C.

The product-moment coefficients for age and AH4 part II showed a negative direction, where the correlation for the rehabilitees was, - .443 ($p < .01$, Table 14, row 2, column 1), and for the criminals, $r = -.119$ ($p > .10$, Table 13, row 2 column 1). It is possible that the correlation coefficient for the criminals has failed to reach a significant level of confidence because of the lower range and S.D. for age, in this group (a discussion on this statistical point was presented at length earlier in chapter 4, in connection with the reliability of the S.T.C.).

Age and the levels of abstraction:* Tables 15 and 16 (rows for age) presents the product-moment coefficients between Age and the levels of abstraction used with the KTSA and the S.T.C., for each group. Only four correlations (out of 40) reached a significant level. These did not form any definite pattern and thus it was difficult to interpret their significance. However, the total

* All the correlation coefficients discussed in the following were made with the frequency of responses given to every level of abstraction. The computations were obtained from Durham University Computing Unit and were made twice with an interval of 12 months.

correlation matrix for age showed some uniform trend as inferred from the direction of the correlations.

For the KTSA, (Tables 15 and 16, first row) age appeared to correlate negatively with the low abstract levels, i.e. B, C, D, E and F (particularly with B, $r = -.585$ $p < .01$, for the rehabilitees, and F, $r = -.41$ $p < .01$, for the criminals), whereas positive (though not significant) correlations were observed with the higher levels of abstraction, i.e. X, Y and Z. This seems to be in accordance with the general findings on the KTSA that as age increases (up to the 20's) the frequency of X, Y and Z levels increases. The fact that none of these correlations reached a significant level is not unexpected.

With the S.T.C. (Tables 15 and 16, first row) the pattern of the correlations between age and the levels of abstraction was slightly different from that on the KTSA. In fact, for the criminals, the pattern was similar to that observed on the KTSA with the exception that Y correlation^{ed} significantly $r = .33$ ($p < .02$). (Since^{for} higher age for the criminals employed meant, usually, longer criminal career - Table 13, row 6, column 1, it might be that familiarity with the objects of the S.T.C. resulted in higher symbolization, yet not the highest).

The pattern for the rehabilitees (Table 15, second row) differed from that of the KTSA. The direction of all the correlations, except for D (or (D) and 'd') and Z, was negative. (The positive correlation obtained between age and A - bizarre responses $r = .262$ $p < .10$ was regarded as meaningless as there were only 4

A responses). Here again ~~more~~ none of the correlations reached a significant level. (The significant level observed for D responses was misleading because in the S.T.C. this type of abstraction was not used, but rather was split into (D) and 'd' types. Therefore, D was, in fact, a combination of two types of responses). In short, the most significant conclusion from the above analysis is that the higher levels of abstraction tend to increase with age range studied, and the lower ones, to decrease. Generally, this tendency has failed to reach a significant level, which again reaffirms the claim that age alone is not responsible for the results obtained for both groups.

AH4 part II and the levels of abstraction: Similar to the results for age, very few significant correlations (5 out of 40) were observed in the case of the AH4.

However, for the KTSA (Tables 15 and 16, third row) intelligence correlated significantly only with E type of responses with $r = .407$ ($p < .01$) for the rehabilitees, and $r = .36$ ($p < .01$) for the criminals. (The $r = -.444$, $p < .01$., obtained between the AH4 and A - bizarre responses for the rehabilitees, though in the expected direction, was regarded as meaningless because of the small number, i.e. 4, of A responses).

Intelligence scores did not correlate significantly with any of the S.T.C. levels of abstraction for the rehabilitation group .

On the other hand, significant correlations were obtained for Z type of abstraction ($r = .33$, $p < .02$) for the criminals. This might suggest that, for the criminals, producing Z - intangible associations on the S.T.C. might be related, positively with intelligence. (see discussion, next chapter). Again, the positive correlation between AH4 and D type of responses ($r = -.34$, $p < .02$) is misleading because this level of abstraction is a combination of two (i.e., (D) and 'd'). None of the two, separately, reached a significant level of confidence.

The Inter-relationships between the levels of abstraction.

THE KTSA: The relationships between the KTSA total scores and the various levels of abstraction (Tables 15 and 16, fifth row) for both groups showed a definite, almost identical, pattern. The KTSA total score correlated significantly (for both groups) with B - responses ($-.363$ $p < .01$ for the rehabilitees, and $-.38$, $p < .01$, for the criminals), with D - responses ($-.37$, $p < .01$, for the rehabilitees, and $-.47$ $p < .01$ for the criminals), with Y responses ($.311$ $p < .05$, for the rehabilitees, and $.32$, $p < .05$ for the criminals), and with Z - responses ($.709$, $p < .01$, for the rehabilitees, and $.86$, $p < .01$, for the criminals). For both groups, the total KTSA-NE did not correlate significantly with A, E and X type of responses.

However, differences between the performance^s of the two groups were observed with regard to two types of responses. The F - responses correlated significantly with the total KTSA-NE ($r = -.378$,

$p < .01$) for the rehabilitees, but not significantly ($r = .01$ $p > .50$) for the criminals. (It is difficult to explain the reason for the latter correlation coefficient). Furthermore, C - responses, tended to correlate negatively with the total KTSA-NE for the rehabilitees yet positively for the criminals (both non-significant correlations). The latter is one of the peculiar characteristics of the criminals LE - pattern, mentioned earlier.

Table 18 showed the inter-correlations between the KTSA levels of abstraction for both group. Again, most correlation coefficients presented failed to reach a significant level of confidence (except 17 out of 72). There is no need to go into detailed analysis of the results and the various differences between the two groups. The general tendency is similar for both groups, that is, most of the correlation coefficients are in the same direction. As expected nearly all correlations were negative, i.e. the greater the frequency of lower levels of abstractions, the fewer higher levels produced. Two exceptions to this rule were observed; with F - responses for the rehabilitees (correlated positively and significantly with D and E levels). But this type of response was additive to the other levels (see chapter 3) and thus was expected to follow a different direction compared with the other levels. The other exception was with C - responses, which correlated positively with Y, for the criminals ($r = .41$, $p < .01$), and tended to correlated positively but not significantly with Z type of responses (for both groups).

The S.T.C.: The relationships between the total S.T.C.-NE scores and the various levels of abstraction (Tables 15 and 16, sixth row) for both groups showed a definite, almost identical, pattern. The total S.T.C.-NE correlated significantly, for both groups, with; B - responses (-.390, $p < .01$ for the rehabilitees, and -.45, $p < .01$, for the criminals), with 'd' - responses (-.485, $p < .01$, for the rehabilitees, and -.45, $p < .01$, for the criminals), with X - responses (-.47, $p < .01$, for the rehabilitees, and -.28, $p < .05$, for the criminals), with Y responses (.404, $p < .01$, for the rehabilitees, and .52, $p < .01$, for the criminals), and with Z - responses (.701, $p < .01$, for the rehabilitees, and .71, $p < .01$, for the criminals). For both groups, the total S.T.C.-NE failed to correlate significantly with E and F types of response. (This does not contradict the pattern observed on the KTSA).

However, differences between the performance of the two groups were observed with regard to three types of response. Most important of all was that S.T.C.-NE correlated positively with K - responses for the criminals ($r = .30$, $p < .05$), but negatively for the rehabilitees ($r = -.292$, $p < .05$). The negative correlation coefficient was expected. The positive correlation for the criminals was very interesting. First it suggested that although 'K' was different from 'C' of the KTSA, it has shown the same direction as the latter. Moreover, although K - responses did not typify the performance of the criminals on the S.T.C., in the same way as did 'C' on the KTSA, it appeared to have the same

relationship to the total S.T.C. - score as the 'C' type of responses to the total KTSA-NE. This is of particular interest since the number of 'K' - responses given by the criminals and the rehabilitees were almost identical, i.e. 91 versus 97, respectively (Tables 7 and 8). It was also observed that the total S.T.C.-NE correlated negatively with (D) - naming responses, but with $r = -.50$ ($p < .01$) for the criminals and $r = -.158$ ($p > .20$) for the rehabilitees. This seems to be compatible with the fact that the (D) - responses are more characteristic of the criminals than of the rehabilitees (see the S.T.C. 'Symbol-Pattern' for criminals).

Finally, it was observed that the total S.T.C.-NE for both groups correlated negatively with A - bizarre responses, but significantly for the rehabilitees ($r = -.288$, $p < .05$), and non-significant for the criminal. In view of the small A - responses given on the S.T.C., (6 for the criminals and 4 for the rehabilitees), no conclusion can be drawn with regard to that type of response.

Table 19 showed the inter-correlation coefficients between the S.T.C. levels of abstraction for both groups. Similar to the correlation coefficients matrix for the KTSA (Table 18), most correlations failed to reach a significant level of confidence (except for 23 out of 110). Generally, the trend was similar to that observed in Table 18, that is, most levels of abstraction correlated negatively (often not significantly) with their preceding (lower) levels. Exceptions to this rule were X and K - type

of responses. The former showed a tendency to correlate positively with D, or rather (D) and 'd' type of responses. The high correlations between D, and (D) and 'd' are obvious, since D includes both (D) and 'd'. However, 'd' - responses correlated positively with D, where ~~(D)~~ - responses negatively. This provides some support for the idea of splitting D - 'naming and functioning' level into separate (D) - naming, and 'd' - functioning levels, as exercised in the S.T.C.

K - type of responses correlated positively with Y and Z - responses (except for Y with the rehabilitation group). This was similar to the trend observed for C - responses in the KTSA (see Table 18). The only difference was that in the latter, the only significant positive correlation for the criminals was with Y - responses, whereas for the K - responses in the S.T.C. the significant positive correlation for that group was with Z ($r = .30$, $p < .05$).

'Criminality' characteristics and levels of abstraction.

Table 17 shows the correlation coefficients obtained between the five 'criminality characteristics' recorded and the levels of abstraction of the KTSA and the S.T.C., for the criminal group. Generally, most of the correlations failed to reach a significant level of confidence (except 4 correlations) and showed a negative direction.

Thus, the 'length of actual imprisonment' failed to correlate

significantly with any level of abstraction for either test. Only the correlation with F - responses, for the KTSA showed a tendency to correlate positively with that 'criminality index' ($r = .25, p < .10$). This type of responses did correlate positively with the 'length of criminal career' (for the KTSA) with $r = .38 (p < .01)$.

The 'percentage of time spent in prison since 17th birthday' did not correlate significantly with any level of abstraction. However, there was a tendency for this 'criminality' index to correlate negatively with (D) - naming responses of the S.T.C. ($r = -.23, p < .10$). This seemed to be in line with the negative correlation ($r = -.31 p < .05$) obtained between B - 'no reason' responses of the S.T.C. and the 'length of criminal career'. Both correlations indicated that the frequency of the so-called 'non-committal responses' on the S.T.C., i.e. (D) - naming, and B - 'no reason' responses decreased, the longer a person was engaged in criminal activities and the longer he was incarcerated.

The number of 'previous convictions' correlated negatively with KTSA Z - responses ($r = -.27, p$ slightly larger than .05 level of significance). This correlation was in harmony with the general results obtained, that is, that the 'genuine criminal' (presumably those with more previous convictions) had lower KTSA-NE compared with the non-criminal rehabilitee. In the same manner, it was possible to interpret the tendency of X - concrete type of responses to correlate positively with that index of 'criminality'.

For both the KTSA and the S.T.C., the correlations were $r = .26$, and $r = .23$ ($p < .10$).

With the 'length of criminal career', KTSA F - 'colour' responses correlated positively and significantly (to be discussed later), and S.T.C. B - 'no reason' responses, negatively (see above).

Interesting was the negative correlation of $r = -.28$ ($p < .05$) with KTSA Z - responses and the 'age at first offence'. The possible meaning of this correlation, i.e. that the older at first offence, the fewer KTSA, Z - intangible abstractions produced, will be discussed in the next chapter.

Analysis of the 'abstraction scores' produced for each S.T.C. symbol-objects.

Table 9 shows the 'abstraction scores' (the weighting score given for every level) produced for each S.T.C. symbol-object by both groups. Such a comparison was feasible only for the S.T.C. 'Symbolizing' task which included 12 (or 60%) of the minimum 20 responses possible on the tests. It might be recalled that on the 'Arrangement' tasks answers were given to all objects simultaneously, and on the 'Liking-Disliking' task - for different objects as preferred by each individual testee. Thus, ^{the} 'Symbolizing' task was the only one where responses were given to every symbol-object, separately, by all the participants, hence the following comparisons. The table below presents the mean of 'symbolization score' given to each S.T.C. symbol-object, and the levels of significance for the differences between the two

means (calculated by Mann-Whitney U - test, SIEGEL, 1956).

Code	Rehabilitees	Criminals	z \geq *
	Mean	Mean	
1. (P)	5.34	3.12	12.3
2. (T)	4.46	2.37	12.2
3. (S)	5.34	3.02	12.1
4. (G)	4.38	2.42	11.8
5. (B)	5.44	3.79	11.2
6. (K)	4.10	2.85	10.9
7. (A)	5.12	3.95	10.7
8. (H)	4.24	2.73	9.6
9. (OO)	3.38	2.63	9.4
10. (C)	5.26	4.75	8.9
11. (M)	5.04	2.73	7.9
12. (N)	5.91	4.16	6.9

N = 49 each group. * All z scores yielded $p < .00003$

It is observed that the criminals have produced significantly lower mean ~~of~~ 'abstraction scores' for all objects, compared with that of the rehabilitees. However, the 'criminal' objects, i.e. Truncheon (T), Gun (G), Knife (K), Policemen's Helmet (H) and Handcuffs (OO), elicited the lowest means for both groups while Police car (P), Pair of scales (S), and motorbicycle (M), elicited a low mean (similar to that of the 'criminal' objects) for the criminal group, but not for the rehabilitees. On the other hand, the 'non-criminal objects', i.e. Bulldozer (B), Ambulance (A), Cigar (C), and Saloon-car (N), elicited higher means for the criminal group, but not necessarily for the rehabilitees.

An interesting example is the case of the Motorbicycle (M),

where the criminals produced a low mean ($M = 2.73$), perceiving it as associated with 'crime, danger and the police' whereas the rehabilitees produced a higher mean ($M = 5.04$), perceiving it as associated with 'youth, sport and carelessness'. Also, most of the 'criminal objects' (No.'s 1 to 9, above) yielded the highest z value (though all were highly significant).

The results tend to show that the low 'abstraction performance' of the criminals applied to all, 'criminal' and 'non-criminal', objects. The 'non-criminal' objects elicited higher means, particularly, for the criminal group.

The 'combined score formula' (the KTST).

It was mentioned earlier that a formula which has combined both KTSA-NE and S.T.C.-NE, yielded the best differentiation between the groups. The following results summarize the correlation coefficient of this 'combined score' (coded as KTST) and the various factors recorded in the study, and the levels of abstraction for both tests.

KTST: Table 13 (row 10) showed that the KTST correlated significantly only with the KTSA-NE and the S.T.C.-NE ($r = .837$, and $r = .851$, both $p < .01$ respectively). These correlations were obvious since the KTST-NE, comprised these two levels. There was a tendency for the KTST to correlate positively with intelligence score ($r = .263$, $p < .10$, Table 13, row 10, column 2) and with the 'length of criminal career' ($r = .261$, $p < .10$, Table 13, row 10 column 6). A similar feature was observed in

the correlation matrix for the rehabilitation group (Table 14, row 5) where the KTST correlated significantly only with the KTSA-NE ($r = .819$, $p < .01$) and with the S.T.C.-NE ($r = .715$, $p < .01$). Studies with that 'combined score' formula employing larger samples should be conducted before any generalization can be arrived at.

KTST and the levels of abstraction: Table 15 (rows 7 and 8) shows the correlation coefficients between the KTST and the two tests' levels of abstraction for the rehabilitation group. The results show an identical trend for both tests, namely, the KTST correlates negatively with the low abstract levels of both test (i.e. B, C, D or (D) and 'd'), E, F, and X), and positively with the higher ones (i.e. Z and Z). Many of these correlation coefficients have failed to reach a significant level of confidence, probably due to the small samples employed.

A similar pattern was observed for the correlation coefficients between the KTST results and the levels of abstraction of the two tests for the criminal group. (Table 16, rows 7 and 8). Only two differences between the two groups were observed. First, C and K responses correlated positively with the criminals' KTST-NE but negatively, for the rehabilitees. Again, this supports the findings that these two types of response ('repetition' and 'narrowness') are characteristic of the criminals. Secondly, the KTSA X - responses correlated negatively ($r = -.057$) with

KTST score for the rehabilitees, and positively ($r = .01$), for the criminals. Although the direction of these correlations is in harmony with the main finding, the small value of these coefficients does not justify any speculations.

THE AUTHENTICITY OF THE RESULTS.

The Statistical Analysis: Rationale.

The statistical analysis of the results (chapter 6) was carried-out in order to comply with basic psychometric and psychodiagnostic requirements of psychological tests. The Tables presented in this volume represent an attempt at providing the information needed for such requirements.

The main results are listed in Tables 1 to 11. These include; the description of the samples employed (Tables 1 and 2), the results on the tests, (Tables 3, 4, and 11), the distribution of the responses for each level of abstraction for each test (Tables 5 to 8), an item analysis for the S.T.C. symbol-objects (9), and testing the S.T.C. scoring system (10).

Tables 12 to 20* represent further inquiries into (a) the authenticity of the main results (20, 12, 13 and 14, the last two elaborated in 15, 16 and 17), (b) the validity of the tests, i.e. their relationships to other test and behavioural characteristics (13 and 14), and (c) the internal structure of the tests (18 and 19).

The discussion below provides the rationale, and evaluates the results of the statistical findings.

* The correlation coefficient matrices presented in Tables 13 to 19 were computed by the Compting Department, Durham University.

Psychometric Features.

Standardization: As a pioneering attempt at differentiating adult criminals from 'non-criminals' with both the KTSA and the S.T.C., it is expected that this study will raise many questions which will have to be dealt with in future studies. Both the successful and unsuccessful attempts at answering many of these questions will be discussed in the following. Obviously, the first problem is that of the standardization of the tests employed. Indeed, the KTSA was reported previously to have been standardized (KAHN, 1956a), but this was not entirely satisfactory (L'ABATE & CRADDICK, 1965). The S.T.C. was never standardized, and under the conditions of this study could not have been standardized. Therefore, it was decided to select a criminal group which will resemble in terms of age, number and types of previous convictions, and length of imprisonment, the majority of habitual, adult criminals incarcerated in England. (Though clearly it is not an adequate representative group). In these respects, the group selected in this study resembled about 60% of all adult, habitual recidivists admitted to English prisons during 1965, the year when this study was conducted.

Reliability.: The KTSA was often reported to have demonstrated a satisfactory reliability. The S.T.C. has shown a good split-half reliability. In the absence of another experienced tester with this test, inter-scorer reliability was difficult to obtain.

However, there is good reason to believe that since the S.T.C. employs many of the KTSA scoring principles which were reported to be conducive toward greater inter-scorer agreement, and with the help of the 'preliminary dictionary of S.T.C. popular responses' (APPENDIX VI), inter-scorer reliability for this test should be reasonable. This is left for future studies.

Validity: Both tests employed have shown a good discriminative validity (between 72 - 77% correct identification) where the 'combined scores' yielded the best discrimination (80%). This power of the S.T.C. may even increase when the item-analysis and other refinements of the test are considered (see next chapter). This test appeared to be independent of the age of the participants, and although its relationship with intelligence is not clear, there are indications that it is relatively independent of the average and above average intelligence scores. Concurrent validity with the KTSA is encouraging, but inconclusive.

The theoretical speculation of the significance of the method of selecting the 'criminal' symbol-objects is believed to have been substantiated. This was interpreted from the positive ($p < .05$) relationship between the S.T.C. and the 'length of criminal career', the only significant correlation for either test with criminal indices. However, the reasons for the direction of this correlation is not understood.

The KTSA appeared to be independent of age, intelligence and criminality factors of the sample employed.

Scoring of the S.T.C.: In the absence of a proper standardization, adequate weighting scores were difficult to compute. A tentative scoring/^{method} was provided, based largely on the frequency of responses of the rehabilitees. This appeared to be at least as good as any arbitrary scoring (Table 10).

The method of evaluating abstract thinking: Previous studies have criticized the dichotomous division of abstract and concrete thinking (e.g. RAPAPORT, 1959, Pp. 706 - 707, McGAUGHRAN, 1954; McGAUGHRAN & MORAN, 1956). Of all tests of abstract-concrete thinking known to the writer (e.g. VIGOTSKY, 1934; HANFMANN-KASANIN, 1937; GOLDSTEIN-SCHEERER, 1941; GORHAM, 1956; CHIAPPO, 1959, BRATTEMO, e.g. 1965), both the KTSA and the S.T.C. use the most elaborated abstract-concrete categorization (i.e. 9 to 10 levels). These permit investigation of refined cognitive nuances. Such a unique feature of the tests employed called for statistical operations to verify the significance of this elaborated categorization. Hence, the correlation coefficient matrices presented in Tables, 15 to 19.

Psychodiagnostic Features.

Discriminative power: Both tests have demonstrated a good discriminative power where the S.T.C. is slightly better than the KTSA (77% ; 72% respectively) while the 'combined scores', discriminate best (80%). This is a satisfactory rate of differentiation considering (a) the so-often mentioned limitations

of the projective tests (e.g. KORNER, 1950), and (b) the base rate where 50% correct discrimination could be obtained by chance alone.

Indeed, AH4 part II scores alone could have discriminated correctly 31 out of 49 criminals, and 30 out of 49 rehabilitees with the cut-off point 29 (chi-square = 4.94, df = 1, $p < .05$). But both Tables 12 and 20 showed that when intelligence is held constant, the KTSA and the S.T.C. differentiated the groups significantly ($p < .001$) over and above the significant differences on intelligence. In other words, it is inferred that these two tests do not measure the same propensities measured by the AH4 part II.

Figures 1, 3 and 4 illustrate the advantage of the S.T.C. and the KTSA over the AH4 part II in such discrimination. The former yielded the best bimodal-curve compared with the KTSA which, again, was better than that for the AH4.

False identifications: The results of the two tests employed were finally integrated into a 'combined KTST score'. (Such an operation was legitimate since both tests yielded almost identical 'Symbol-Pattern'). It is this 'combined score' which should be considered in psychodiagnosis of criminals. Thus, considering the 'combined scores', only 6 out of 49 criminals were 'false positives' (scored like the 'non-criminal' rehabilitees) and 14 out of 49 rehabilitees were 'false negatives' (i.e. scored like the criminals). As mentioned in an earlier

chapter, ideally, no false cases should be obtained. In practice, a test of criminality would have preferred less 'false positives'. Thus the above results are in the expected direction.

Furthermore, the fact that some criminals differed from the typical low-abstract scores of the criminal group has lent support to the suggestion of two types of criminals:

- (a) Those who failed on the 'decriminalization process' showing 'arrested cognitive development'.
- (b) Those who have not shown 'arrested cognitive development', but possibly, in spite of their normal abstract capability, have repudiated their obligations to society.

Although the majority of the criminals tested (87.7%) belongs to type (a), the existence of the other type has led to the hypothesis that a lower level of abstraction is not, necessarily, responsible directly, for resorting to criminal behaviour. Indeed, it is a cardinal feature of the criminals, but must be related to other psychological and environmental factors. In other words, though clinically, the abstract-concrete facet of cognition appears to be a promising trait by which criminals may be identified, it does not provide a complete etiological explanation for the onset of criminal activity.

Additional support for such a division comes from the fact that 28.5% of the 'non-criminal' rehabilitees have produced a

'combined NE' typical of criminals (though their LE, was not always a 'criminal' one). Since it is known that these individuals are not criminals, it is clear that the combined score on the KTSA and the S.T.C. alone, is not sufficient to suggest a criminal tendency. Therefore, it is recommended that when assessing the likelihood of becoming a criminal, these two tests must be evaluated together with other tests. e.g. those measuring 'arrested emotional development', sociological 'scales', and the like. (When, and if such tests are available).

Is the S.T.C. a test of 'criminality'? The rationale of constructing the S.T.C., namely, the method of selecting the symbol-objects has postulated that it will be expected that the difference between criminal recidivists and 'non-criminal' rehabilitees employed will be greater on such a test. This hypothesis was proved. The presumption that a test which includes criminal objects will be more adequate for criminals, in the sense that it will be more meaningful to them, seems to have some support from the positive ($p < .05$) correlation between the 'length of criminal career' and the S.T.C. (no other significant correlation between any of the 'criminality factors' and the score on either test was obtained). It is interesting that although this relationship implies that the longer a criminal is involved in lawless activities the better his performance on the S.T.C., the progress is very limited. In spite of this tendency to do

better on the S.T.C., the criminals scored significantly lower than the 'non-criminal' rehabilitees (and some of them have been involved in criminal activities over 17 years).

It might be argued that the lower performance on abstract-concrete tasks is related to incarceration (e.g. TAYLOR, 1961). Such criticism may rely on studies which have shown that deprivation (maternal or sensory) is related to depersonalization. If this argument is valid, a significant negative correlation between the 'length of imprisonment' and the performance on the tests should have been found. In fact, the correlation with the KTSA was negative but of negligible value (i.e. $r = -.002$), and that with the S.T.C., a non-significant positive correlation of .200 ($p > .10$). Thus this argument is not tenable.

The present results cannot provide a clear answer to the above question. The answer to whether the KTSA and the S.T.C., together or separately, are tests of criminality depends on verification of the hypothesis of the 'cognitive arrestation on the decriminalization process' and its relationship to 'criminality'. This question should be dealt with in future studies.

CHAPTER: 7.

DISCUSSION.

It might have been noticed that a point of caution concerning the limitations of the present study was emphasized repeatedly throughout the foregoing presentation. This was thought to be necessary in order to keep the evaluation of the results within the appropriate proportions. However, it is believed that over and above the purely empirical finding, this pioneering study may have some broader implications in the psychological study of criminals. This chapter is devoted to discussing some of the broader indications of this study with an attempt at integrating and explaining the findings within a larger frame of reference.

This will involve the following issues: (a) Discussion on the advantage of seeking a psychological characterization of the 'genuine', 'criminal recidivist', and (b) Discussion of some possible theoretical considerations.

(a) IDENTIFYING CRIMINAL RECIDIVISTS.

Quantitative versus Qualitative Definitions.

The belief that the so-called 'criminal recidivists' or 'habitual criminals' represent a distinct group which needs to be studied is shared by many investigators of criminal behaviour.

MANDEL et. al. (1965), for example, have emphasized the opinion that no one can dispute the genuine need to study recidivism, therefore, "A uniform definition of what constitutes recidivism is the only base upon which recidivism rates can be determined and compared with any degree of confidence". (op. cit. p. 59). Indeed, the provision of a definition of 'criminality' or 'criminal recidivism' is undisputably the foremost task of contemporary research. However, the above-mentioned authors - representing many other contemporary approaches - have provided, what ~~it~~ is called here, a quantitative definition of 'recidivism', that is, a definition based on overt, statistical characteristics of such behaviour, namely, the rate and severity of crimes committed within a given period of time, and on the frequency of sentences of imprisonment.

This, it is believed here, represents one of the fundamental problems in the task of characterizing the criminal recidivists. A quantitative definition, at the present moment, is the only starting point possible; - but it should not be the ultimate goal. Indeed, MANDEL, et. al. (op. cit.) have failed to characterize their juvenile recidivists on the basis of psychological tests (i.e. M.M.P.I., T.A.T. Rorschach). But, it is argued here, that the basic question of whether the difference between, say, the 'criminal recidivist' and the 'occasional criminal' is simply a matter of quantity (i.e. as revealed by

the frequency of committing criminal activities), or a matter of quality (i.e. due to personal proclivities, psychological and otherwise), still remains open. Similarly, no conclusive answer has been provided as to whether the difference between the 'criminal recidivist' (or for that matter, any criminal) and the so-called 'lawful' individual is a matter of quality or of quantity.

A strong trend, notably among the criminologists, is to resort to quantitative, formal definitions. Hence, a person who has never been convicted in court for lawless behaviour is regarded as a 'non-criminal'.* Definitions which are based on such an assumption have serious limitations. They may be adequate for characterizing the convicted criminals, but they do not help in discriminating the true 'non-criminal' from the 'uncaught' one. Obviously such definitions depend on (a) the efficiency of the police and other crime detecting agencies, (b) the competence of the actor to commit a 'perfect crime', (c) the severity of the offence committed (where 'crimes' such as stealing a small amount of money from parents, or cheating in school are never reported to the authorities), and (d) whether or not a given person is regarded as 'suspicious' by the police. (where such a person is under constant scrutiny and the likelihood that he will, eventually, be caught at some

* Note that the term 'non-criminal' is used here in a psychological rather than a legal sense. In jurisprudence, this term is applicable to a certain group of law-breakers, who were convicted and imprisoned for offences, such as 'non-payment of wife's maintenance', of 'income tax', etc. (HOME OFFICE, 1967, p. 15).

offence is greater). These factors do not increase the validity of the assumption that the 'never-caught' person is indeed a 'non-criminal' nor does it increase the belief that the 'often-caught' criminal is more a 'genuine offender' than the criminal who was apprehended once or twice.

Furthermore, such quantitative definitions are basically descriptive and do not contribute towards crime prevention. They all are based on ex-post facto characteristics, i.e. whether a person is a 'criminal', or likely to be a 'recidivist', depend on whether he has already committed, at least one crime. In other words they assume that one cannot hope to detect a 'potential criminal' unless some 'signs' of the existence of criminal tendencies appear. Just how much society has to suffer from the menace of criminality before these 'signs' can be detected according to the quantitative approach, is difficult to say.

On the other hand, if psychological research could demonstrate the existence of qualitative differences (expressed in terms of perceptual, cognitive, emotional, and other mechanisms) between the criminal, or 'the criminal recidivist' and the 'non-criminal', much of the criticism raised against the quantitative approach would be of minor importance. Therefore, it is maintained here that the ultimate aim of the 'criminal-psychologist' is to substitute the contemporary quantitative definitions for qualitative ones. This seems to be the safest way toward providing 'operational definitions' capable of identifying 'potential criminals' at a

very early stage. The road toward this aim is very long indeed. But it is believed that the present study has provided a minor contribution toward this goal by indicating the possibility of the existence of such qualitative differences in the abstract-concrete facet of cognition. This seems to be one of the main assets of this study. Because otherwise, advocates of the 'quantitative' approach may point out that this study has, in fact, differentiated incarcerated people from non-imprisoned individuals. It could be argued, therefore, that there is little advantage in doing so by means of psychological testing if, by simple observation of who is imprisoned and who is not, a better differentiation can be made.

(b) 'ARRESTED COGNITIVE DEVELOPMENT' AND CRIMINAL BEHAVIOUR.

As mentioned earlier, this study was not constructed in order to verify a particular theory nor did it intend to provide any. The claim that the purpose of this research was achieved fully merely by indicating the possibility of adopting a new approach toward identifying the 'genuine criminals' with tests of cognition, is perfectly defensible, even in the absence of an explanation as to why 'cognition' has such a differential power. It could be argued that this study has shown the existence of a psychological phenomenon, and it is now the duty of further investigators to provide some explanation. However, upon reflection, it was thought that a possible hypothesis to

explain the findings could be provided.

Before proceeding, a point of clarification should be made. It is not maintained that the foregoing results prove or substantiate the explanation suggested below, nor that this is the only way of understanding the finding. In fact, the findings are too general to verify any elaborate theory. Therefore, any explanation provided in this context should be regarded, merely, as an hypothesis, a "guess". The only merit of presenting a broader theoretical frame of reference below, is that it does not leave the results unexplained.

Developmental Features of 'Criminal Conduct'.

A child born in our society is a criminal. Not, necessarily, in the biological sense of the 'born criminal' or that advocated in "The biological basis of criminal behaviour" (EYSENCK, 1963 - 64b), but rather in the sense that the young infant is socially unadjusted, i.e. his behaviour is motivated solely by selfish desires irrespective of other people or of any social code of conduct (see ALEXANDER, 1964, also ALEXANDER & STAUB, 1956). In subsequent years, the growing child is subjected to an intensive process of training (socialization) which aims at promoting behaviour conforming to the social codes. Once this process has been completed successfully, a pattern of 'non-criminal' behaviour (and attitudes) is expected to have been acquired. This process can be conceived of as a process of 'decriminalization'.

It is clear from the literature on child development that the successful accomplishment of the 'process of decriminalization' depends on both the nature of the training conditions, i.e. socialization agencies, child-parent relationships, educational facilities, etc. and on the psychological development emotional and cognitive, of the growing child. These two factors are believed to be interrelated. Therefore, it is held that any impediment to psychological maturity whether independent of training conditions, e.g. biochemical deficiency, or due to the interference of defective training conditions, or both, may impair the successful completion of this 'dcriminalization process'. This, inevitably increases the chance for criminal conduct to come forth.

Signs of 'criminal' behaviour can be observed in the growing child throughout the process of 'dcriminalization'. These take the form of disobedience and antagonism to authority, aggressive reactions, cheating, stealing, and the like, characteristic of young children. Usually, society adopts a lenient attitude toward such juvenile mischiefs on the assumption that such conduct is expected, or even sometimes natural in the young, and that it represents a temporary state which will disappear upon successful completion of the 'dcriminalization process'. One among many manifestations of such an attitude is the rule that criminal responsibility is not applicab^{le} for the under-aged.

That the onset of criminal behaviour is associated with developmental progression, namely, ^athe failure ⁱⁿ the 'decriminalization process, can be seen in the fact that many of the adult, habitual criminals have shown such tendencies in their childhood and adolescence, also from the fact that the 'criminality' is a form of maladjustment typical of juveniles, (GLUECK & GLUECK, 1950). The fact that 'criminal behaviour', in one form or another, is common to all growing children has lent support to the assumption that, basically, this form of maladjustment is rooted in inadequate development. Using the terms of this context, this assumption is described as an 'arrested development' on the ^{pr}ogression of the 'decriminalization process'. Such 'arrestation' can also be described in the words of HARVEY et. al. (1961):

"If environmental pressures are out of synchrony with the conceptual structure required for the emergence of a more abstract synthesis, fixation or arrestation of development occurs... such asynchrony produces... an effect which prevents progression". (op. cit. p. 91).

The notion that criminals, as a group, manifest what is often described as emotional immaturity (often referred to in terms of a lack of emotional control, a low tolerance level of frustration, an absence of 'balance' between various components of personality, etc.) is quite common. It is hypothesized, here, that parallel to this immaturity there is a cognitive immaturity.

The traditional description of the changes occurring in the mental processes of the child during his development (a 'cognitive maturity') was made in terms of abstract and concrete thinking. In the words of WOHLWILL (1962).

"This question has been answered most frequently in terms that emphasize an increase in powers of abstraction or increased intervention of symbolic process. More generally... there is a decreasing dependency of behaviour on information in the immediate stimulus field". (op. cit. p. 87).

A similar opinion was expressed by HARVEY et. al. (1961) who came to the following tentative conclusion on the basis of their extensive analysis of the classical works of cognitive development:

"Older children are more abstract than younger children in the sense that functioning and perception is less diffuse, less absolute, less all-or-none, less stimulus bound, and more differentiated. Older children can generally break a stimulus field down into its parts and integrate these into new wholes more effectively than younger children... In all of these, progressive development can be described in directional terms, as proceeding from the concrete to the abstract". (op. cit. Pp. 109 - 110).

Arrested Development versus The Idea of Regression.

The hypothesis of 'arrested development along the decriminalization process' is not, necessarily, congruous with the approach, typical of the psychoanalytical doctrine, which perceives criminality (like other forms of psychopathology) as a

form of regression. An example of such a trend can be seen in ALEXANDER (1930) who has described the characteristics of the neurotic-symptoms as (a) being regressive by nature, (b) being autoplasmic (i.e. directed outwardly), and (c) having their latent context rejected by the ego. These also comprise the basis for his explanation of 'criminality', where:

"If, for example, autoplasmicity is absent, though the other two characteristics, rejection by the ego and regression are present, we are dealing with a neurotic character. The regressive and rejected impulses are not gratified by means of autoplasmic symptom-formation, but by means of alloplasmic activity which influences the relation of the individual to the environment". (op. cit. p. 303).

But, when both autoplasmicity and rejection are absent, and only regression remains, we have 'pure criminality'. This term was regarded more as a theoretical concept, thus:

"As a matter of fact, I am convinced of the opinion that on closer examination most of our criminals will turn out to be neurotic characters, and the notion of pure criminality must be looked upon as a theoretical concept..." (op. cit. p. 304).

^H
AICORN (1936) also thought that regression was a typical feature of the delinquent personality. The delinquent has a 'disturbed, faulty ego' development which may also take the form of regression, i.e. reverting back to a lower or more infantile level.

This idea was also adopted, specifically, in the area of cognition, and in connection with concrete-abstract thinking. The Freudian idea of primary and secondary mechanisms was

introduced to the cognitive functioning (e.g. HILGARD, 1962) where the former was said to be motivated by the 'pleasure principle' and hallucinatory contents, whereas the secondary mechanism was believed to seek more realistic substitutions for this hallucinatory material. Concreteness was associated with primary mechanisms and abstract thinking with the secondary. Hence, regression, as related to the thinking process, is described in terms of reverting back to the primary mechanism, usually, in the face of severe difficulties.

This phenomenon was observed particularly with schizophrenic and brain-damaged patients. A recent exponent of the idea of regression in the area of cognition ('pathology of thought') is ØSTEGAARD (1962) who has summarized previous studies in this subject, and also has found in her study that:

"Genuine schizophrenic patients" are characterized by severely regressive thinking, an uneven performance level ... (etc.) "Episodic schizophreniform psychoses" are characterized by: severely regressive thinking ... (etc.). "Schizophreniform borderline personalities" are characterized by: moderately regressive thinking... (etc.). "Non-schizophrenic paranoid patients" are characterized by: slight evidence of regressive thinking... (etc.)". (op. cit. p. 263).

The reason why such a regression takes place, particularly, in difficult situations is interpreted in slightly different ways. RAPAPORT (1959) thought that for most people, resorting to a concrete level of thinking was what might be called 'a regression in the service of progression', a stage which might help, ultimately, towards achieving emotional catharsis (when capable of producing abstractions).

"Once such a set of abstraction is conquered and we can operate with it, considerable relief is experienced - a saving in cathectic expenditure; but as soon as unusual difficulty is encountered, we again fall back upon concrete material to aid us in applying our abstract constructs to the difficult new case." (op. cit. p. 706).

For GOLDSTEIN (1959), a forerunner of modern studies ^{of} with abstract-concrete thinking with brain-damaged patients and schizophrenics, reverting back to concreteness is a form of defence, a protective mechanism against 'anxiety arousing' demands which cannot be fulfilled. Therefore, such a cognitive functioning is evident mainly in difficult situations. Hence it follows that:

"... if lack of abstraction is a protective mechanism, the withdrawal will be utilized only, or particularly, in situations which are dangerous for the patient..." and it is expected that "... it will be less evident when there is no danger". (GOLDSTEIN, op. cit. p. 1342).

Of course, what might be an adequate interpretation of the thinking process of some groups of schizophrenics and brain-damaged patients (and this type of explanation is not free from criticism, see e.g. BUSS & LANG, 1965; LOTHROPE, 1961) is not necessarily true for criminals. This argument is supported by all those expositions (discussed in detail at the end of chapter 2) which claim that the majority of criminals (80%) are psychologically 'normal'. The idea of 'regression' is incompatible with such statements.

On the other hand, the hypothesis of the 'arrested development on the decriminalization process', emotionally and cognitively, is in harmony with both contentions. It is compatible with the argument that most criminals are psychologically 'normal' as it suggests that what is wrong with criminals is that they are not 'quite as normal' (i.e. mature) as the general population. At the same time it does not deny the possibility that some criminals may be primarily psychologically (or even medically) ill.

Perhaps the greatest asset of the 'developmental' hypothesis in this context is that it is congruent with the results obtained in the present study. As expected, the criminal recidivists have produced a level of abstraction significantly lower than that of the 'non-criminal' group. Similarly, since the criminals are not regarded as psychologically-ill, it is clear why they have hardly produced any 'A - bizarre type' of responses.

The hypothesis of the 'arrested cognitive development' does not imply a complete cessation of cognitive progress. Thus some Z - type responses are expected. Indeed, the criminal 'Symbol-Patterns' on both tests used included Z and Y - responses, only not as many as observed among the rehabilitees.

The same hypothesis seems to agree with some of the correlation coefficients obtained. (It should be emphasized that very few correlations have reached a significant level of confidence, and it is not improbable that in spite of their sig-

nificance ($p = .05$) they are 'chance correlations'. Their value is small, and does not explain more than 10% of the variance involved). Thus, $r = -.27$ (p approx. .05) for the 'number of previous convictions' and KTSA, Z - level, may be interpreted as: the more 'recidivist' the criminal (i.e. the greater the 'arrestation') the fewer are the highly abstract responses. (i.e. the greater the cognitive immaturity). The $r = -.28$ ($p < .05$) between 'age at first offence' and the same KTSA level, could imply that the older the person at the first offence (i.e. the greater the evidence of the failure on the 'decriminalization process'), the fewer 'Z - intangible' abstract responses.

Ideally, a system comprising stages of development, to indicate at approximately what phase such 'arrestation' has occurred, should be provided. In fact, there is nothing in the results which can lead to such an undertaking without ending in far-fetched, over-speculation. The only psychological theory which is closest to the suggested hypothesis is the "Conceptual Systems and Personality Organization" provided by HARVEY et. al. (1961). These authors have made provisions, in their elaborated and complex theory, for four stages of personality growth congruent with the development along the concrete-abstract dimension. Delinquency, in their view, is related to arrestation on the second stage (between the ages 5 - 8).

The difficulty in subscribing to that theory (though the present results are in harmony with it) is that the present hypothesis has not gone so far as to claim, as did HARVEY et. al. (op. cit.), that a direct relationship exists between concrete-abstract functioning and personality (including criminal behaviour). The hypothesis of 'arrested development on the decriminalization process' suggests that as far as 'criminality' is concerned, a low abstract thinking when accompanied by emotional immaturity provides a psychological condition favourable for the emergence of criminal behaviour. Probably the interaction with external conditions will determine whether such behaviour will be developed. This implies that the relationship between low level of abstraction and 'criminality' is indirect.

In all this, the above hypothesis is believed to pertain to the majority of the criminals. It is possible that a small group of criminals are, primarily, psychologically-ill, or cognitively well developed but resort to crime for other reasons, (see the following section).

The Meaning of The Criminal 'Symbol-Pattern'.

Without contradicting the foregoing, it is legitimate to speculate about the possible, indirect, impact of the typical features revealed on the criminals' 'Symbol-Pattern' on criminal conduct. The main characteristics of that 'Symbol-Pattern'

were, as follows: (a) the presence of fewer abstract responses compared with the rehabilitees, (b) ^a predominance of repetitive responses (only on the KTSA), and (c) ^a positive relationship between these two features (for both tests).

By definition, 'abstraction' means an ability to see beyond the immediate tangible propensities of an object. It has been suggested (below) that the ability to abstract not only involves the ability to integrate many parts of the immediate perceptual field into new wholes, but also to form alternative hypotheses with regard to such integrations (BOURNE, 1966). The connection between the ability to integrate alternative hypotheses and abstraction was suggested by HARVEY et. al. (1966), based on analysis of the classic works on cognitive development.

"Fourth (highest) stage of functioning is characterized by abstract standards developed through the exploration of alternative solutions against a variety of criteria... Abstract functioning is characterized by the availability of alternative conceptual schemata as a basis for relating and by the ability to hold a strong view or attitudes that does not distort incoming information". (op. cit. p. 109).

This, in the words of GOLDSTEIN and SCHEERER (1941, p. 4), is probably the ability "To grasp the essential of a given whole; to break up a given whole into parts, to isolate and to synthesize them", and "To plan ahead ideationally: to assume an attitude towards the "mere possible" and to think or perform symbolically".

A failure to acquire these abilities adequately is in accord with the often mentioned lack of emotional restraint and control,

typical of many criminals. In other words, a failure to form concepts based on evaluation of all aspects of a situation, both visible and invisible, and to integrate them into a symbolic whole is the cognitive manifestation of emotional characteristics, such as; impulsiveness, difficulties in enduring prolonged frustration, and the negation of demands (usually by authorities).

Carrying this one step further it may be hypothesized that it is expected of those criminals who encounter difficulties in evaluating complex situations properly (by taking into account all aspects and integrating them in the abstract) to arrive at incomplete evaluations. May be this explains the observation that many criminals are repeatedly caught for illegal activities which appear stupid and trivial to the outside. This does not have to do with lack of knowledge of the consequences of resorting to criminal conduct. Many criminals may know these consequences. But knowledge is one thing, and the integration of such knowledge in evaluating given circumstances is another.

Again, by definition, 'C - repetitive type responses' (and for that matter also 'K responses' on the S.T.C.) represent a cognitive tendency to adhere to 'one track of thinking' when two or more stimuli (i.e. symbol-objects) appear to be similar in some respects. The predominance of the KTSA, 'C - responses' in the criminals' 'Symbol-Pattern' is another indication of the

outcome of a low abstract level. In HARVEY's et. al. (op. cit. p. 109) words it could be a lack of "the availability of alternative conceptual schemata as a basis for relating". It is also not surprising that both C and K responses correlated positively with the abstract type of responses (the only positive correlations with the latter, see Tables 18 and 19). This implies that even when capable of producing some abstract concepts, the criminals tend to repeat them. In other words, the presence of some abstract responses in the 'Symbol-Pattern' does not necessarily indicate an ability of high level conceptualization, but could also suggest familiarity with cultural meaning of some symbols which are used repeatedly possibly with little genuine understanding.

Professor CRADDICK (private communication) is of the opinion that in order to evaluate the KTSAs, 'C - responses', it is essential to know what type of responses were repeated. This seems to minimize the independent significance of that type of responses. The opinion held in this study argues that C - level represents^s a cognitive tendency on its own, irrespective of what type of responses were repeated. Otherwise, there is no merit in having a separate C - level; it is simpler to score every response straight forwardly, regardless of whether it is a repetition or not.

The present opinion is also in harmony with the contemporary notion that perseveration and repetition are behavioural

characteristics which are important in every psychological assessment of personality.

After such an evaluation was done, it is also reasonable to comply with Professor CRADDICK's recommendations. Thus, Tables 7 and 8 (the figures in the brackets) show that on the S.T.C., X, Y and Z responses were repeated almost identically by both groups. But, on the KTSA (Tables 5 and 6, the figures in the brackets) the criminals have repeated more Z - responses, but considerably more X and Y levels. This is congruent not only with the foregoing analysis, i.e. that the criminals tend to produce lower level of abstraction with more X and D - responses, but also with HARVEY et. al. (1961) who have suggested that concreteness is associated with 'ritualism' and 'repetitive' tendencies.

"It seems to us very probably that the tendency of the more concretely functioning individual - to think categorically, to adhere rigidly to rules ... and to be ritualistic - all are expressive of his attempt to hold on to his rather tenuous way of ordering the world until he can, through further interactions with his environment and articulations of it, make available to himself a way of ordering that provides a more secure world into which to move". (op. cit. Pp. 45 - 46).

CHAPTER 8:FURTHER CONSIDERATIONS.

The findings of this study have raised three important issues which have some bearing on future investigations, using the KTSA and the S.T.C. with criminal populations. These will be discussed briefly in the next pages.

Future Refinements of The S.T.C.

The responses given for each of the 12 S.T.C. symbol-objects were presented in Table 9. On the basis of these responses, an item-analysis was computed in order to assert which object contributed most to the total 'symbolizing' scores, and which contributed very little and thus ought to be eliminated. (This was done only for 12 responses out of 20 (60%) given on 'Symbolizing' task because this was the only task which permitted comparisons of all symbol-objects). Tetrachoric correlation coefficients were computed by comparing the responses above and below the median score for each object with those above and below the median of the total score (Table 9).

The results of the item analysis are presented in the table below.

Item - analysis, based on the responses given for S.T.C.

'Symbolizing' task. (Tetrachoric correlations).

Symbol - objects.	Correlations.	
	Criminals.	Rehabilitates
1. Saloon car (N)	.46*	.67*
2. Motorbicycle (M)	.37**	.66*
3. Knife (K)	.33***	.63*
4. Truncheon (T)	.58*	.57*
5. Bulldozer (B)	.62*	.44**
6. Handcuffs (OO)	.35***	.40**
7. Ambulance (A)	.63*	.31***
8. Pair of scales (S)	.20	.47*
9. Cigar (C)	.44**	.29
10. Gun (G)	.30	.23
11. Police car (P)	.52*	.10
12. Policemen's Helmet (H)	.09	.10

N = 49

*) $p < .001$ level of significance.
 **) $p < .01$ level of significance.
 ***) $p < .05$ level of significance.

It is observed that all the correlations for every item, except for Nos. 4 and 12, vary in size from one group to another. Thus, for example, the tetrachoric correlations for the 'Knife' object are; .33 for the criminal group, and .63 for the rehabilitates. The meanings of these differences are not clear.

However, the results of the item-analysis suggests future modifications of the S.T.C. symbol-objects as follows:

(a) Reducing the number of symbol-objects: Only those objects which yielded correlation coefficients greater than $r_c = .30$

(i.e. between $p < .05$ and $p < .001$ EDWARDS, 1964 Pp. 190 - 193) for both groups were thought worthy to be retained in the test material. The other, e.g. No. 9 'Cigar' object which yielded a significant correlation for the criminals ($p < .01$) but not for the rehabilitees should be eliminated. In other words, only items that were proved to be good predictors of the total score for both groups should be retained.

Ideally, only those correlation coefficients which reached the .01 or smaller level of confidence ought to be considered. In the table above, this would have meant retaining only four objects, i.e. Nos. 1, 2 4 and 5, of the original 12. This means that 66% of the original objects will be discarded. Therefore, it was decided that when an item yielded a coefficient significant, at least, at the .01 level of confidence for one group, and with a second coefficient at $p < .05$, for the other, such an object should be retained. There is good reason to believe, that with a larger N, the latter will be increased in its level of significance.

Finally, seven objects, Nos. 1 to 7 on the above list, are suggested for future studies with the S.T.C.

(b) Introducing similarly shaped objects: Unlike the KTSA, the S.T.C. in its present version does not employ similarly shaped symbol-objects. This has lead to the omission of KTSA, C - type of responses from the latter, and to a reduction of the oppor-

tunities to produce E - shape, responses (see Table 7 and 8). It is suggested that some of the seven S.T.C. symbol-objects retained may be duplicated in different sizes and colours. This would permit the re-introduction of C - type of responses in the S.T.C. scoring principle (as this level is scored for a repetition of similarly shaped objects only). Such an improvement on the S.T.C. is important since C - level typified the criminals' KTSA 'Symbol-Pattern'.

It is suggested, therefore, to have 12 S.T.C. symbol-objects comprising, an 'Ambulance', a 'Bulldozer', three 'Knives', two pairs of 'Handcuffs', one 'Motorbicycle', two 'Saloon cars', and two 'Truncheons'.

This will make it possible for 6 repetitions to be made, (5 similarly shaped objects, and 1 repetition of reason for arrangement), or 30% out of the 20 responses required on the S.T.C. (On the KTSA, it is possible to give 37% of such responses.)

(c) Reproducing the items in different colours: In the present version of the S.T.C. the original colours of the symbol-objects as sold in toy shops were retained. Consequently, colours varied considerably from one object to another. The result was that very few colour (F) responses were given (see Tables 7 and 8).

It is suggested that when reproducing the S.T.C. symbol-objects in the future, special attention should be paid to the colour of the objects. This implies that some symbol-objects could have an identical colour, similar to the symbol-objects of the KTSA.

Concrete Thinking and The Familiarity With The Symbol-Objects.

It might have been noticed that the low KTSA-NE, and S.T.C.-NE, produced by the criminals were referred to, throughout the text, as 'low abstract level' rather than 'concrete thinking'. It is true that the concrete level of thinking was predominant in the criminals' 'Symbol-Pattern'; but on the other hand, almost every individual 'Symbol-Pattern' included also some highly abstract responses. Since the tests take into consideration the whole range of responses produced, it was thought more adequate to call this performance a 'low abstract level'.

However, the predominance of the concrete types of responses should not be overlooked. Theoretically, they could provide some clues as to the developmental stage at which 'cognitive arrestation on the decriminalization process' occurred, once such stages will be provided.

A possible objection to the method of selecting the S.T.C. symbol-object could be that the S.T.C. has employed 12 symbol-objects of which 8 were 'criminal' ones, that is, they were particularly familiar to the criminals. There is good reason to believe that familiarity with an object tends to stimulate a more concrete response. Therefore, the predominance of concrete responses in the criminals' S.T.C. 'Symbol-Pattern' may be due to their familiarity with the objects rather than an indication of their typical level of thinking. This argument may claim, further,

that since the S.T.C. objects did not include objects which were particularly familiar to the 'non-criminal' rehabilitees, they have shown a higher level of abstraction.

This objection is rejected on the following grounds.

First, it assumes that familiarity with an object inevitably leads to concrete attitudes. Such an assumption has not been proved beyond doubt. It is less likely to be relevant in the present case where the testee was asked, specifically, to state what each object symbolizes and represents, and was given examples for the task required (APPENDIX V). Perhaps the best answer to the above objection is the fact that the criminals have produced a similar, low 'level of abstraction' on the KTSA where no assumption of particular familiarity can be expected. This seems to suggest that the predominance of the more concrete type of responses in the criminals' 'Symbol-Pattern' on both tests is a general cognitive feature irrespective of familiarity with the objects.

The question of familiarity with an object and its relationship to level of abstraction is unclear, and awaits further investigation. Certainly it is not congruent with the fact that on the whole the level of performance of both groups on the S.T.C. was slightly higher than that observed on the KTSA. The average score on the S.T.C., when scored with the KTSA scoring system (Table 10) was similar to that obtained for the KTSA itself. But the former test used less objects, and responses than did the latter.

An interesting experiment will be to employ a group of prison officers who on the one hand are familiar with criminal objects but on the other are expected to demonstrate a cognitive level similar to that of the general population. Another possibility is to introduce into the test material some 'criminal' symbol-objects and some 'non-criminal' objects with special relevance to the control group. In any case, further studies of the relationship between familiarity with an object and the cognitive level of symbolizing this object are needed.

The observed concrete level displayed by the criminal group employed may suggest the possibilities of using a psychotherapeutic method which is based on concretization of experiences, thoughts, and feeling, such as, psychodrama (e.g. MORENO & KIPPER, 1968).

Predicting 'Criminality' With The KTSA and The S.T.C.

The results of the present study have suggested a possible way of identifying adult criminal recidivists. The ultimate aim was that this would eventually lead toward accurate early prevention of crime. But, early detection of criminals by means of the KTSA and S.T.C. has not yet been studied. For such a purpose, a different experimental design is needed.

The best test of such a research is a follow-up, longitudinal study with young children or adolescent testees. Such a study could employ intermediate groups, i.e. parolees, probationers and

first offenders. The predictive power of the tests could be assessed against the subsequent behaviour of these testees (allowing a period of 5 or more years).

There was a good reason to exclude, first offenders, parolees and probationers from the present study. With these people, it is difficult to know whether their 'occasional' criminal record is an indication of a quality of 'genuine lawlessness', or rather one unfortunate mischief. The inclusion of such people amongst whom some may be 'non-criminal' types could have obscured the results. This was a risk that was not desirable in a pioneering study.

Future studies can afford this risk, since the possibility of identifying criminals with the KTSA and the S.T.C. has been demonstrated. Therefore, more adequate representative samples, both criminal and control groups, should be employed. The results of the present study indicate the need to match the groups on intelligence since the relationship between the S.T.C. and intelligence is not entirely clear.

It is fair to conclude that the results of the present study justify further explorations of the KTSA and the S.T.C. with criminal populations.

Conclusion.

The two tests employed in this study revealed a typical

cognitive performance, in terms of abstract-concrete thinking, of a group of adult criminal recidivists which was not only significant, but also substantially and consistently lower than that of a group of 'non-criminal' rehabilitees. This performance was relatively independent of other factors. As expected, it failed to correlate significantly with other factors which could account for the results. (It is not known whether this is attributable to the size of the samples employed, or whether it represents genuine relationships).

It appears that the results suggest that the rationale of selecting the objects, the method of constructing the tests, and the technique used have elicited important psychological features typical of the adult criminal recidivists employed. These results justify further investigation of the exact meaning of these characteristics.

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No.	Age	AH4 _{II}	Marital Status
1.	44	30	M
2.	17	52	S
3.	33	41	M
4.	37	21	M
5.	37	38	M
6.	26	37	S
7.	39	25	M
8.	41	29	M
9.	43	17	S
10.	27	28	M
11.	35	12	S
12.	37	32	M
13.	40	36	M
14.	30	34	M
15.	41	25	M
16.	37	25	M
17.	41	37	M
18.	33	39	M
19.	40	29	M
20.	34	28	S
21.	37	31	M
22.	37	34	S
23.	22	42	S
24.	33	42	M
25.	26	39	M
26.	22	57	S
27.	35	41	M
28.	19	23	S
29.	25	36	H
30.	30	22	S
31.	37	35	S
32.	42	28	M
33.	18	49	S
34.	29	30	S
35.	19	35	S
36.	31	24	M
37.	29	26	M
38.	32	42	S
39.	19	44	S
40.	34	33	S
41.	39	24	H
42.	18	23	S
43.	41	15	S
44.	33	29	S
45.	44	30	M
46.	28	34	M
47.	24	32	S
48.	25	35	M
49.	26	30	S
	1566	1580	
M	31.96	32.24	
S.D.	7.80	8.98	

Table 2: The Criminal Group; Age, Imprisonment Index, Recidivism Index, Marital Status, and performance on the AH4 part II.

No.	AGE	AH4 part II	Imprisonment		Recidivism		Age at first offence	Marital status
			Length (mths.)	% from 17th (mth.)	Prev. conv.	Criminal career (years)		
1	25	35	18	19	5	6	19	M
2	32	13	36	20	9	14	18	S
3	31	48	30	18	9	16	15	M
4	31	7	120	71	9	12	19	S
5	23	28	25	35	5	5	18	D
6	28	20	41	31	8	13	15	M
7	26	21	23	21	14	11	15	S
8	26	38	51	47	6	17	9	M
9	30	31	63	40	10	14	16	M
10	27	17	88	73	9	21	8	M
11	30	31	68	43	10	7	23	S
12	28	23	33	25	8	6	22	S
13	23	33	33	46	8	6	17	M
14	29	11	66	46	10	9	20	M
15	25	33	84	88	11	10	15	S
16	26	21	81	75	9	11	15	S
17	29	26	112	78	12	8	21	M
18	30	15	40	26	10	14	16	S
19	29	26	120	83	10	15	14	D
20	26	21	45	42	9	12	14	S
21	28	14	105	79	8	5	23	S
22	26	21	30	28	5	9	17	D
23	26	4	30	28	8	10	16	S
24	26	44	32	30	7	11	15	M
25	26	31	72	66	8	16	10	M
26	34	27	66	32	10	20	14	M
27	25	30	25	26	12	9	16	S
28	27	37	40	33	8	13	14	D
29	32	36	48	27	10	18	14	S
30	35	21	96	44	13	20	15	M
31	30	19	84	54	10	15	15	S
32	29	35	33	23	17	12	17	M
33	30	18	81	52	12	15	15	M
34	24	39	30	36	8	8	16	D
35	26	18	60	56	7	12	14	D
36	24	29	18	21	8	8	16	S
37	33	32	148	77	10	10	23	M
38	25	25	16	17	5	7	18	S
39	31	29	117	70	14	8	23	D
40	33	29	11	6	6	18	15	M
41	31	27	61	36	11	17	14	M
42	32	28	120	66	9	17	15	S
43	29	6	130	90	10	16	13	S
44	27	39	75	63	10	3	24	M
45	33	22	72	37	6	9	24	S
46	26	28	42	39	9	12	14	D
47	31	32	52	31	15	15	16	S
48	27	24	52	43	7	8	19	M
49	29	38	138	96	9	13	16	D
Mean	1389	1280	3111	2233	453	581	810	
S.D.	2.98	9.65	35.8	22.5	2.56	4.33	3.58	

Table 3 : KTSAs 'Symbol-Pattern' for Criminal and Rehabilitation Groups.

No.	Criminal Group										Rehabilitation Group											
	Numerical Element	Letter Element										Numerical Element	Letter Element									
		1	2	3	4	5	6	7	8	9	V		1	2	3	4	5	6	7	8	9	
1.	82	C	B	Z	Y	E	X	F			111	Y	X	E	D	F	C	B				
2.	84	X	Y	D	C	B	Z	E			98	Y	X	B	Z	C	D					
3.	103	X	D	Z	Y	C	F	E	A		135	Z	Y	E	X	F	C	D				
4.	84	D	Z	B	X	C	Y	A			115	Z	C	X	D	Y	E					
5.	58	C	F	B	Y	E	D				83	D	C	E	X	Y	Z	F				
6.	73	B	X	C	Y	Z	F				99	Y	C	E	X	Z	F	D	E			
7.	39	D	X	B	F	E					118	Z	C	E	D	Y	B	A				
8.	83	Z	C	E	B	D	Y	F			78	X	B	D	Z	C	Y	E				
9.	71	C	B	Y	X	Z	E				96	X	Y	B	Z	D	C	A				
10.	105	C	Y	Z	X	F	B				122	Z	Y	X	D	C	F	E				
11.	85	C	Y	X	D	Z	B	F			82	X	F	D	Y	E	C	Z	B	A		
12.	86	X	D	Z	C	Y	F	E			104	C	Z	Y	X	B						
13.	63	C	X	B	F	D	Z	Y	E		93	Y	X	D	Z	C	F	B				
14.	82	C	X	B	Z	Y					101	Y	C	Z	X	B						
15.	68	C	B	Y	D	Z	X	E			80	C	Y	X	D	Z	E					
16.	91	C	Z	Y	X	D	B				120	Z	C	Y	X	E	D	B				
17.	73	C	X	B	Z	Y	F	E	D		108	Y	X	Z	C	F	E	D	B			
18.	82	Y	B	X	C	E					114	Y	Z	X	E	D	C	B				
19.	84	C	Y	X	Z	B	D	A			89	Y	D	C	X	F	Z	E	B			
20.	79	C	X	Z	B	B	Y	E			113	Z	C	Y	X	B						
21.	59	B	D	C	Y	Z	X				103	Y	Z	X	E	C	D	B				
22.	81	Z	B	C	D	Y	X	F	E		94	Y	X	Z	C	D	B	E				
23.	70	X	C	D	Z	Y	E	A			108	Y	X	E	Z	D	F	C				
24.	74	C	E	Z	X	Y	D	B			103	X	Y	Z	D	E	C					
25.	99	Z	B	Y	X	D	C	E			101	E	C	Z	Y	X	D	F				
26.	70	Y	C	D	X	B	Z				101	X	E	C	Y	Z	D					
27.	73	X	C	B	Z	Y	D	F	E		107	Y	Z	C	B	E	A					
28.	104	Z	C	Y	X	D	F				102	X	Z	Y	C	D						
29.	89	C	Z	X	B	Y					114	Z	C	Y	X	D	F	B				
30.	62	B	C	Y	X	D	Z	E	A		69	X	Y	C	F	D	B					
31.	56	D	X	E	F	Y	C				101	Z	C	Y	B	X	E	D				
32.	69	C	X	E	Y	F	D	B			93	D	Z	X	Y	C	F	E				
33.	65	D	X	C	Z	E	Y	F	B		64	D	F	E	Y	X	Z	C				
34.	84	C	Z	X	Y	D	B				120	Z	X	C	Y	B	A					
35.	59	B	X	C	Z	Y	F				82	C	Z	B	X	Y	E	D				
36.	81	C	X	B	Z	F	E	Y	D		128	Y	X	Z	F	E	D	C				
37.	51	D	X	E	B	F					109	Y	X	Z	D	C	B					
38.	111	X	Z	B	Y	F	E	C			88	D	Y	X	Z	C	B	E				
39.	77	X	C	B	Y	Z	D				81	F	C	Y	X	B	E	Z				
40.	41	D	B	X	C	Y	E				74	E	D	C	X	Z	Y	F	B			
41.	103	X	Z	D	C	Y	F	E	B		81	C	Y	B	X	Z	F	E				
42.	106	Z	D	E	C	Y	X	F	B		76	C	Y	X	Z	B	D	A				
43.	95	X	Z	C	B	Y	F	E	D		111	X	Y	Z	C	D	B					
44.	84	D	Y	X	E	C	F	B			110	Z	Y	C	X	B	E					
45.	91	C	Z	Y	B	F	D	X			114	Z	X	C	B	Y						
46.	137	Z	C	Y	F	X					80	E	Y	X	F	C	D	B				
47.	83	X	C	B	Y	Z					68	C	B	Y	X	Z	D					
48.	91	X	C	F	Z	Y	E	D	B		101	Y	X	E	Z	C	D					
49.	79	C	X	D	Z	E	Y	F			92	X	C	Z	Y	D	E	F	B			

3919
 Mean: 79.98
 S.D.: 18.21

4834
 98.65
 16.57

Table 4 : STC 'Symbol-Pattern' for Criminal and Rehabilitation Groups.

No.	Criminal Group										Rehabilitation Group											
	Numerical Element	Letter Element										Numerical Element	Letter Element									
		1	2	3	4	5	6	7	8	9	10		1	2	3	4	5	6	7	8	9	10
1.	64	Y	B	Z	X	D						100	X	Z	Y	D	k					
2.	80	Y	X	D	E	d	k	B				82	Y	X	k	Z	B					
3.	97	Y	Z	X	D	A						104	Z	X	Y	d						
4.	72	Y	d	X	B	k						98	Z	k	X	Y	d					
5.	53	d	Z	B	X	E	k					77	X	k	Z	Y	d	E				
6.	67	X	k	Z	Y	D	B					109	Z	X	Y	E	F	B				
7.	59	D	Y	X	k	E	B					103	Z	Y	k	B	X	D				
8.	91	k	Z	Y	X							99	Y	Z	d	X						
9.	102	Z	k	Y								118	Z	Y	X							
10.	90	Z	Y	k	X	d	B					110	Z	Y	k	X	B					
11.	62	X	d	k	Y	D						68	X	Z	D	Y	d	B	A			
12.	82	X	Z	Y	d	E	B	A				105	Y	Z	X	k						
13.	34	d	X	B	Y	D						114	Z	Y	X	d	D					
14.	47	D	Y	X	d	k	B					119	Z	Y	X	k						
15.	59	X	D	Z	Y	d	k	B				95	Z	Y	d	X	k	E				
16.	75	X	Z	d	Y	k	B					72	Y	X	k	Z	d	B				
17.	92	Z	Y	k	X	D						94	Y	k	Z	X	d					
18.	71	Z	X	d	D	k	Y	E	B			110	Z	Y	X	k	B					
19.	55	d	X	Y	Z	E	D					98	Z	Y	X	D						
20.	79	Z	Y	X	d	k	E	B				99	Z	Y	X	k	d					
21.	36	d	B	X	Z	D						76	X	d	Y	Z	B					
22.	82	Z	D	Y	X	E	B					84	Y	X	k	Z	B	F	E	D		
23.	35	B	X	Y	D	d	k	A				77	X	Y	d	Z	D	k				
24.	77	Z	B	Y	k	X	E					94	Z	Y	X	d	k					
25.	87	Z	Y	X	d	E	D	k	B	A		89	X	Y	Z	k	B					
26.	71	X	Y	D	Z	d	E	B				103	Y	Z	D	X	d	k				
27.	61	X	d	Y	Z	E	B					111	Y	Z	k	X						
28.	69	X	d	Z	Y	B	D	k				104	Y	Z	k	X						
29.	91	Z	Y	k	X	B	E					120	Z	Y	k							
30.	65	Z	d	B	X	Y	D	k				96	Z	k	Y	X	B					
31.	52	k	Y	X	B	D	Z	d				110	Z	X	Y	B						
32.	22	D	X	B	d							105	Z	Y	X	k	d	A				
33.	72	X	d	Y	Z	k						95	X	Y	Z	E	B					
34.	77	Y	k	B	Z	X	E	d	D			111	Z	k	Y	X						
35.	71	Y	X	d	Z	B	k					96	Y	Z	k	B	X					
36.	68	d	Y	X	F	Z	k	B				109	Z	Y	X	d						
37.	73	E	Y	D	X	k	Z	B				83	Y	d	X	k	Z					
38.	55	D	Z	X	B							91	X	Y	Z	k	d					
39.	93	Z	Y	k	B	X						91	X	Y	k	Z						
40.	73	Y	Z	D	k	X						95	Z	Y	E	k	X	A				
41.	107	Y	Z	d	X	E						112	Z	Y	X	E						
42.	73	d	Y	Z	X	D						97	Y	X	k	Z						
43.	75	X	Y	D	d							112	Z	Y	X	d	k	B				
44.	92	X	Y	Z	k	d	B					123	Z	Y	X							
45.	86	Y	Z	d	k	B						75	Z	k	B	d	Y	X	A			
46.	106	Z	Y	X	d	k	B					118	Y	Z	X	E						
47.	67	X	Y	d	D	Z	k	B				87	Y	Z	X	k	B	d				
48.	63	X	Y	d	D	B	Z	k				98	Y	X	Z	D	k	B				
49.	113	Z	Y	X	k	E						99	Z	Y	B	X	D	k				

3543
 Mean: 72.30
 S.D.: 19.20

4835
 98.67
 13.37

Table 5 : Distribution of the number of the Criminal Group responses for KTSa categories of abstraction.

No.	A	B	C	D	D		E	F	X	Y	Z	TOTAL
					D	a						
1.	0	6	6	0	0	0	3	1	2 (3)	3 (1)	4 (2)	25
2.	0	3	3	4	4	0	2	0	7 (3)	4	2	25
3.	1	0	2	7	6	1	1	1	7	2 (1)	6 (1)	27
4.	1	4	3	5	5	0	0	0	3	2 (1)	6 (1)	24
5.	0	5	7	1	1	0	1	6 (2)	0	4 (5)	0	24
6.	0	8	5	0	0	0	0	2	5 (1)	3 (2)	2 (2)	25
7.	0	3	0	15	15	0	1	2	3	0	0	24
8.	0	3	6	2	0	2	5	1	0	1	6 (6)	24
9.	0	5	8	0	0	0	2 (1)	0	3 (2)	4 (4)	2 (1)	24
10.	0	1	8	0	0	0	0	2	2	7 (5)	5 (3)	25
11.	0	2	6	4	4	0	0	1	4	5 (3)	3 (3)	25
12.	0	0	4	5	4	1	1 (1)	2	6	2	4 (3)	24
13.	0	4	6	3	3	0	1	3	4 (4)	1	2 (2)	24
14.	0	5	7	0	0	0	0	0	5 (5)	3	4 (2)	24
15.	0	5	5	4	4	0	2	0	2 (3)	4	2 (2)	24
16.	0	2	7	2	2	0	0	0	4 (3)	4 (4)	5	24
17.	0	4	7	1	1	0	1	2	4 (2)	2	3 (5)	24
18.	0	6	5	0	0	0	1	0	5 (1)	8 (4)	0	25
19.	1	2	7	1	1	0	0	0	5 (2)	5 (3)	3 (2)	24
20.	0	3	6	3	1	2	1	0	5 (2)	2 (2)	4 (2)	24
21.	0	7	5	5	2	3	0	0	2	3 (3)	2 (2)	24
22.	0	5	4	3	2	1	1	2	2	2	5 (4)	24
23.	1	2	5	4	3	1	1	0	7 (3)	2	2 (2)	24
24.	0	2	8	2	2	0	6	0	4 (1)	2	2 (7)	26
25.	0	4	3	3	2	1	0	1	3	3	7 (3)	24
26.	0	3	6	5	5	0	0	0	3 (1)	6 (3)	1 (2)	24
27.	0	3	6	2	2	0	1	1	7 (4)	2	2 (2)	24
28.	0	0	7	2	1	1	0	1	3	4 (5)	7 (2)	24
29.	0	5	6	0	0	0	0	0	5 (1)	3	5 (5)	24
30.	1	7	6	2	2	0	1	0	3 (2)	4 (4)	1	25
31.	0	0	1	14	14	0	3	2	5	1 (1)	0	26
32.	0	1	7	2	2	0	4 (1)	3	5 (4)	3 (2)	0	25
33.	0	1	3	10	10	0	2 (1)	1	5 (2)	1	2	25
34.	0	2	8	2	2	0	0	0	5 (4)	2 (1)	5 (3)	24
35.	0	11	3	0	0	0	0	1	7	1 (1)	1 (2)	24
36.	0	4	5	2	2	0	3 (1)	3	4	2 (1)	3 (3)	26
37.	0	3	0	10	10	0	5	1	5	0	0	24
38.	0	5	2	0	0	0	2	2	8	2 (1)	6 (1)	27
39.	0	4	6	1	1	0	0	0	8 (2)	3 (2)	2 (2)	24
40.	0	5	3	12	12	0	1	0	3 (3)	1	0	25
41.	0	1	3	5	5	0	1	1	7 (3)	2	6	26
42.	0	1	3	6	5	1	3	1	2	2 (1)	8 (2)	26
43.	0	4	4	1	0	1	1	1	7 (1)	2 (1)	5 (2)	25
44.	0	2	3	8	8	0	3	2	5 (2)	6 (1)	0	29
45.	0	3	6	2	1	1	0	2	1 (1)	5 (4)	5 (1)	24
46.	0	0	7	0	0	0	0	2	1	4 (4)	12 (3)	26
47.	0	5	6	0	0	0	0	0	6 (3)	4	3 (3)	24
48.	0	1	8	1	1	0	1 (1)	4	9 (5)	1	3 (2)	28
49.	0	0	6	5	1	4	3 (1)	1	5 (4)	2	3 (1)	25

5 162 248 166 146 20 64 (7) 55 (2) 213 (77) 141 (70) 161 (92) 1215
 Mean: 10 3.30 5.06 3.38 2.98 4.0 130.14 112.04 434 157 287 142 3.28 187 24.80
 S.D. : 3 2.31 2.08 3.63 3.67 .80 148 1.23 2.10 1.69 2.49 1.14

Table 6 : Distribution of the number of the Rehabilitation Group responses for KTSA categories of abstraction.

No.	A	B	C	D	D		E	F	X	Y	Z	Total				
					D	d										
1.	0	1	1	2	2	0	4 (1)	1	8	10	0	27				
2.	0	5	4	1	1	0	0	0	5 (2)	6 (1)	4 (1)	25				
3.	0	0	2	1	1	0	6	2	4 (1)	6 (1)	7	28				
4.	0	0	6	3	0	3	2	0	4	2	9 (6)	26				
5.	0	0	6	6	6	0	5 (1)	2	4 (2)	3 (1)	2 (2)	28				
6.	0	1	6	1	1	0	4	1	3 (2)	8 (2)	2 (2)	26				
7.	1	1	5	3	2	1	3	0	0	2	11 (5)	26				
8.	0	4	2	3	1	2	1	0	11 (2)	1	2	24				
9.	1	3	1	2	1	1	0	0	8 (1)	7	2	24				
10.	0	0	3	3	3	0	1 (1)	1	4	5	8 (2)	25				
11.	1	1	2	4	4	0	2 (1)	5	7	3 (1)	1	26				
12.	0	1	9	0	0	0	0	0	2	5 (4)	7 (5)	24				
13.	0	1	2	5	5	0	0	1	6 (2)	7	2	24				
14.	0	1	8	0	0	0	0	0	3 (2)	8 (2)	4 (4)	24				
15.	0	0	9	2	0	2	1 (1)	0	4 (3)	7 (3)	1 (2)	24				
16.	0	1	7	1	1	0	1	0	3	4 (2)	9 (5)	26				
17.	0	1	2	1	1	0	1	1	7 (1)	9 (1)	2	24				
18.	0	1	3	3	3	0	3	0	4	7 (1)	5 (2)	26				
19.	0	2	4	4	4	0	2	3	3	6 (1)	2 (3)	26				
20.	0	1	6	0	0	0	0	0	5 (2)	5	7 (4)	24				
21.	0	1	4	2	2	0	4	0	4 (1)	6	4 (3)	25				
22.	0	2	4	3	3	0	1	0	5	5 (1)	4 (3)	24				
23.	0	0	1	2	2	0	4	1	6 (1)	7	3	24				
24.	0	0	1	3	3	0	1	0	12 (1)	4	3	24				
25.	0	0	5	3	3	0	5	2	4 (2)	4 (2)	4 (1)	27				
26.	0	0	6	1	1	0	6	0	7 (1)	4 (3)	3 (2)	27				
27.	1	3	4	0	0	0	2	0	0	9 (3)	5 (1)	24				
28.	0	0	5	3	2	1	0	0	6 (1)	5 (1)	5 (3)	24				
29.	0	1	6	2	2	0	0	1	3 (1)	3 (2)	9 (3)	25				
30.	0	7	4	1	1	0	0	1 (1)	6 (3)	5	0	24				
31.	0	4	5	1	1	0	1	0	2	4 (1)	7 (4)	24				
32.	0	0	2	7	6	1	1 (1)	1	5	3	5 (1)	24				
33.	0	0	1	11	11	0	3 (1)	5	2	2	1	25				
34.	1	2	4	0	0	0	0	0	4 (1)	3 (1)	10 (2)	24				
35.	0	4	8	1	1	0	1 (1)	0	3 (5)	1	6 (2)	24				
36.	0	0	1	1	1	0	1	1	8 (1)	8	5	25				
37.	0	1	1	3	2	1	0	0	8	8	3 (1)	24				
38.	0	2	3	6	5	1	1	0	5	5	3 (3)	25				
39.	0	4	5	0	0	0	3	5 (1)	4	4 (3)	1 (1)	26				
40.	0	2	4	4	3	1	6	2	3	2 (2)	2 (2)	25				
41.	0	4	7	0	0	0	2	2 (1)	3 (3)	5 (1)	2 (2)	25				
42.	1	3	7	2	2	0	0	0	4 (4)	4 (1)	3 (2)	24				
43.	0	1	3	1	1	0	0	0	8 (2)	7	4 (1)	24				
44.	0	2	5	0	0	0	1 (1)	0	4 (2)	6 (1)	6 (1)	24				
45.	0	4	4	0	0	0	0	0	4 (3)	3	9 (1)	24				
46.	0	2	3	2	2	0	6 (1)	3	4	5 (2)	0	25				
47.	0	6	7	1	1	0	0	0	4 (3)	5 (2)	1 (2)	24				
48.	0	0	3	2	2	0	4 (2)	0	6	6 (1)	3	24				
49.	0	1	5	3	3	0	2	1	8 (3)	3	3 (2)	26				
	6	81	206	110	96	14	91(12)	42 (3)	237(58)	247(47)	201(86)	1221				
Means.	12	153	420	224	196	.28	1.95	24.85	.06	4.83	1.18	5.04	95	4.10	1.75	24.91
S. D.	.3	1.52	2.21	2.09	2.04	.63	1.90	1.34	2.38	2.14	2.80	1.14				

Table 7: Distribution of the number of the Criminal Group responses for STC categories of abstraction.

No.	A.	B	k	D	D		E	F	X	Y	Z	TOTAL
					D	d						
1.	0	7	0	2	2	0	0	0	2	7	2	20
2.	0	1	1	3	2	1	1	0	5	9 (1)	0	20
3.	1	0	0	2	2	0	0	0	4	9	4	20
4.	0	3	1	4	0	4	0	0	3	9 (1)	0	20
5.	2	3	1	5	0	5	2	0	2	1	4 (1)	20
6.	0	2	4	3	3	0	0	0	5 (1)	3	3 (3)	20
7.	0	1	2	7	7	0	1	0	4	6 (2)	0	21
8.	0	0	7	0	0	0	0	0	3	5 (4)	5 (3)	20
9.	0	0	7	0	0	0	0	0	0	3 (1)	10 (6)	20
10.	0	1	4	2	0	2	0	0	2	5 (3)	6 (1)	20
11.	0	0	4	5	1	4	0	0	8 (4)	3	0	20
12.	1	1	0	4	0	4	1	0	6	4	4	21
13.	0	3	0	12	2	10	0	0	3	2	0	20
14.	0	1	2	9	6	3	0	0	4 (1)	4 (1)	0	20
15.	0	2	2	6	4	2	0	0	5	2	3 (2)	20
16.	0	2	2	3	0	3	0	0	7	2	4 (2)	20
17.	0	0	4	2	2	0	0	0	3 (1)	5 (2)	6 (1)	20
18.	0	1	2	6	3	3	1	0	5 (1)	1 (1)	5	21
19.	0	0	0	10	1	9	1	0	6	2	1	20
20.	0	1	3	3	0	3	2	0	3	4	4 (3)	20
21.	0	4	0	11	1	10	0	0	3	0	2	20
22.	0	1	0	6	6	0	1	0	3	3	7	21
23.	1	5	2	5	3	2	0	0	4	3 (2)	0	20
24.	0	6	2	0	0	0	1	0	1	4	6 (2)	20
25.	1	1	1	3	1	2	1	0	2	4	7 (1)	20
26.	0	1	0	6	4	2	1	0	7	4	2	21
27.	0	1	0	7	0	7	1	0	8	2	1	20
28.	0	2	1	5	1	4	0	0	6	3	3 (1)	20
29.	0	2	4	0	0	0	1	0	3	4	6 (4)	20
30.	0	4	1	5	1	4	0	0	3	2	5 (1)	20
31.	0	3	7	3	2	1	0	0	3	3	1 (7)	20
32.	0	3	0	12	10	2	0	0	5	0	0	20
33.	0	0	1	6	0	6	0	0	8 (1)	3	2	20
34.	0	3	3	2	1	1	2	0	2	7	2 (3)	21
35.	0	2	1	5	0	5	0	0	5	5 (1)	2	20
36.	0	1	1	7	0	7	0	2	4	5	1 (1)	21
37.	0	1	3	4	4	0	6	0	3	5 (3)	1	23
38.	0	1	0	9	9	0	0	0	5	0	5	20
39.	0	2	5	0	0	0	0	0	1	5	7 (5)	20
40.	0	0	2	3	3	0	0	0	1	11 (1)	3 (1)	20
41.	0	0	0	3	0	3	1	0	2	9	5	20
42.	0	0	0	9	2	7	0	0	2	5	4	20
43.	0	0	0	5	4	1	0	0	8	7	0	20
44.	0	1	2	1	0	1	0	0	7	6	3 (2)	20
45.	0	2	3	3	0	3	0	0	0	7 (1)	5 (2)	20
46.	0	1	1	2	0	2	0	0	2	4	10 (1)	20
47.	0	1	1	6	2	4	0	0	6 (1)	5	1	20
48.	0	2	1	4	2	2	0	0	9	3	1 (1)	20
49.	0	0	3	0	0	0	1	0	3	6	8 (3)	21

6 79 91 220 91 129 25 2 196(10) 211(24) 161(57) 991
 Mean: 12 1.61 1.85 4.49 1.85 2.63 .51 .04 4.0 4.30 3.28 20.22
 S.D.: 3 1.57 1.89 3.10 2.37 2.71 .99 .28 2.2 2.47 2.66 5.4

Table 8: Distribution of the number of the Rehabilitation Group responses for STC categories of abstraction.

No.	A	B	k	D		E	F	X	Y	Z	TOTAL
				$\frac{D}{n}$	$\frac{d}{d}$						
1.	0	0	1	2	2	0	0	7	4	6 (1)	20
2.	0	2	4	0	0	0	0	6	6 (3)	2 (1)	20
3.	0	0	0	2	0	2	0	6	6	6	20
4.	0	0	5	1	0	1	0	3	2	9 (5)	20
5.	0	0	4	3	0	3	1	0	6	3 (1) 3 (3)	20
6.	0	1	0	0	0	0	2	1	5	4	21
7.	0	2	2	1	1	0	0	0	1 (1)	3 11 (1)	20
8.	0	0	0	4	0	4	0	0	3	8 5	20
9.	0	0	0	0	0	0	0	0	5	7 8	20
10.	0	1	3	0	0	0	0	0	1 (1)	5 (1) 10 (1)	20
11.	1	1	0	3	2	1	0	0	12	1 2	20
12.	0	0	3	0	0	0	0	0	3	11 (3) 3	20
13.	0	0	0	2	1	1	0	0	2	7 9	20
14.	0	0	2	0	0	0	0	0	2	5 (1) 11 (1)	20
15.	0	0	2	4	0	4	1	0	3	4 6 (2)	20
16.	0	2	4	3	0	3	0	0	4	4 3 (4)	20
17.	0	0	5	2	0	2	0	0	3 (1)	6 (4) 4	20
18.	0	1	2	0	0	0	0	0	3	4 10 (2)	20
19.	0	0	0	3	3	0	0	0	5	6 6	20
20.	0	0	3	1	0	1	0	0	5	5 6 (3)	20
21.	0	1	0	4	0	4	0	0	10	3 2	20
22.	0	2	3	1	1	0	1	1	4	7 (3) 2	21
23.	0	0	1	4	1	3	0	0	10	3 (1) 2	20
24.	0	0	1	4	0	4	0	0	4	5 6 (1)	20
25.	0	1	3	0	0	0	0	0	8 (3)	5 3	20
26.	0	0	1	3	2	1	0	0	1	9 (1) 6	20
27.	0	0	3	0	0	0	0	0	2	8 (2) 7 (1)	20
28.	0	0	4	0	0	0	0	0	3	7 (2) 6 (2)	20
29.	0	0	3	0	0	0	0	0	0	15 (1) 12 (2)	20
30.	0	1	5	0	0	0	0	0	3	3 (1) 8 (4)	20
31.	0	1	0	0	0	0	0	0	6	5 8	20
32.	1	0	2	1	0	1	2	0	4 (1)	6 6 (1)	22
33.	0	1	0	0	0	0	1	0	9	7 2	20
34.	0	0	4	0	0	0	0	0	2	3 11 (4)	20
35.	0	2	4	0	0	0	0	0	1	7 (1) 6 (3)	20
36.	0	0	0	2	0	2	0	0	4	7 7	20
37.	0	0	2	6	0	6	0	0	3 (1)	8 (1) 1	20
38.	0	0	3	1	0	1	0	0	8	4 4 (3)	20
39.	0	0	3	0	0	0	0	0	9 (2)	7 (1) 1	20
40.	1	0	3	0	0	0	3	0	2	5 6 (3)	20
41.	0	0	0	0	0	0	1	0	6	6 7	20
42.	0	0	2	0	0	0	0	0	8 (2)	9 1	20
43.	0	1	1	1	0	1	0	0	1	7 9 (1)	20
44.	0	0	0	0	0	0	0	0	3	8 9	20
45.	1	3	4	2	0	2	0	0	1	1 8 (4)	20
46.	0	0	0	0	0	0	1	0	5	10 5	21
47.	0	2	3	1	0	1	0	0	4	6 4 (3)	20
48.	0	1	1	1	1	0	0	0	4	11 (1) 2	20
49.	0	3	1	1	0	1	0	0	1	6 (1) 8	20

Σ 29 99 63 14 49 13 2 211(12) 279(29) 287(56) 985
 M: .08 .59 1.97 1.28 .28 1.0 .26 .04 4.30 5.69 5.85 20.10
 S.D.: .27 .85 1.62 1.52 .67 1.4 .63 .19 2.75 2.28 3.00 .36

Table 9 : Distribution of Symbolizing scores on the STC 'Symbolizing' task, for each object, for the Criminal and the Rehabilitation groups.

No.	Criminal group											Rehabilitation Group														
	H	O	P	S	T	G	K	M	B	A	C	N	Tot.	H	O	P	S	T	G	K	M	B	A	C	N	Tot.
1.	7	6	0	6	6	0	0	0	4	6	0	6	41	0	7	7	4	7	4	6	7	7	6	2	6	63
2.	6	4	6	1	2	6	4	0	4	6	6	0	45	6	2	6	7	6	7	2	6	4	6	6	6	62
3.	6	6	0	7	7	0	-1	6	6	7	6	6	56	4	7	7	7	0	6	7	6	7	4	7	7	68
4.	4	6	6	1	1	2	1	6	6	6	6	6	51	7	2	2	7	2	7	2	6	4	4	7	2	52
5.	-1	1	1	-1	7	4	1	2	1	1	6	7	29	2	2	1	2	4	1	7	2	7	1	6	2	41
6.	4	0	0	2	0	2	2	7	0	6	7	2	32	4	6	7	6	7	7	7	6	7	7	7	7	78
7.	0	4	0	0	0	6	0	2	0	2	6	6	26	7	7	2	0	7	0	7	6	7	7	6	7	63
8.	2	2	6	7	2	2	6	2	7	6	7	2	51	7	7	1	6	7	1	4	1	6	2	7	7	49
9.	2	2	7	7	2	2	7	2	7	6	7	2	53	2	2	6	7	7	6	7	6	6	4	6	6	65
10.	2	4	2	7	2	7	1	2	0	6	4	1	38	7	2	4	7	7	6	7	6	7	2	2	6	63
11.	2	2	0	1	4	6	6	2	4	1	1	4	33	4	4	4	4	-1	0	4	4	0	7	6	1	37
12.	-1	7	4	1	6	1	1	1	1	6	7	6	45	4	2	6	6	6	6	7	6	6	2	6	7	64
13.	4	6	0	1	4	1	1	1	1	1	1	6	30	7	0	6	7	7 ^b	6	6	6	6	1	6	6	65
14.	0	0	0	1	0	0	0	6	6	6	6	2	27	6	6	2	7	7	2	7	7	7	7	7	7	72
15.	1	6	1	0	1	1	7	2	6	4	2	7	38	6	4	1	1	7	2	2	1	6	1	6	7	44
16.	4	6	4	1	0	2	7	4	1	0	4	4	37	7	2	0	2	2	6	2	4	6	6	2	7	46
17.	6	2	0	0	2	2	7	7	6	4	6	7 ^b	49	2	2	6	4	2	4	2	2	6	6	6	6	48
18.	4	0	7	7	0	0	0	2	0	1	4	6	31	7	6	2	7	2	4	6	7	7	7	6	7	68
19.	0	1	6	1	6	1	1	1	1	1	1	4	24	6	0	6	7	4	0	0	6	6	7	4	7	53
20.	7	2	2	4	4	1	1	2	6	0	7	6	42	2	6	7	6	2	2	7	6	1	7	6	7	59
21.	7	1	1	1	0	1	1	1	1	1	1	1	17	4	4	4	7	4	0	4	1	4	4	7	1	44
22.	4	0	0	7	0	0	7	0	7	6	0	0	31	2	2	6	6	2	7	0	6	6	4	0	7	48
23.	0	6	6	0	6	-1	0	0	0	6	0	0	23	0	2	7	1	6	4	4	4	1	6	7	4	46
24.	0	0	0	0	0	2	7	2	7	6	7	7	38	7	1	7	4	6	7	7	6	2	6	6	7	66
25.	0	0	0	4	7	7	7	2	6	6	7	7	53	2	6	4	6	2	6	7	4	6	2	7	6	58
26.	0	4	0	1	0	4	7	0	4	6	1	6	33	6	6	7	6	2	6	0	6	6	6	7	7	59
27.	4	0	6	1	1	4	1	1	4	4	6	1	33	2	6	6	7	7	2	6	6	6	6	7	2	63
28.	4	0	1	4	1	7	2	0	6	1	4	0	30	2	7	6	7	2	2	2	7	7	6	7	7	62
29.	2	2	7	4	2	2	7	6	6	0	7	7	52	7	6	6	7	7	2	2	2	6	7	6	6	64
30.	7	1	0	6	1	1	1	0	0	4	2	7	30	2	2	7	6	2	6	2	7	7	6	2	7	56
31.	2	7	2	2	2	2	2	2	6	0	4	1	32	4	7	7	7	7	7	6	6	6	6	7	7	77
32.	0	0	0	0	0	0	0	0	1	0	1	0	2	2	1	7	-1	7	6	7	6	6	6	7	7	61
33.	4	1	1	1	4	1	6	1	1	4	7	7	38	4	6	4	7	4	6	6	6	7	4	4	6	64
34.	0	7	6	0	2	6	0	2	6	1	2	7	39	2	2	7	7	7	2	2	6	7	6	7	7	62
35.	1	1	6	1	1	1	1	2	6	6	6	6	38	2	2	7	6	2	0	0	6	7	6	4	6	48
36.	1	1	1	6	1	6	1	7	1	1	6	2	34	6	0	7	7	0	6	0	6	7	4	6	7	56
37.	0	0	6	0	0	2	0	2	6	6	7	6	35	6	6	1	1	6	2	4	2	1	6	6	6	47
38.	0	0	0	7	0	0	0	0	4	0	7	0	18	7	2	2	2	7	6	4	4	6	1	6	4	51
39.	2	2	7	7	2	2	7	2	4	6	6	7	54	4	7	6	6	2	2	4	4	6	6	6	2	55
40.	0	0	6	6	0	2	7	6	6	6	7	6	52	2	2	7	7	2	7	-1	6	7	6	6	6	57
41.	7	7	6	6	4	1	1	6	1	6	6	7	58	4	6	6	4	4	6	7	4	6	6	6	7	66
42.	0	1	4	6	7	1	1	4	6	1	7	1	39	4	6	7	6	6	4	2	2	6	4	6	6	59
43.	4	4	6	0	4	0	0	4	0	6	6	1	35	6	7	6	7	7	7	2	6	7	4	6	7	72
44.	4	6	7	4	2	7	2	6	1	7	4	6	56	6	6	4	7	7	7	7	7	4	6	6	7	74
45.	7	1	6	2	2	1	0	0	6	6	7	1	38	2	2	7	7	2	2	7	7	6	0	0	6	50
46.	7	6	1	4	1	2	7	4	6	6	7	7	59	4	6	7	7	7	6	6	7	6	6	6	6	74
47.	0	1	4	6	1	2	4	6	6	1	7	0	38	2	2	7	4	6	2	7	4	6	6	6	6	58
48.	6	1	4	1	7	4	2	4	0	6	6	0	41	6	6	7	6	2	6	0	4	6	6	6	4	59
49.	2	2	7	7	2	6	7	7	6	7	6	7	66	4	2	7	7	6	1	0	6	6	0	7	7	53

1890 204 233 194 186 194 201 189 262 262 219 215 201 267 251 258 290 2869

Table 10 : STC numerical Element (KTSA scoring) for Criminal and Rehabilitation Groups.

No.	Crim.	Rehab.
	NE	NE
1.	75	103
2.	82	82
3.	104	110
4.	74	102
5.	61	76
6.	71	118
7.	65	121
8.	89	104
9.	105	126
10.	93	118
11.	59	74
12.	88	105
13.	39	124
14.	52	128
15.	66	93
16.	79	73
17.	96	87
18.	78	119
19.	57	107
20.	81	102
21.	43	79
22.	96	86
23.	46	79
24.	87	99
25.	96	90
26.	78	110
27.	63	115
28.	74	106
29.	93	129
30.	84	108
31.	61	119
32.	35	109
33.	73	95
34.	80	118
35.	74	100
36.	69	108
37.	76	76
38.	70	92
39.	97	89
40.	99	98
41.	108	119
42.	79	96
43.	79	121
44.	92	132
45.	90	83
46.	116	123
47.	70	90
48.	69	101
49.	118	109

3829 5051
 Mean: 78.14 103.08
 S.D.: 18.58 16.07

Table 11 : Combined scoring system (KTSA+STC) for Criminal and Rehabilitation Groups.

No.	Crim.	Rehab.
	NE	NE
1.	73	106
2.	82	90
3.	100	120
4.	78	107
5.	47	80
6.	70	104
7.	49	111
8.	87	89
9.	87	107
10.	98	116
11.	74	75
12.	84	105
13.	49	104
14.	65	110
15.	64	88
16.	83	96
17.	83	101
18.	77	112
19.	70	94
20.	79	106
21.	48	90
22.	82	89
23.	53	93
24.	76	99
25.	93	95
26.	71	102
27.	67	109
28.	87	103
29.	90	117
30.	64	83
31.	54	106
32.	46	99
33.	69	80
34.	81	116
35.	65	89
36.	75	119
37.	62	96
38.	83	90
39.	85	86
40.	57	85
41.	105	97
42.	90	87
43.	85	112
44.	88	117
45.	89	95
46.	122	99
47.	75	78
48.	77	100
49.	96	96

3734 4848
 76.20 98.93
 16.02 11.17

Table 12: KTSA and STC pair-matching results for selected groups of criminals and rehabilitees matched for Intelligence (AH4 part II).

Selected Criminal Group							Selected Rehabilitation Group						
No.	Pre No.	AH4	Age	K T S A		S T C		Pre No.	Age	K T S A		S T C	
				NE	Letter E.	NE	Letter E.			NE	Letter E.	NE	Letter E.
1.	(13)	15	30	82	YBKCE	71	ZXdDkYEB	(43)	41	111	XYZCDE	112	ZYXdkB
2.	(10)	17	27	105	CYZXFB	90	ZYkXdB	(9)	43	96	XYBZDCA	118	ZYX
3.	(30)	21	35	62	BCYXDZEA	65	ZdEKYDk	(4)	37	115	ZCXDYF	98	ZkXYd
4.	(45)	22	33	91	CZYFDEX	86	YZdkB	(30)	30	69	BXYCFD	96	ZkYXB
5.	(12)	23	28	86	XDZCYFE	82	XZYdEBA	(28)	19	102	XZYCD	104	YZkX
6.	(48)	24	27	91	KCFZYDB	63	XYdDBZk	(36)	31	128	YXZFEDC	109	ZYXd
7.	(38)	25	25	111	XZBYFEC	55	DZXB	(16)	37	120	ZCYXEDB	72	YXkZdB
8.	(19)	26	29	84	CYZBDA	55	dXYZED	(37)	29	109	YXZDCB	83	YDXkZ
9.	(5)	28	23	58	CFBYED	53	dZBXEk	(20)	34	113	ZCYXB	99	ZYXkd
10.	(42)	28	32	106	ZDECYXFB	73	dYZXD	(32)	42	93	DZXYCFE	105	ZYXkdA
11.	(46)	28	26	137	ZCYFX	106	ZYXdkB	(10)	27	122	ZYXDCEF	110	ZYkXB
12.	(36)	29	24	81	CXBZFEYD	68	dYXFZkB	(8)	41	78	XBDZCYE	99	YZdX
13.	(39)	29	31	77	KCBYZD	93	ZYkBY	(19)	40	89	YDCXFZEB	98	ZYXD
14.	(40)	29	33	41	DBCKYE	73	YZDkX	(44)	33	110	ZYCXBE	123	ZYX
15.	(27)	30	25	73	KCBZYDFE	61	KdYZEB	(1)	44	111	YXEDFCB	100	XZYDk
16.	(25)	31	26	99	ZBYXDCE	87	ZYXdEDkBA	(21)	37	103	YZXECDB	76	XdYZB
17.	(37)	32	33	51	DXEBF	73	EYDXkZB	(12)	37	104	CZYXB	105	YZXk
18.	(47)	32	31	83	KCBYZ	67	XYdDBZk	(47)	24	68	CBXZD	87	YZXkBa
19.	(15)	33	25	68	CBYDZXE	59	XDZYdkB	(40)	34	73	FCYDZYFB	95	ZYELXA
20.	(1)	35	25	82	CBZYEXF	64	YBZXD	(35)	19	82	CZBXIED	96	YZkEX
21.	(32)	35	29	69	CEXYFDB	22	DXBd	(48)	25	101	YXEZCD	98	YXZDkB
22.	(29)	36	32	99	CZXBY	91	ZYkXBE	(29)	25	114	ZCYXFB	120	ZYX
23.	(28)	37	27	104	ZCYXDF	69	XdZYRDk	(6)	26	99	YCEXZFDB	109	ZXYEFB
24.	(8)	38	26	83	ZCERDYF	91	kZYX	(5)	37	83	DCEXYZF	77	kZYE
25.	(34)	39	24	84	CZXIDB	77	YkBZXEAd	(18)	33	114	YZXEDCB	110	ZYXkBa
26.	(44)	39	27	84	DYXGCFB	92	KYZkdB	(25)	26	101	ECZYXDF	89	KYZkBa
27.	(24)	44	26	74	CEZYXDB	77	ZBYkXE	(39)	19	81	FCYXBEZ	91	KYkZ

	805	759	2255	1963	870	2689	2679
Mean:	29.8	28.1	83.14	72.70	32.2	99.24	99.22
S.S.:	10.35	7.76	20.40	16.75	4.20	17.80	12.81

Table 13 : The Criminal Group; Correlation coefficient matrix for Age, Intelligence, Criminality indices, KTSA, STC, and KTST.

VARIABLE	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
AGE	(1) : --									
AH _i	(2) : -.119									
LENGTH IMPR.	(3) : .438 ^a	-.175								
% FROM 17th	(4) : .043	-.126	.895 ^a							
PREV. CONV.	(5) : .363 ^a	-.053	.292 ^a	.163						
CRIM. CAREER	(6) : .544 ^a	-.068	.185	.019	.225					
AGE 1st OFF.	(7) : .168	-.027	.117	.025	.028	-.733 ^a				
K.T.S.A.	(8) : .076	.092	-.002	.026	-.176	.118	-.190			
S.T.C.	(9) : .231	.359 ^a	.200	.111	-.089	.296 ^a	-.156	.436 ^a		
K.T.-S.T.	(10) : .115	.263	-.052	.105	-.133	.261	-.205	.837 ^a	.851 ^a	--

N= 49.

Table 14 : The Rehabilitation Group; Correlation coefficient matrix for Age, Intelligence, KTSA, STC, and KTST.

VARIABLE	(1)	(2)	(3)	(4)
AGE	(1) : ---			
AH _i	(2) : -.443 ^a			
K.T.S.A.	(3) : .206	-.045		
S.T.C.	(4) : .052	-.060	.186	
K.T.-S.T.	(5) : .182	-.071	.819 ^a	.715 ^a

N= 49

- ^a) .05 level of significance.
- ^b) .01 level of significance.
- ^c) .02 level of significance.

Table 15: The Rehabilitation Group; Correlation coefficient matrix for Age, Intelligence, KTSA, STC, KTST and Levels of Abstraction.

		Levels of Abstraction										
		A	B	C/k	D	(D)	d	E	F	X	Y	Z
AGE	K :	-.070	-.587"	-.153	-.010			-.101	-.170	.104	.173	.089
	S :	.262	-.110	-.138	.298'	.148	.244	.094	-.012	-.151	-.268	.268
AHI	K :	-.444"	.032	-.040	.120			.407"	.102	-.140	.013	-.106
	S :	-.217	-.019	.031	-.045	.019	-.056	.050	.075	.092	.193	-.216
KTSA	K :	.007	-.363"	-.166	-.371"			-.038	-.378"	.010	.311'	.709"
	STC S :	-.288'	-.390'	-.292'	-.533"	-.158	-.485"	.027	-.033	-.470"	.404"	.701"
KTST	K :	.029	-.281'	-.091	-.374"			-.092	-.370"	-.057	.343"	.585"
	S :	-.271	-.243	-.136	-.235	-.106	-.197	-.259	-.043	-.473"	.124	.681"

N= 49.

K: Correlations with K.T.S.A. levels of abstraction.
 S: Correlations with S.T.C. levels of abstraction.

- ') .05 level of significance.
- ") .01 level of significance.
- ''') .02 level of significance.

Table 16: The Criminal Group; Correlation coefficient matrix for Age, AH4 part II, KTSA, S.T.C., KTST and levels of abstraction.

		Levels of abstraction										
		A	B	C/K	D	(D)	d	E	F	X	Y	Z
AGE	K:	.23	-.03	-.22	.25			.06	-.41 ^{''}	.09	.16	-.12
	S:	-.23	-.26	.11	-.12	.00	-.14	.06	-.21	.06	.33 ^{'''}	.02
AH4	K:	-.16	-.21	.14	.01			.36 ^{''}	.07	-.12	-.05	.07
	S:	.06	-.04	.12	-.34 ^{'''}	-.20	-.20	.17	.05	-.20	.11	.33 ^{'''}
KTSA	K:	.01	-.38 ^{''}	.22	-.47 ^{''}			-.20	.01	.05	.32 [']	.86 ^{''}
STC	S:	-.10	-.45 ^{''}	.30 [']	-.78 ^{''}	-.50 ^{''}	-.45 ^{''}	.09	-.03	-.28 [']	.52 ^{''}	.71 ^{''}
KTST	K:	-.06	-.35 ^{'''}	.12	-.29 [']			-.11	-.13	.01	.24	.75 ^{''}
	S:	-.14	-.40 ^{''}	.08	-.56 ^{''}	-.38 ^{''}	-.30 [']	-.09	-.01	-.13	.37 ^{''}	.64 ^{''}

N= 49

K= Correlations with KTSA levels of abstraction.

S= Correlations with S.T.C. levels of abstraction.

- ') .05 level of significance.
- '') .01 level of significance.
- ''') .02 level of significance.

Table 17: The Criminal Group; Correlation coefficient matrix for Indices of Criminality and K.T.S.A. and S.T.C. levels of Abstraction.

		Levels of Abstraction.										
		A	B	C/k	D	(D)	d	E	F	X	Y	Z
LENGTH OF IMP.	K:	.15	-.07	-.08	.10			.01	.25	-.01	.05	.02
	S:	-.20	-.22	.17	-.05	-.18	.09	.14	-.17	.00	.04	.06
% FROM 17th	K:	.04	-.04	.03	-.00			-.02	-.14	.08	.05	.06
	S:	-.11	-.16	.16	-.03	-.23	.16	.05	-.15	.04	-.08	.08
PREV. CONV.	K:	.07	-.14	-.01	.14			-.04	-.21	.26	.09	-.27 ⁽¹⁾
	S:	-.24	-.18	.05	.17	.18	.04	-.03	-.07	.23	-.10	-.17
CRIM. CAREER	K:	.21	-.08	-.07	.08			-.05	.38 ⁽¹⁾	-.07	.12	.15
	S:	-.09	-.31 ⁽¹⁾	.12	-.17	-.05	-.15	-.06	-.12	-.08	.24	.18
AGE 1st OFF.	K:	-.06	.06	-.08	.09			.00	.12	.15	.01	-.28 ⁽¹⁾
	S:	.08	.15	-.04	.10	.06	.06	.12	-.02	.04	-.02	-.19

N= 49.

K: Correlations with K.T.S.A. levels of abstraction.

S: Correlations with S.T.C. levels of abstraction.

(¹) Nearly .05 level of significance.

¹) .05 level of significance.

²) .01 level of significance.

Table 18 : Correlation coefficient matrix for the frequency of responses for each KTSA level of abstraction, produced by both groups.

	Levels of abstraction.								
	A	B	C	D	E	F	X	Y	Z
A	*								
B: (R)	-.04	*							
(C)	-.04	*							
C: (R)	-.03	.20	*						
(C)	-.07	-.03	*						
D: (R)	.01	-.35" ⁸	-.38" ⁸	*					
(C)	.03	-.33 ¹	-.71" ¹	*					
E: (R)	-.20	-.30 ¹	-.13	.18	*				
(C)	-.16	-.21	-.18	.26	*				
F: (R)	-.01	-.08	-.23	.39" ¹	.41" ¹	*			
(C)	-.25	-.14	.01	-.01	.12	*			
X: (R)	-.00	-.16	-.53" ¹	.05	-.13	-.10	*		
(C)	.10	-.07	-.19	-.03	-.07	-.12	*		
Y: (R)	-.18	-.13	-.22	-.31 ¹	-.05	-.18	.13	*	
(C)	.02	.03	.41" ¹	-.40" ¹	-.32 ¹	-.13	-.23	*	
Z: (R)	.16	-.07	.23	-.25	-.24	-.42" ¹	-.38" ¹	-.29 ¹	*
(C)	.04	-.30 ¹	.14	-.33 ¹	-.23	-.06	-.17	.00	*

N= 49 each group.

')=.05 level of significance.

")=.01 level of significance.

"')=.02 level of significance.

(R) = Rehabilitation group¹

(C) = Criminal group.

Table 19: Correlation coefficient matrix for the frequency of responses for each S.T.C. level of abstraction, produced by both groups.

	Levels of abstraction											
	A	B	K	D	(D)	d	E	F	X	Y	Z	
A	*											
B : (R)	.14	*										
(C)	.14	*										
K : (R)	.04	.18	*									
(C)	-.12	-.10	*									
D : (R)	.04	-.11	-.21	*								
(C)	-.04	.02	-.58 ^{''}	*								
(D) : (R)	.09	-.04	-.31 [']	-.31 [']	*							
(C)	-.07	-.00	-.24	.53 ^{''}	*							
d : (R)	.00	-.09	-.07	.90 ^{''}	-.12	*						
(C)	.01	.02	-.45 ^{''}	.67 ^{''}	-.26	*						
E : (R)	.46 ^{''}	-.10	-.07	-.14	-.13	-.08	*					
(C)	.13	-.05	.00	-.08	.03	-.12	*					
F : (R)	-.06	.21	-.06	-.10	.06	-.14	.40 ^{''}	*				
(C)	-.04	-.05	-.06	.11	-.11	.23	-.07	*				
X : (R)	.04	-.14	-.30 [']	.15	.17	.08	.01	.01	*			
(C)	-.15	-.23	-.33 ^{''}	.32 [']	.16	.22	-.12	.00	*			
Y : (R)	-.31 [']	-.24	-.25	-.17	-.03	-.17	-.02	-.01	-.17	*		
(C)	-.08	-.20	.03	-.46 ^{''}	-.22	-.35 ^{''}	.03	.04	-.27	*		
Z : (R)	-.03	-.01	-.00	-.34 ^{''}	-.10	-.31 [']	-.05	-.05	-.66 ^{''}	-.25	*	
(C)	.05	-.17	.30 [']	-.54 ^{''}	-.31 [']	-.35 ^{''}	-.03	-.12	-.52 ^{''}	-.03	*	

N= 49

- ') .05 level of significance.
- '') .01 level of significance.
- ''') .02 level of significance.

(R)= Rehabilitation group
(C)= Criminal group.

Table 20: AH4 part II and S.T.C.-NE: Analysis of covariance for the Criminal and Rehabilitation groups.

	:	Total	Within	Between
Sum of products	:	6783.19	2828.09	3955.10
Sum of squares (Y), S.T.C.-NE	:	44239.48	17033.30	27206.18
Sum of squares (X), AH4 II	:	8859.69	918.37	7941.32
df.	:	97	96	1
Adjusted $\sum Y^2$:	39046.11	8324.29	30721.82
df.	:	96	95	1

$$F(\text{Adjusted } \sum Y^2) = 350.61 (p < .001)$$

$$F(X, \text{AH4 II}) = 830.68 (p < .001)$$

$$F(Y, \text{S.T.C.}) = 153.33 (p < .001)$$

FREQUENCY

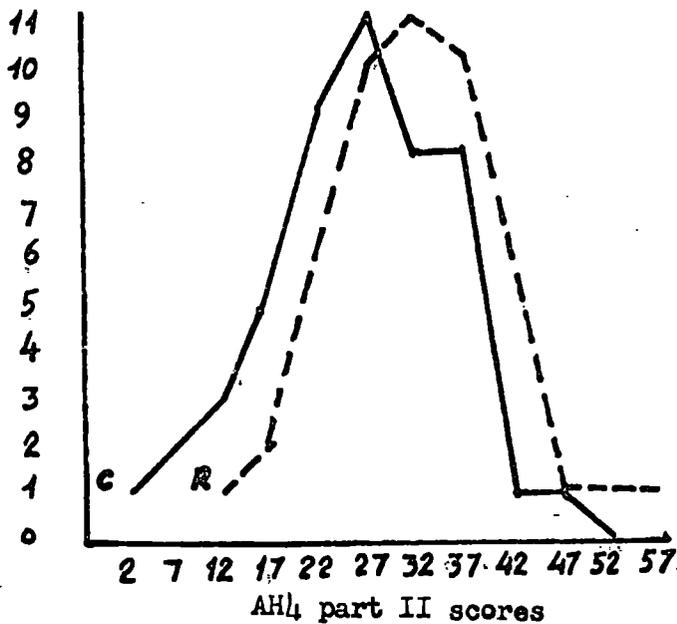


FIGURE 1 : Distribution of AH4 part II scores for Criminals (C) and Rehabilitees (R).
FREQUENCY

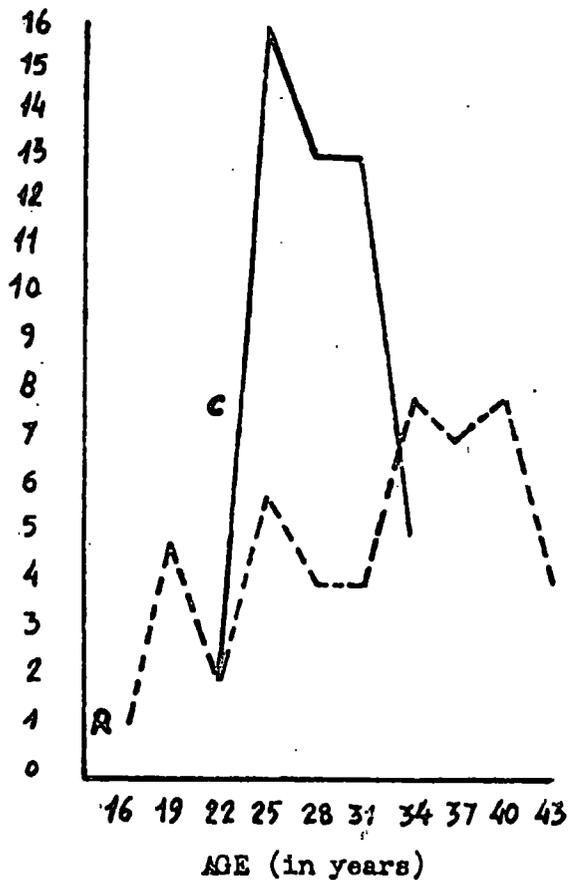


FIGURE 2 : Distribution of Age for Criminals (C) and Rehabilitees (R).

FREQUENCY

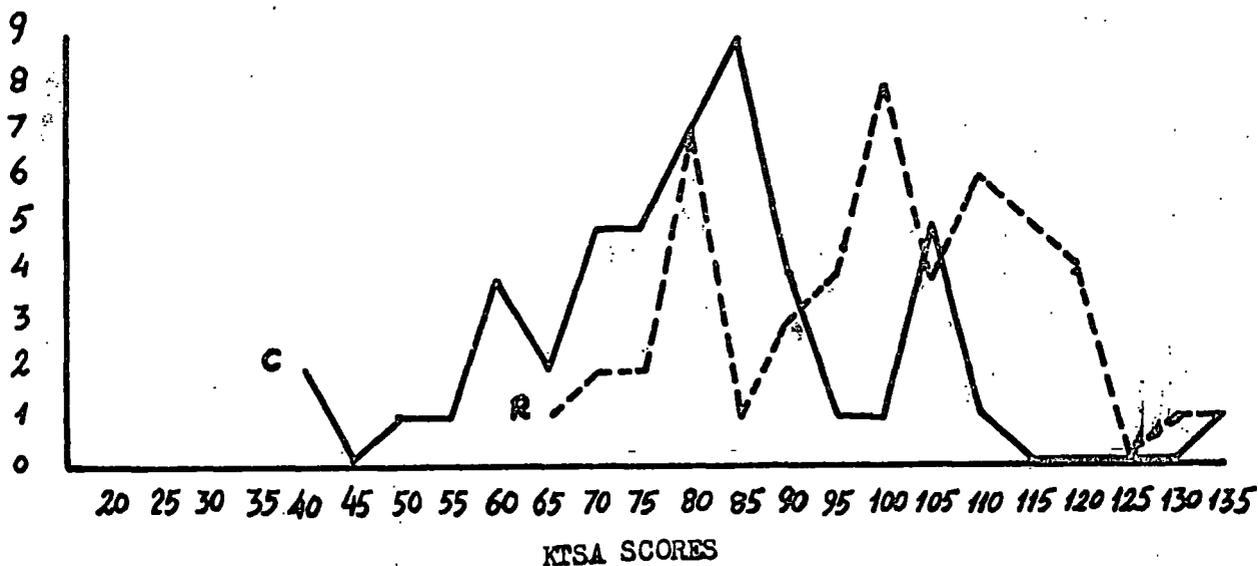


FIGURE 3: Distribution of KTSA-NE for Criminals (C) and Rehabilitees (R).

FREQUENCY

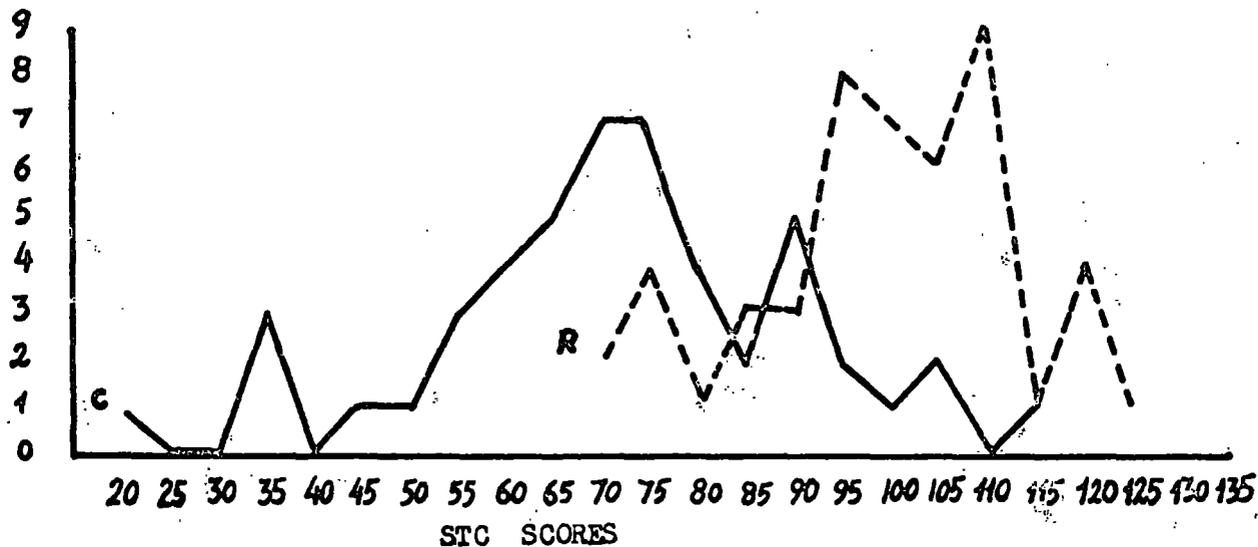


FIGURE 4: Distribution of STC-NE for Criminals (C) and Rehabilitees (R).

f
(Means)

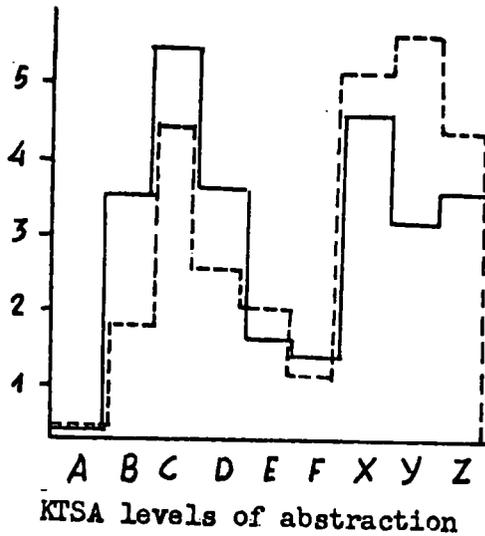


FIGURE 5 : Distribution of KTSA responses (Means) for each of the nine levels of abstraction for both criminals and rehabilitees.

f
(Means)

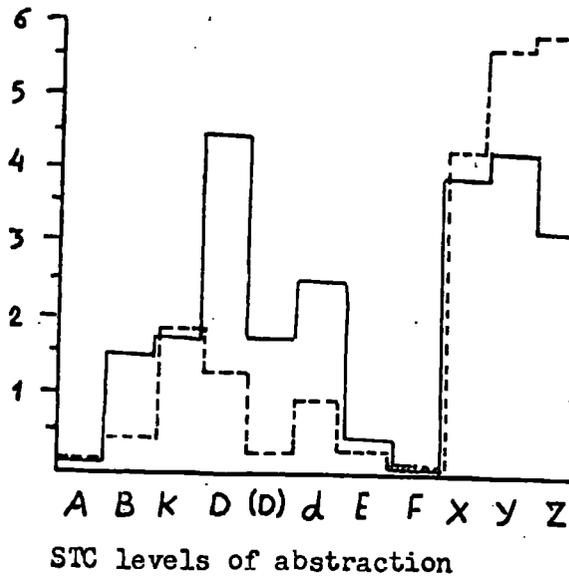
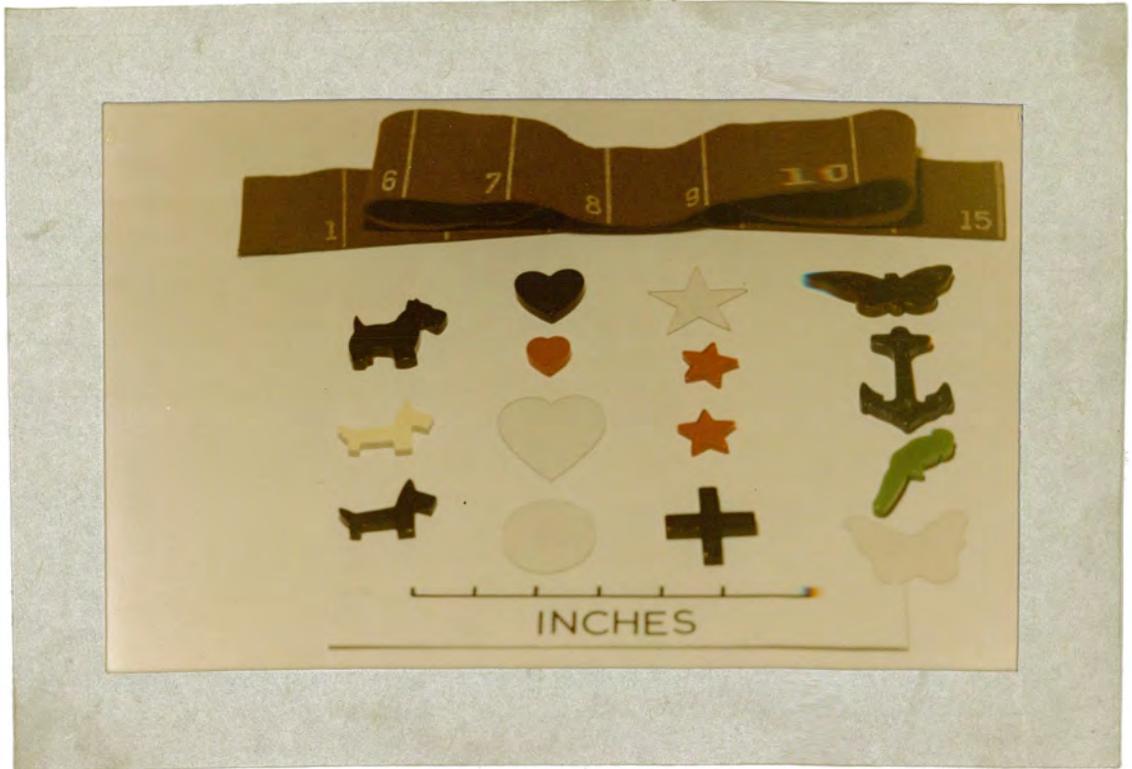


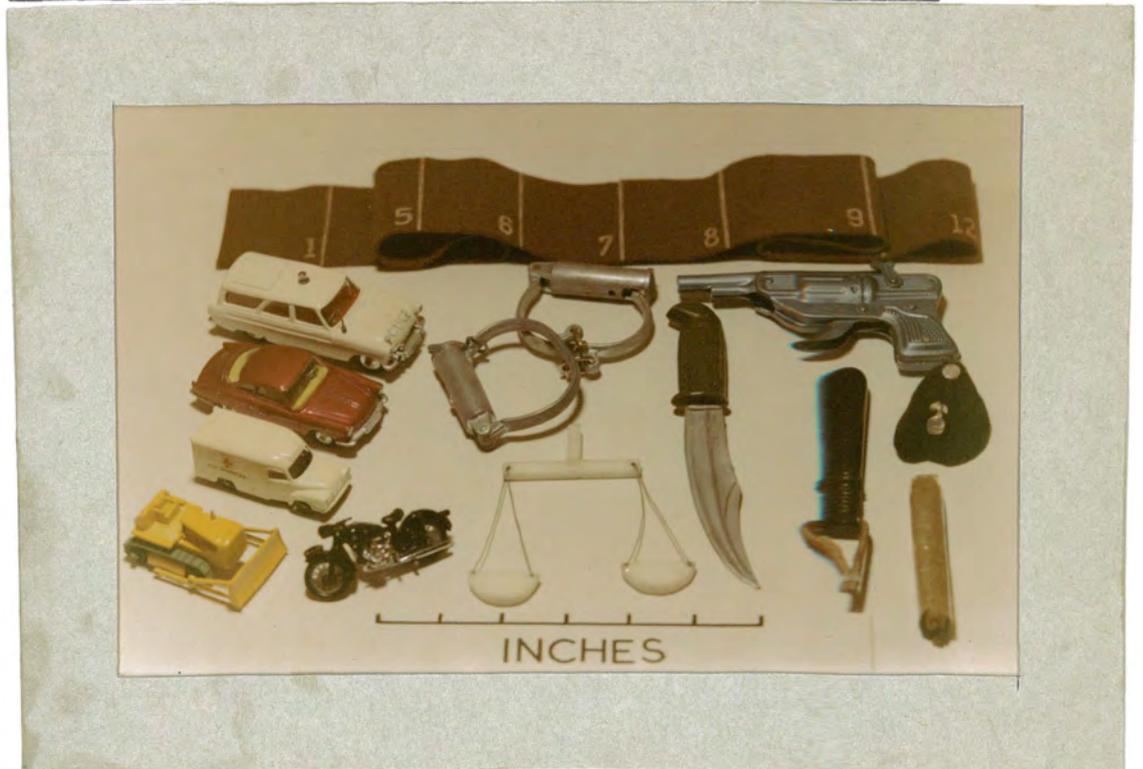
FIGURE 6 : Distribution of STC responses (Means) for each of the eleven levels of abstraction for both criminals and rehabilitees.

Reading: Criminals ———
Rehabilitees - - - -

APPENDIX I.



The Kahn Test of Symbol Arrangement (the KTSA).



The Symbolization Test for Criminals (the S.T.C.).

INDIVIDUAL RECORD SHEET

for use with

Kahn Test of Symbol Arrangement - KTSA

NAME:		M _ F	AGE:	DATE:
PLACE:	EDUCATION:	EXAMINER:	SYMBOL PATTERN:	
REMARKS:				

PERCENT	SIGMA SCORE	(A) Bizarre 0	(B) No Reason No Symb. 1	(C) "Same as Before" 1	(D) Naming or Function 1	(E) Shape Material Appearance 3	(F) Color 3	(X) Concrete Association 4	(Y) Tangible Abstraction 6	(Z) Intangible Abstraction 8	SIGMA SCORE
2%					1					12 ⁺	
	7.0									11	7.0
14%	6.5								13	10	6.5
	6.0			0	0	3		8	12	9	6.0
	5.5		0	3	1	2	2	7	10	8	5.5
34%	5.0	0	1	4	2	1	1	6	9	7	5.0
	4.5		2	5	4			5	8	6	4.5
34%	4.0	1	3	6	5	0	3	4	7	5	4.0
	3.5		4	7	6	4	0	3	6	4	3.5
14%	3.0		6	8	7	5	4	0	5	3	3.0
	2.5		8	9	8	6	5	2	4	2	2.5
	2.0	2	10	10	9	7	6	1	3	1	2.0
2%	1.5	3	12	11	10	8	7	0	2	0	1.5
		4	14	12	11	9	8	12	16		
		5	16	13	12	10	9	18	19		
		6	20 ⁺	14 ⁺	13	11	8	24	22		
		7 ⁺		15 ⁺	14	12	9		24		
Raw Scores X Weights											Sum of Scores:

	I. NAMING	10	II. SYMBOLIZING	10	TIME
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					

IV. LIKING: **DISLIKING:**

1. _____ 15. _____

2. _____ 14. _____

3. _____ 13. _____

V. REASON:

(VI). REASON:

APPENDIX III.

No.	ARRANGEMENTS			I NAMING	II SYMBOLIZING	III Liking	III DISLIKING	REMARKS
	I	II	III					
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

SYMBOL-PATTERN

III LIKING

- 1.
 - 2.
 - 3.
- DISLIKING
- 1.
 - 2.
 - 3.

AGE

DATE

REMARKS

APPENDIX IV.

Sociological and psychological typologies of delinquents as found in the literature. (After KINCH, 1962, Table II, p.325).

Authors	Type I	Type II	Type III
Present discussion	Pro-social	Anti-social	A-social
Abrahamsen	Situational accidental offenders	Associational offenders	Genuine psychopath
Argow	Situationally provoked syndrome	Associated learning syndrome	Compensatory syndrome
Bloch and Flynn		Cultural deviant	Unsocialized aggressive; acting out neurotic
Edelstin	Benign delinquency	Anti-social behavior based on environmental problems	Character defect; psychopathic and infantile
Esman	Adolescent crisis delinquent	Dyssocial delinquent	Anti-social delinquent
Friedlander	Puberty offender	True criminal	Anti-social character; aggressive; psychopathic youth
Gibbons and Garrity	Casual delinquent	Gang offender A. Predatory theft B. Aggressive street gang C. Urban Negro	Aggressive delinquent
Hirschberg		Socialized delinquent	Unsocialized aggressive
Jenkins		Socialized delinquent	Unsocialized aggressive delinquent
Mueller	Accidental delinquent	Socialized delinquent A. "Good" controls B. "Bad" controls	Unsocialized aggressive delinquent
Redl and Wineman		Genuine delinquent super-ego disturbance	Severe impulse disturbances; disturbances in aggression
Reiss	Relatively integrated	Relatively defective super-ego control	Weak ego; highly aggressive
Tappan	Acute criminal (accidental)	Normal or chronic delinquent	Psychopathic delinquent
Topping		Pseudo-social boy	Aggressive delinquent
Weinberg		Subcultural deviant	"True" psychopath

1.

APPENDIX V.

INSTRUCTION FOR ADMINISTERING THE S.T.C.

The tester must be familiar with the code signs of the symbol-objects, i.e. (A)- for 'ambulance', (B) for 'bulldozer', (C) for 'cigar', (G) for 'Gun', (H) for 'policemen's helmet', (K) for 'knife', (M) for 'motorbicycle', (N) for 'saloon car', (P) for 'police car', (OO) for 'handcuffs', (S) for 'pair of scales', and (T) for 'truncheon'. The method of recording is similar to that used in the KTSA.

Before administration commences the tester must make sure that all the test materials and the Record-Sheet are available. He should see that the test situation is suitable and that a comfortable atmosphere prevails. The behaviour of the testee prior, during and after the testing must be observed and recorded, if unusual. The tester may sit opposite the testee if the table is small, or at his side in case it is too wide.

The strip and the symbol-objects are placed before the testee for a few moments of inspection, and then administration begins.

FIRST ARRANGEMENT.

Step 1: "You have in front of you a strip divided into 12 segments which are numbered consecutively from 1 to 12. Also, you have twelve little models. To begin with I would like you to arrange these objects along the strip in any way you wish".

(Often the testee asks for further, more specific instructions as to how to arrange the objects.

The tester merely repeats "In any way you wish".)

- Step 2: Record time and direction of the arrangement in the appropriate space on the Record-Sheet (APPENDIX III, Arrangement I, and T-time, D-direction below).
- Step 3: "Now that you have arranged them would you please tell me what is your reason for arranging the objects in this particular order. Why did you put them down the way you did?"
- Step 4: The reason given is recorded verbatim in: I REASON (Record-Sheet). When the answer is not clear, the tester must ask for further explanation, i.e. "What do you mean", and record the answer.
- Step 5: "Now I would like you to tell me the name of each object. Tell me what it is. Start here (point at the first segment, etc.)."
- Step 6: The exact answers are recorded verbatim on: I NAMING.
- Step 7: Objects are removed from the strip.

SECOND ARRANGEMENT:

- Step 1: "Now, please arrange these objects on the strip, again, in any way you wish".
(Often the testee inquires whether the previous order had to be repeated. The tester merely states "In any way you wish".).
- Step 2: Record time and direction in: II ARRANGEMENT (and T and D below).
- Step 3: "Well, why did you arrange the objects this way this time?"
- Step 4: The reasons given are recorded verbatim in: II REASON.
- Step 5: "Now I would like you to tell me what each of these objects can stand for, represent or symbolize. For example, you know that our flag stands for England. Some people say that a horseshoe is a sign of good-luck, or that a light, for instance, can symbolize knowledge or wisdom. Tell me what each of the objects might stand for, represent or symbolize. Start with the first object and go to the end."

Step 6: Record symbolizing responses verbatim in:

II SYMBOLIZING. (When a response is unclear ask "What do you mean?").

Step 7: Remove all objects from the strip.

THIRD ARRANGEMENT.

Step 1: "Will you arrange the objects, this time according to how they appeal to you? Place the object you like best first (segment 1). Put the one you like second best next, and put the one you like third best here (segment 3). Continue in this manner, place the objects you like most at this end (point at segment 1) and the ones you like least at that end (point at segment 12).

Step 2: Record time and arrangement on: III ARRANGEMENT (and T and D below).

Step 3: "Why did this one (first object) appeal to you most?"

Step 4: Record reason verbatim (III LIKING, No. 1).

Step 5: "Why did you like this one?". (second object).

Step 6: Record reason verbatim (III LIKING, No. 2).

Step 7: "Why did you like this one?" (third object).

Step 8: Record reason verbatim. (III LIKING, No. 3).

Step 9: "Why did you like this one least of all?". (Object on 12th segment).

Step 10: Record reason verbatim (III DISLIKING, No. 1).

Step 11: "Why didn't you like this object?" (object on 11th segment).

Step 12: Record reason verbatim (III DISLIKING, No. 2).

Step 13: "Why didn't this (object on 10th segment) appeal to you as much as some of the others?"

Step 14: Record reason verbatim (III DISLIKING, No. 3).

Step 15: Remove the objects from the strip, and take the strip away.

APPENDIX VI.

A DICTIONARY OF S.T.C. POPULAR RESPONSES.

In the following, a few illustrations of scoring some of the typical responses given for the S.T.C. are presented.

These are divided into three sections.

- a. Reasons given on "Symbolizing" task, for each object and for every level of abstraction.
- b. Reasons given on "Arrangement" task, for each level of abstraction.
- c. A note on scoring the responses given for "Liking and Disliking" tasks.

The list is incomplete and includes a small number of responses. This, should be elaborated following further studies with larger samples. In any case, this dictionary serves as an illustration for the scoring method adopted in this test.

It is important that the scorer of the S.T.C. will be familiar with the scoring principles, and the examples given for the Kahn Test of Symbol Arrangement (KTSA), particularly the manual edited by HILL and LATHAM (1966).

REASONS FOR "SYMBOLIZING" (for each symbol-object).

RESPONSES TO AMBULANCE.

(B) Responses.

- (B)- I could not tell you.
- (B)- Means nothing to me.
- (B)- No reason, nothing.

(D) Responses.

- (D)- Ambulance.
- (D)- Just a car.

(d) Responses.

- (d)- To bring you to hospital.
- (d)- For carrying sick people.

(X) Responses.

- (X)- Accident.
- (X)- Road accidents.
- (X)- The ambulance service.
- (X)- A motorway. (see (Y) rules).

(Y) Responses.

- (Y)- A necessary thing.
- (Y)- Hospitals.
- (Y)- A public service.
- (Y)- Medicine.
- (Y)- Pain.
- (Y)- Sickness. (see (Z) rules).
- (Y)- Ill-health. (see (Z) rules).
- (Y)- Emergency. (see (Z) rules).
- (Y)- Efficiency.
- (Y)- Save of life.

(Z) Responses.

- (Z)- Health.
- (Z)- Life.
- (Z)- Death.
- (Z)- Humanity.
- (Z)- Kindness.
- (Z)- Illness.
- (Z)- Goodness.
- (Z)- Disaster. (see (Y) rules).

RESPONSES TO THE BULLDOZER.(B) Responses.

- (B)- I forgot what it is.
- (B)- I don't know.
- (B)- I have not a clue.

(D) Responses.

- (D)- A bulldozer.
- (D)- A tractor.
- (D)- Earth remover.
- (D)- Farming (see (Y) rules)

(d) Responses.

- (d)- It removes land.
- (d)- It is used for building.

(X) Responses.

- (X)- Road buildings.
- (X)- Building sight.
- (X)- Represents works in the land.
- (X)- Building: (see (Y) rules).
- (X)- Countryside farm: (see (Y) rules).

(Y) Responses.

- (Y)- Industry.
- (Y)- Farmers.
- (Y)- A farm (see (X) rules).
- (Y)- Work.
- (Y)- Civil engineering.
- (Y)- The building trade.
- (Y)- Excavation.
- (Y)- Construction (see (Z) rules).

(Z) Responses.

- (Z)- Power.
- (Z)- Strength.
- (Z)- Development.
- (Z)- Progress.
- (Z)- Destruction.
- (Z)- Security (on job).
- (Z)- Construction (see (Y) rules).
- (Z)- Improvement.

RESPONSES TO THE CIGAR.(B) Responses.

- (B)- I couldn't tell what it is.
- (B)- Just a piece of nothing.

(D) Responses.

- (D)- A cigar.
- (D)- Tobacco leaves.
- (D)- A smoking cigar.

(d) Responses.

- (d)- To smoke a cigar.

(X) Responses.

- (X)- Box of cigars.
- (X)- Fun for children.
- (X)- Christmas (see (Y) rules).
- (X)- Winston Churchill. (see (Y) rules).
- (X)- A businessman. (see (Y) rules).
- (X)- A smoke.
- (X)- Smoke. (see (Y)- rules, more likely).

(Y) Responses.

- (Y)- Cuba.
- (Y)- Cancer.
- (Y)- Good living.
- (Y)- Waste of money.
- (Y)- A wealthy man.
- (Y)- A businessman. (see (X)- rules).
- (Y)- A millionaire.
- (Y)- Represents smoking.
- (Y)- Big mouth people.
- (Y)- Smoke.

(Z) Responses.

- (Z)- Pleasure.
- (Z)- Relaxation (see (Y)- rules).
- (Z)- Wealth.
- (Z)- Content.
- (Z)- Satisfaction.
- (Z)- Luxury.
- (Z)- Class distinction.
- (Z)- Enjoyment. (see (Y)- rules).

RESPONSES TO THE GUN.

(A) Responses.

(A)- The devil.

(B) Responses.

- (B)- I forget what do you call them.
- (B)- Nothing, no symbolization.
- (B)- It is broken.

(D) Responses.

- (D)- A gun.
- (D)- A pistol.
- (D)- It is a toy.
- (D)- It is a weapon.

(d) Responses.

- (d)- For killing.
- (d)- For shooting.

(X) Responses.

- (X)- Bank robbery.
- (X)- Weapon.
- (X)- Killing. (see Y rules).
- (X)- Target to shoot at.
- (X)- A murder. (see (Y)- rules).
- (X)- Five arms.

(Y) Responses.

- (Y)- The Army.
- (Y)- Ganster.
- (Y)- A cowboy.
- (Y)- A murderer.
- (Y)- Sport.
- (Y)- Shooting, hunting.
- (Y)- Terror.
- (Y)- Danger.
- (Y)- War (see (Z) rules).
- (Y)- Five arms (see (X)-rules).

(Z) Responses.

- (Z)- Violence.
- (Z)- Death.
- (Z)- Crime.
- (Z)- Power.
- (Z)- War. (see (Y) rules).
- (Z)- Agression.
- (Z)- Tyrany.

RESPONSES TO THE HELMET.

(A) Responses.

(A)- That is not to be touched.

(B) Responses.

- (B)- I don't know.
- (B)- Could be anything, couldn't it?
- (B)- I think it reminds me of something.

(D) Responses.

- (D)- Helmet.
- (D)- Policeman's helmet.
- (D)- It is part of a uniform.
- (D)- Looks like a copper's hat.

(d) Responses.

(d)- To protect the head.

(X) Responses.

- (X)- Uniform.
- (X)- Christmas bells.
- (X)- A policeman.
- (X)- Policeman on duty.

(Y) Responses.

- (Y)- The police.
- (Y)- Police force.
- (Y)- Protection. (see (Z) rules).
- (Y)- Help.
- (Y)- Keeping law and order.

(Z) Responses.

- (Z)- The law.
- (Z)- Law and order.
- (Z)- Safety.
- (Z)- Protection (see (Y) rules).
- (Z)- Authority.
- (Z)- Power.

RESPONSES TO THE KNIFE.(A) Responses.

(A)- China (see (Y)- rules).

(B) Responses.

(B)- It is difficult to say.

(B)- Means nothing.

(B)- I wish I knew.

(D) Responses.

(D)- A knife.

(D)- A dagger.

(D)- Just a toy.

(D)- An old fashioned knife.

(d) Responses.

(d)- For cutting.

(d)- For killing.

(X) Responses.

(X)- Offensive weapon.

(X)- Weapon.

(X)- Trouble with the knife.

(X)- Killing.

(Y) Responses.

(Y)- Surgeon.

(Y)- Arabian knights.

(Y)- Japan.

(Y)- Trouble.

(Y)- Terror.

(Y)- Theft.

(Y)- War. (see (Z)-rules).

(Y)- Criminals.

(Y)- Defence (see (Z) rules).

(Z) Responses.

(Z)- Hooliganism.

(Z)- Violence.

(Z)- Vandalism.

(Z)- Crime.

(Z)- Viciousness.

(Z)- Death.

(Z)- Evil.

(Z)- Cowardness.

RESPONSES TO THE MOTORBICYCLE.(B) Responses.

- (B)- No reason at all.
- (B)- It has no meaning to me.

(D) Responses.

- (D)- Motorbicycle.
- (D)- To get you around the country.
- (D)- It's a German motorbike.

(d) Responses.

- (d)- It is used to ride on.

(X) Responses.

- (X)- Police-patrol man. (see (Y) rules).
- (X)- Escorting someone.
- (X)- Motor vehicle.
- (X)- Transport to work.
- (X)- Scrambling.
- (X)- Motor racing.
- (X)- Vehicle.
- (X)- Police-patrol man.

(Y) Responses.

- (Y)- Speed.
- (Y)- Sport.
- (Y)- Young lads.
- (Y)- Death trap.
- (Y)- Transport.
- (Y)- A method of transportation.
- (Y)- Danger, Dangerous object.
- (Y)- A nuisance.

(Z) Responses.

- (Z)- Death.
- (Z)- Youth.
- (Z)- Enjoyment.
- (Z)- Destruction.
- (Z)- Protection.
- (Z)- The Law.

RESPONSES TO THE N.S.U. - SALOON CAR.

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(B) Responses.

- (B)- I am afraid I don't know.
- (B)- I cannot guess.

(D) Responses.

- (D)- A car.
- (D)- A saloon car.
- (D)- A family car.
- (D)- Pretty little car.
- (D)- It is a model.

(d) Responses.

- (d)- To get you around the country.

(X) Responses.

- (X)- Motor racing.
- (X)- Vehicle.
- (X)- Transport to work.
- (X)- Reminds me of my car.
- (X)- The car I want to have.

(Y) Responses.

- (Y)- Speed.
- (Y)- Travelling.
- (Y)- Car industry.
- (Y)- Mechanics.
- (Y)- Love of cars.
- (Y)- Businessman.
- (Y)- Money.
- (Y)- Transport.
- (Y)- Means of transportation.
- (Y)- Wealthy person.
- (Y)- Traffic juncture.

(Z) Responses.

- (Z)- Pleasure.
- (Z)- Luxury.
- (Z)- Wealth.
- (Z)- Travel.
- (Z)- Prosperity.
- (Z)- Success.
- (Z)- Ambition.
- (Z)- Relaxation.
- (Z)- Recreation.

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RESPONSES TO THE (GO) HANDCUFFS.

(B) Responses.

- (B)- Just in here.
- (B)- It's nothing, just metal.

(D) Responses.

- (D)- Pair of handcuffs.
- (D)- It's a toy.

(d) Responses.

- (d)- To detain people. . . .
- (d)- To handcuff you.
- (d)- For fastening people's hands.
- ((d)- Keeps you tied in.

(X) Responses.

- (X)- A prison. (see (Y)- rules).
- (X)- A prisoner.
- (X)- Being caught.

(Y) Responses.

- (Y)- A prison.
- (Y)- A criminal.
- (Y)- Arrest.
- (Y)- Jail.
- (Y)- Custody.
- (Y)- Trouble.
- (Y)- Keeping order.
- (Y)- A trap.
- (Y)- Restrain. (see (Z)- rules).
- (Y)- Imprisonment.

(Z) Responses.

- (Z)- Law.
- (Z)- Captivity.
- (Z)- Law and order.
- (Z)- Security (for the public).
- (Z)- Safeness.
- (Z)- Crime.
- (Z)- Force. (see (Y)- rules).
- (Z)- Punishment. (see (Y)- rules).

RESPONSES TO THE POLICE-PATROL CAR.

(A) Responses.

(A)- The fire brigade.

(B) Responses.

(B)- I should know it.
(B)- I cannot think of anything.

(D) Responses.

(D)- Police-patrol car.
(D)- It's a model.
(D)- Toy for kids.

(d) Responses.

(d)- It is used for chasing.
(d)- To get quickly to a place.

(X) Responses.

(X)- Patrolling.
(X)- They go on the roads. (see (D)- rules).
(X)- Vehicle.
(X)- Police-transportation. (see (Y)- rules).
(X)- Accidents.
(X)- A motorway. (see (Y)- rules).

(Y) Responses.

(Y)- Trouble.
(Y)- Keeping order.
(Y)- Police force.
(Y)- Prison police.
(Y)- Poliee.
(Y)- Controlling.
(Y)- A motorway.
(Y)- Speed.

(Z) Responses.

(Z)- Law.
(Z)- Law and order.
(Z)- Authority.
(Z)- Protection.
(Z)- Security.
(Z)- Law enforcement. (see (Y)-rules).

RESPONSES TO THE PAIR OF SCALES.(A) Responses.

(A)- The white angels.

(B) Responses.

(B)- I don't think I have seen it before.

(B)- Very difficult to tell.

(D) Responses.

(D)- A pair of scales.

(d) Responses.

(d)- For weighting.

(d)- You keep balance with scales.

(X) Responses.

(X)- Scales of justice (see (Z)- rules).

(X)- Scales in the shops.

(X)- Old fashioned pair of scales.

(Y) Responses.

(Y)- A shop.

(Y)- Gold.

(Y)- Weight (see (Z)- rules).

(Y)- Weighting.

(Y)- Business.

(Y)- Measures. (see (Z)-rules).

(Z) Responses.

(Z)- Justice.

(Z)- Scales of Justice. (see (X)- rules).

(Z)- Measurement.

(Z)- Liberty. (also (A)).

(Z)- Commerce.

RESPONSES TO THE TRUNCHEON.(B) Responses.

- (B)- No idea whatsoever.
- (B)- Just piece of rubbish, nothing.

(D) Responses.

- (D)- Truncheon.
- (D)- Policeman's Truncheon.
- (D)- A baton.
- (D)- A tool.
- (D)- It's a weapon. (see (X)- rules).

(d) Responses.

- (d)- For protecting oneself.
- (d)- Hitting people.

(X) Responses.

- (X)- Goes with policeman.
- (X)- Weapon.
- (X)- Protective weapon.

(Y) Responses.

- (Y)- Stopping violence.
- (Y)- Enforcing the Law.
- (Y)- Keeping order.
- (Y)- Defence (see (Z)- rules).
- (Y)- A prison officer.
- (Y)- A copper.

(Z) Responses.

- (Z)- Power.
- (Z)- Violence.
- (Z)- Brutality.
- (Z)- Protection.
- (Z)- Deterrence.
- (Z)- Law and order.
- (Z)- Authority.
- (Z)- Defence. (see (Y)- rules).

REASONS FOR ARRANGEMENT.(A) RESPONSES.

- (A)- This is the only true way to put them down.
- (A)- Because I am soft hearted.

(B) RESPONSES.

- (B)- Just picked them up.
- (B)- It was handy.
- (B)- No reason.
- (B)- At random.

(D) RESPONSES.

- (D)- Police-patrol car, gun, knife, etc.

(d) RESPONSES.

- (d)- Gun for shooting, knife for cutting, to be handcuffs, etc.

(E) RESPONSES.

- (E)- Cars together, things to do with the police together, etc.
- (E)- According to the way I like and dislike them.
- (E)- They go together.
- (E)- Set of things.
- (E)- These I like best.

(F) RESPONSES.

- (F)- I like the colour of this.
- (F)- The colour appeals to me.
- (F)- I like red and yellow things.

(X) RESPONSES.

- (X)- I like cars.
- (X)- I am keen on motorbikes.
- (X)- I like to have a smoke.
- (X)- I like wagons, the rest I don't care for.
- (X)- These are running by patrol.
- (X)- Vehicles first.
- (X)- A scene of road accidents.
- (X)- I hate accidents.
- (X)- (Telling a story by describing a scene or a plot, e.g. "Policeman in his truncheon going in his car to accident place where the ambulance is there, etc.").

REASONS FOR ARRANGEMENT (Continued).(Y) RESPONSES.

- (Y)- A rich man, a motorist, arrest.
- (Y)- Motorway, speed, Police, hospital, etc.
- (Y)- Necessity; hospital first.
- (Y)- The gun is for sport.
- (Y)- These have to do with the Police Force.
- (Y)- Work the last, I don't like work.
- (Y)- In order of their value of their use.
- (Y)- These are menace to the road.
- (Y)- These represent trouble, the rest I don't care for.

(Z) RESPONSES.

- (Z)- Represent pleasure.
- (Z)- Violence and death.
- (Z)- Here is justice.
- (Z)- The law.
- (Z)- Mastery and authority.

REASONS FOR LIKING AND DISLIKING.

A complete set of examples of scoring responses for each symbol-object, for every level of abstraction, and both for Liking and Disliking tasks is not yet possible. The range of responses produced by the two samples employed was not large enough to permit illustration in each case.

Basically, scoring the reasons for Liking and Disliking an object is similar to that illustrated in the section for "RESPONSES FOR "SYMBOLIZING"". The reader will find those useful for the scoring on the LIKING-DISLIKING task.

An important exception is the case of scoring responses such as:

- "I like to drive a car".
- "I like a cigar".
- "I want to avoid this (ambulance)".
- "I hate knife".
- "I'd rather be shot than stabbed", etc.

all these, which on "SIMBOLIZING" would be scored (D) or (d) are scored, here, (X). The rule is, when the name of the object is given, preceded by the paradigm "I like....", "I don't like....", or "I hate....", (X) is scored here, rather than (D) or (d). (see also, HILL & LATHAM, 1965).