CHAPTER II

REVIEW OF LITERATURE

Review of the various work done over the years by
researchers in different fields of physiology, sociology, psychology etc. reveals that, in essence, personality factors are extremely important in criminality. Though other factors are contributory to the final product of the criminal, it is this individual factor of personality which plays a major role.

Personality is made up of two aspects:— (1) cognitive, (2) affective. Intelligence, as a cognitive aspect of personality has often been linked with crime. In general, criminals are thought to be of lower and substandard intelligence to that of normals. This may of course be due to the fact that the more intelligent ones do not get apprehended by law (Gibbons 1968).

Anxiety is another personality factor which has been related to crime (Lykken 1957, Schalling 1970). In recent years, the work of Eysenck has been acknowledged in the field of personality. He has made practical application of his theory to a general but interactionist theory of crime. Work has also been done by Cattell and co-workers in this field, where a relationship between Cattell's and Eysenck's personality factors has been suggested. It is evident that these theories of personality offer significantly to explanations of crime.

Interesting though these findings may be, it is unreasonable to suppose that criminals are a homogenous group. The personality
differentiations to be made of criminals will have to be related to the discrimination made of the type of crime committed (Eysenck 1970). As Mohan and Singh (1977) have observed, a major criminal differs in personality structure from one who commits minor crimes. Besides, age too appears important in giving an explanation of the variations in personality make-up. Definite personality changes are known to occur with age (Banister, Smith, Heskin and Bolton 1973).

The ensuing discourse would mainly revolve around the exposition of these determiners of crime, i.e., type of crime, the age factor and the effect of psychological variables on crime.

A. TYPE OF CRIME

One usually attributes crime on one hand to the environmental conditions which predispose a person to crime, and on the other hand, the inherited personality traits which predispose him to succumb to temptation (Eysenck 1970). The situation may be even more complex. It is possible that certain personality types interact with certain environmental conditions. Eysenck (1970) even suggests that "different personality conditions/combinations, give rise to different types of crimes, or at least antisocial conduct".

Various efforts have been made to classify crimes and criminals. Different classifications have been suggested and invariably the criminal is categorized according to the kind of crime committed by him.
Nayar (1975) in an empirical study of 'Violence and Crime in India', noted that the national trend over the period of 1951-1970, showed a divergent pattern among different types of crimes in 1968 and 1969, with a sharp decline in property offenses but an upward thrust in riots and in offenses against the person.

Sinclair and Chapman (1973), analysed the background data of 1009 men in prisons of U.K., to derive types or dimensions by which the men could be described. They also wanted to see whether these confirmed the findings of other studies, particularly to relate the results to those of Marcus (1960) and West (1963). Typology suggested by the analysis done by Sinclair and Chapman (1973):- (1) Occasional delinquent, (2) Late delinquent, (3) Professional delinquent, (4) Aggressive delinquent, (5) Offenders with skilled employment status, (6) Socially integrated unskilled worker, and (7) Social inadequate.

Sinclair and Chapman (1973) seem to have made a detailed typology differentiating criminals, but this differentiation seems inadequate since they have not taken into account either the type of offense committed or the frequency and seriousness of it. A more clear-cut classification is required.

Prison authorities have necessarily to group criminals for purposes of convenience. The Indian Penal Code (IPC) lists crime under different heads as (1) murder, (2) culpable homicide, (3) rape, (4) kidnapping and abduction, (5) dacoity, (6) burglary, (7) robbery, (8) thefts, (9) riots, (10) criminal breach of trust,

But, for ease of classification, as well as to give some conceptual framework to evolve some major theoretical deductions, one must regroup these crimes into meaningful types. Mohan and Singh (1977) made a two-way classification whereby they divided these IPC categories under two main headings of (1) Major and (2) Minor Crimes, such as, violent crimes like Murder (IPC 302) were regarded as major crime and persons under the Prevention of Corruption Act (P.O.C. Act) were regarded as minor criminals. These were further classified as casual or hardened criminals, i.e., according to the frequency of crime. Britt and Tittle (1975) used this classification of major and minor crimes in a study in U.K.

B. AGE AND CRIME

Age has been studied in relation to crime by various psychologists and certain age trends have been predicted. One of the most striking and persistent "conditions" associated with criminality is being young (Nettler 1974). Delinquency begins to come to official attention in late childhood and increases up to age 16 or 17 when adult courts take over the problem of crime. The peak is reached in later adolescence and young adulthood and declines gradually with advancing age (Réckless 1971). McClintock and Avison (1968) provide a picture of indictable offenses that dramatically indicates the higher crime rates of teenagers and...
males. A similar pyramid of criminality appears in Sweden (Sveri 1960) and the United States. According to Sutherland and Cressey (1968), (1) the age of Maximum general criminality is probably during or shortly before adolescence, (2) the crime rates at several ages vary decidedly from time to time, (3) juvenile delinquency is probably related in some manner to adult criminal behaviour, but it is not correct to say that the juvenile delinquent of today is the adult criminal of tomorrow. There is evidence that after about age 25, the percentage of criminals who are 1st offenders increases with increasing age, (4) the younger the person of either sex when first arrested, the greater the likelihood of a second arrest and in general, (5) the shorter the time span between offenses (Mannheim and Wilkins 1955).

Sutherland and Cressey (1968) seem to contradict themselves in making these various conclusions. If the age of maximum criminality is before adolescence, then the chances of reformation is greater than for an older person; the less the chance therefore of a juvenile delinquent committing a crime again.

On the other hand recidivism is higher in India for the simple reason that a juvenile 1st offender is rarely reformed due to the very small percentage of juvenile delinquency schools in India. There is great stigma attached to a person once apprehended by the police. He is kept in constant vigilance and any local crime of the nature committed earlier by him, is traced firstly to him. Although this factor may act as a deterrent for recidivism, it is equally likely that once a stigma is attached,
any further loss of face in society is irrelevant. Consequently a crime may be committed again by him.

Statistics given by Crime in India (1971) show that (1) 88% of the total juvenile delinquents arrested were new offenders, (2) juveniles were responsible for 2.8% of the total crime during 1971, (3) the percentage involvement of juveniles in the age group of 16-21 years had been showing a steady increase over the years. The overall increase of juveniles arrested in the age group 16-21 years indicates an increase of 200.5% during 1971 over 1960.

Age and Type of Crime: Age appears to have an important effect directly or indirectly on the frequency and type of crime committed. (1) The age of maximum criminality varies with the type of crime for example, the years during which one is most likely to commit a major crime like murder tend to be the early twenties (Nettler 1974). (2) The age of concentration of the more violent types of crimes (major crimes) such as robbery with assault, has remained constant for several centuries. Reports show that these were mainly young adults. (3) Minor crimes like forgery, fraud etc. are usually committed at later years, but with changing trends in crime (Crime in India, 1971), age trends have also changed for example automobile thefts have increased over recent years and these are mainly attributed to the younger age group.

Various statistics provided by Crime in India (1971) show that there are definite changes in age trends over the
years affecting the type of crime and the personality. The results of the study will therefore reflect this.

The role that age and type of crime seem to play in producing the criminal has been reviewed in preceding pages. But crime is the result of multifarious determiners. Recent past has witnessed the growth of relationship between personality and crime. Experimental evidence has gradually accumulated to suggest that there are certain key factors which are of primary importance in criminality, because no conclusive decision has been obtained. These key factors are highlighted in the following enumeration.

C. INTELLIGENCE AND CRIME

Two views about the effect of intelligence on criminality have been maintained over the years, some studies had indicated that criminals are not intellectually inferior to non-criminals (e.g., Tulchin 1939). Warder, Presley and Kirk (1971) found that there is no substantial difference in the distribution of Progressive Matrices scores between prison and hospital populations.

Another school of thought explains differences between criminals and non-criminals to differences in intelligence. Previously the mental defect theory had been used as a specific explanation of crime. Though the mental defect theory is no longer considered as a scientific explanation of crime, yet in the light of recent evidence, crime is related to low intelligence. The evidence related intelligence to learning and suggestibility from
which further deductions were made regarding the socialization process and crime.

**Intelligence and Learning**: Krasnogorski (1913), Wilson (1928), Ellis et al (1960) all obtained evidence that bright subjects are superior to dull ones on rote learning. The second group of findings reported no difference in the performance of normals and retardates on transfer, verbal learning etc. Mohan and Dharmani (1976) found an inverse relation between intelligence and verbal conditioning. Eysenck (1970), on the other hand said that intelligence has never been found to correlate with conditioning.

**Intelligence and Suggestibility**: There are three kinds of suggestibility (a) primary or motor, (b) secondary or sensory, (c) tertiary or social suggestibility (Eysenck, 1970). Though all three types of suggestibility fall under a general definition, nevertheless, these three different types of suggestibility do not correlate with each other at all. Secondary suggestibility is correlated negatively with intelligence, i.e., the higher the intelligence the lower will be the suggestibility and individuals of low intelligence would be more suggestible.

These relationships with intelligence can be interpreted in terms of the socialization process. Socialization is the process by which an individual acquires and learns cultural 'mores'. The norms of the prevalent society are learnt through this process, which is a resultant of learning. Since intelligence
has been defined as the ability to learn (Green 1953), it implies that the more intelligent an individual, the more readily and extensively he will be able to learn; and dull subjects thus ought to have diagrammatically opposite rates of learning (Mohan and Dharmani 1976). We can go further to support this contention in the light of the relationship between intelligence and suggestibility. Lower intelligence would also mean higher suggestibility (more likely that an individual would be led astray by antisocial elements of society) i.e. such an individual is unable to learn the mores of society, leaving him more vulnerable to submit himself to antisocial acts.

D. PERSONALITY

As has been stressed time and again, personality factors are important determiners in criminal acts. The major variants are discussed below:

(1) ANXIETY AND CRIME

Ours is said to be the age of anxiety and therefore a relationship with crime would be expected, as many studies have proved (Iykken 1957, Schalling 1970). Distinction is made by workers in this field between anxiety as an unpleasant affective state measured by self-report or physiological indicators and anxiety as a trait (as used for example in the Manifest Anxiety Scale) meaning the disposition to be anxious or suffer from anxiety symptoms, i.e., anxiety proneness (Schalling 1970).

A further clarification regarding two separate anxiety dimensions should also be made. In a factor analytic study of
ratings of various anxiety components (Buss 1961) two factors were found. The factor denoted 'somatic anxiety' loaded in physiological concomitants of anxiety like sweating, heart-palpitations and somatic complaints, distractability and a subjective feeling of tenseness and of being upset and panicky. The factor denoted "psychic anxiety", loaded in worry, muscular tension and skeletal components of anxiety like tremor. Somatic anxiety symptoms were frequent in extravert patients in a study by Corah (1964). The problem of anxiety in criminals may be elucidated by separating these two aspects of anxiety in empirical studies. Criminals may have high levels of 'somatic anxiety', but are unlikely to show high levels of "psychic anxiety".

In the twentieth century, anxiety has emerged as a central problem of modern life (Spielberger 1972). Spielberger (1966) discusses the nature and measurement of anxiety as a transitory emotional state (A-State) which consists of feelings of apprehension and tension and heightened activity of the autonomic nervous system. It is assumed that A-states vary in intensity and fluctuate over time as a function of the stresses that impinge upon the individual. State anxiety is distinguished from anxiety proneness or trait anxiety (A-trait), which is defined in terms of individual differences in the frequency that anxiety states are manifested over time (Spielberger 1972). Persons who are high in A-trait tend to perceive a larger number of situations as dangerous or threatening than persons who are
low in A-trait, and to respond to threatening situations with A-state elevations of greater intensity.

Sarason et al (1960) analysed test anxiety to be a result of an emotional sequence. In his analysis, the anxiety experience involves the fundamental emotions of fear, shame, or guilt, distress and anger. On the basis of his evaluation of the literature and his own research findings, Sarason concludes that "persons who differ in assessed test anxiety differ with regard to their attentiveness to environmental stimuli".

Cattell (1966) on the other hand, in his factor-analytic framework, views anxiety as a second order factor. He has specified the first order components of anxiety as : "ego weakness, ergic tension, guilt-proneness, defective integration of the self sentiment, and protension of suspicion (Cattell and Scheier 1961). In this analysis, Cattell has clearly recognized anxiety as a complex of primary factors.

The interest of the Iowa group (Spence 1956, 1958, 1964; Spence and Beecroft 1954, Spence and Farber 1953, 1954; Spence, Farber and Taylor 1954; Spence and Taylor, 1951, 1953; Taylor 1951) has not been to investigate anxiety as a phenomenon but rather, in the role of drive in certain learning situations. According to Hull (1943), "all Habits \( H \) activated in a given situation, combine multiplicatively with the total affective drive state \( D \), operating at the moment, to form excitatory potential \( E = f(H \times D) \). Total effective drive in the Hullian
system is determined by the summation of all extent need states, primary and secondary, irrespective of their source and their relevance to the type of reinforcement employed. Since response strength is determined in part by E, "the implication of varying drive level in any situation in which a single habit is evoked, is clear: the higher the drive, the greater the value of E and hence of response strength. Higher drive levels should not however always lead to superior performance". (Taylor 1956), Taylor (1953) viewed anxiety as a drive and said that variation in drive level of the individual is related to the level of internal anxiety.

Spence and his colleagues, have assumed like Mowrer (1939) and Miller (1948) that response strength (R) in a conditioning situation, is some positive function of the total Drive and this total effective Drive strength is in part a function of the level of internal anxiety or emotionality of a subject. Subjects with greater degree of anxiety would possess more Drive and therefore condition better than their counterparts who have a lower degree of anxiety.

The inception of the dimensional theory of personality by Eysenck ushered in an era of many-faced probings into the behavioural concomitants of Extraversion/Introversion and Neuroticism (henceforth referred to as E/I and N respectively). It was way back in the 1960's that the Iowa group repeatedly voiced about the salience of anxiety as a determiner in human
performance (Mohan and Kumar 1976) Taylor's concept of anxiety was highly correlated with Eysenck's concept of Neuroticism (henceforth referred to as N as well) (Bendig 1957).

Eysenck (1970) in stating his theory of criminality, said that neurotics are high on anxiety or emotionality and that anxiety acts as a drive which multiplies with habit. Adcock (1965) comparing Eysenck's personality system with that of Cattell, concluded on theoretical grounds that Eysenck's factor of neuroticism (N) were substantially the same as Cattell's second order factor of anxiety. He felt that both N and anxiety would be better described as emotional reactivity. In a study, Adcock (1970), found high correlations between the 16 PF anxiety and the EPI Neuroticism, which gave some support to Adcock's suggestion that Eysenck's N and Cattell's anxiety (A) are estimates of the same basic variable. Anxiety as defined by the TMAS is a mixture of Neuroticism and Introversion, i.e., it corresponds to Cattell's Neuroticism. Iwawaki et al (1964) found a high correlation (0.74) between N and anxiety scores of a Japanese version of the TMAS. According to Cattell, the main primary factors defining Neuroticism are: C (ego strength), L (protension), E (dominance), H (Parma). In essence, one may conclude that if according to Eysenck (1970), criminals are high on N, they would also have elevated scores on the TMAS anxiety and on Cattell's Neuroticism scale.
A REVIEW OF EYSENCK'S PERSONALITY THEORY

In 1970, Eysenck had adumbrated a psychological theory which deduced that antisocial conduct, particularly crime, would be found more frequently in people whose personality placed them in the high Extraversion/high Neuroticism/high Psychoticism quadrant and a number of empirical studies were quoted to support this deduction. In the following discourse, each of these three factors as related to crime, are discussed in detail to throw some light on present evidence as it stands now.

(a) Extraversion/Introversion

Criminal behaviour is obviously determined by an interaction of several factors, and any randomly chosen group of criminals can be expected to be heterogenous with regard to personality. Eysenck (1964) and Trasler (1962) have argued however, that criminals may be assumed to be more extravert than non-criminal subjects.

Eysenck's personality theory postulated that there are two aspects of personality : 1. cognitive (intelligence), and 2. affective (which consists of Extraversion, Neuroticism and Psychoticism), virtually independent of each other. The affective abilities are of special significance to this study and therefore discussed in somewhat details.

Eysenck gives analysis of E/I and N at two levels. On the descriptive side, Eysenck (1957, 1959) deduced the concept of E/I from nosological categories based on Janet and Jung's views and
supported by Hildebrand's study (1958). According to Eysenck and Eysenck (1968), "the typical extravert is sociable, likes parties, has many friends, needs to have people to talk to, and does not like reading or studying by himself. He craves excitement, takes chances, often sticks his neck out, acts on the spur of the moment and is generally an impulsive individual. He is fond of practical jokes, always has a ready answer, and generally likes change. He is carefree easygoing, optimistic and likes to "laugh and be merry". He prefers to keep moving and doing things, tends to be aggressive and to lose his temper quickly. His feelings are not kept under tight control, and he is not always a reliable person. The typical introvert is a quiet, retiring sort of person, introspective, fond of books rather than people; he is reserved and distant except to intimate friends. He tends to plan ahead, "look before he leaps", and distrusts the impulse of the moment. He does not like excitement, takes matters of everyday life with proper seriousness and likes a well ordered mode of life. He keeps his feelings under close control, seldom behaves in an aggressive manner, and does not lose his temper easily. He is reliable, somewhat pessimistic, and places great value on ethical standards" (Eysenck 1964).

On the causative side, Eysenck traces the origin of E/I from Pavlov's (1927, 1941) excitation and inhibition balance in the Central Nervous System (CNS), and Hull's (1943) concept of reactive inhibition (Ir). In his review of personality, Eysenck (1963) gave evidence that difference in individuals on E/I was
well grounded in the constitution of the individuals, especially
the ascending reticular formation in the CNS. Eysenck (1967)
relates his conception of the physiological differences between
Introverts and Extraverts to a distinction used by Russian
researchers especially Sokolov (1963), of organisms with
"weak nervous system and organisms with strong nervous systems
(Gray 1965). Introverts are assumed to have a weak nervous
system and Extraverts a strong nervous system. Organisms with
weak nervous systems are thought to respond at lower levels of
stimulation and with greater intensity to stimuli than organisms
with strong nervous systems (Mohan 1976). The physiological
basis of Introversion is now considered to be differences in the
threshold of arousal of the reticular activating system.
Introverts are presumed to have lower threshold of reticular
arousal than Extraverts. But initially Eysenck traced this
differentiation in individuals to Pavlov's (1927) experiments
with dogs, who found that not all dogs condition alike. There
were some dogs in whom the excitation was quicker, build up of
inhibition slower, and as such they could be conditioned better
Eysenck (1955a) extended Pavlovian views to Jungian typology.
For doing this, he took the help of Hullian concepts of reactive
inhibition based on Hull's (1943) first submolar principle,"all
responses leave in the physical structure a state which acts
directly to inhibit the evocation of activity... this inhibitory
substance manifests through reaction potentials. This negative
action is called "Reactive Inhibition (Ir), an increment of which
is assumed to be generated by every repetition of the response, whether reinforced or not and these increments are assumed to accumulate except as they spontaneously disintegrate with the passage of time" (Mohan 1976).

Though other psychologists have raised the question of the unidimensionality of E/I, the distinction between sociability (soc.) and impulsivity (imp.). Components of E appear to be of great importance in personality research especially when dealing with E in criminal groups.

Dual Nature of Extraversion: In 1963, Eysenck and Eysenck put forward a theory about the dual nature of Extraversion wherein they said that sociability (soc.) and impulsivity (imp.) are primary traits, contributing to the higher order E/I factor. It was tentatively suggested that the two extraversion factors may differ with regard to relative importance of environmental versus genetic influence - soc. being more easily subject to environmental influences and imp. having deeper roots in heredity. (Schalling and Holmberg 1970). These two first order factors of sociability and impulsivity correlate around 0.5 (Eysenck 1964).

E/I and Criminality

Eysenck and Eysenck (1970) while stating their three factor theory of crime, have postulated that "extraverted people tended under certain stated condition to condition less well than introverted ones, thus making them ceteris paribus more likely to behave in an anti-social fashion."
The assumption that criminals are more extraverted than non-criminals is based on a learning theory interpretation of crime. Normally conditioned fear responses to earlier punished or disapproved acts serve as deterrants. Crime may be regarded as a sign of failure to condition the fear responses essential for the socialization process. Highly extravert subjects are considered to condition less efficiently, due to a more rapid growth of cortical inhibition (Eysenck 1957, 1967). Under identical conditions therefore, cortical arousal will be more marked in introverts, cortical inhibition in Extraverts (Eysenck 1967).

Eysenck (1960) in his review of the evidence on individual differences in conditioning, states that extraverts will only show poorer conditioning (Eyeblink, and GSR) than introverts under certain conditions (Eysenck 1965). The conditions are: (1) Partial reinforcement (PR) (2) discrimination learning, (3) weak UCS and (4) short CS-UCS interval (Eysenck 1967). Eysenck (1964, 70), explains the differences between introverts and extraverts in conditioning in terms of the differential build up of reactive inhibition, though he mentions the possibility that the differences might also be due to differences in excitatory potential (Passingham 1967).

According to Mowrer (1950) socialization is mediated by learning in two stages: (1) fear responses are conditioned to cues associated with punishment or withdrawal of love (2) In the second stage, responses that are instrumental in removing the individual from the fear producing cues, e.g., inhibition of the
forbidden behaviour, are reinforced by fear reduction. A low
capacity to condition fear responses and/or to acquire avoidance
responses would be assumed to be conducive to crime and other non-
conforming behaviour.

Passingham (1972) has summed up Eysenck's theory of
criminality with respect to conditioning in extraverts as
follows: (1) extraverts condition badly (Eysenck 1964), (2)
socialization is mediated by conditioning, (3) extraverts will
tend to be poorly socialized, (4) two predictions will follow
from this: (i) Criminals will tend to be extraverted
(ii) criminals will tend to condition badly.

Lykken (1957) and Tong (in Eysenck 1964) have carried out
extensive studies of psychopaths and have come to the conclusion
that their conditioning is much less effective than that of
various control groups.

Studies by Frank's (1956), Fine (1963), Quay and Hunt
(1965) all suggested that the deficit in conditionability in
psychopathic individuals was to some degree associated with
extraversion. Buikhuizen and Hemmel (1972) purported to examine
Eysenck's (1970) theory relating criminal behaviour and lack
of conditionability. They administered several tests of verbal
conditioning to two experimental groups and two well chosen
control groups and concluded that these tests (1) did not
correlate with extraversion and (2) did not discriminate between
criminals and controls. They pointed out that Eysenck's theory
deals with classical conditioning and that verbal conditioning may not be a proper test to bring out these differences. They concluded that "with regard to verbal conditionability, we could not confirm Eysenck's theory" (Buikhuisen and Hemmel 1972).

Eysenck later modified his theory of criminality as regards E/I to state that "it is the impulsive side of extraversion rather than the sociability side which we may consider to be associated with criminal behaviour" (Eysenck 1964).

Impulsivity and Crime

According to Schalling (1970), the relations postulated by Eysenck to exist between cortical arousal, conditionability and Extraversion, are valid only for the impulsiveness component of E. In line with this reasoning, it was hypothesized that criminals are higher than non-criminals in impulsiveness, whereas they may be assumed to be lower in sociability. In a recent paper by Eysenck and Eysenck (1971), evidence in support of this proposition has been presented. Schalling and Holmberg (1970) also put forward the hypothesis that criminals have higher scores than non-criminal subjects in the impulsiveness component of E/I on the basis of its emphasis on acting rapidly without caution, lack of planning, happy-go-lucky and carefreeness, traits often noted especially in young offenders (Quay 1964).

Many authors have emphasized impulsive behaviour as the most important single characteristic of psychopathy (equated with criminality) (Arieti 1963, Craft 1966, Russ 1966). However, according to Schalling (1970), the concept of impulsiveness
requires some specification. As used in certain psychiatric writings, it refers to break-through in behaviour of unconscious strong inner urges in a context of tension and conflict. As used to describe psychopaths, it does not imply strong impulses but rather weak restraints (Checkley 1964) and inability to delay gratification (Buss 1966). The main difference lies in the intrapsychic concomitants of the impulsive behaviour (Peterson, Quay and Cameron 1959). Impulsiveness in the latter sense includes a lack of planning and foresight, a giving into 'whim' without apparent emotional turmoil or signs of tension or conflict (Shealling 1970). Concerning sociability, it is evident that for prisoners, who live in an institution with few possibilities of seeing friends and going to parties, sociability items may have other implications than for individuals leading a normal life. The temporary conditions may influence their way of responding, although instructions emphasize that the questions refer to habitual behaviour. Further, as has been pointed out by Eysenck (1964), it may be difficult to separate low sociability (e.g. reporting having few friends, being reserved) due to lack of interest in people (true introversion), and low sociability due to disturbances in interpersonal relationships (neurotic introversion). Thus criminals may be expected to have lower scores in the sociability component of Extraversion.

Review of Studies on E/I and Crime

Eysenck (1970) supported his theory of criminality with respect to Extraversion by giving evidence of various studies which had obtained results revealing criminals to be higher on
E/I than normals (Fine 1963, Gibson 1967) to quote a few.

Epps and Parnell (1952), Sigman (1962), Trasler (1962), Syed (unpublished M.Sc. Thesis in Eysenck 1964), Pierson and Kelley (1963), all obtained positive evidence that criminals are markedly extraverted. Eysenck and Eysenck (1973) found female prisoners to be high on E/I as predicted by Eysenck's theory. Wilson and Maclean (1974), compared the scores of hundred recidivist prisoners and 100 trainee bus drivers on the EPI. Results supported Eysenck's findings that criminals tend to be more extraverted than controls.

According to Singh (1973), Indian studies are almost nonexistent. He obtained significantly higher E scores of criminals. Singh and Akhtar (1972) found that students suspected of cheating in examinations showed higher N and E scores on MPI as compared to non-cheaters. Shanmugam (1975) obtained higher E/I scores of criminals in a study as compared to non-criminals.

On the other hand a few studies have reported lower scores in E/I of criminals. Mohan and Singh (1976) found that criminals scored lower on E/I than those reported by Eysenck (1970). Millman (1966), Berry (1966), Forrest and Houghugi (1966) obtained data which showed criminals to be lower on E/I than normal subjects.

A few studies have reported significant difference on E/I between normals and criminals. Bartholomew (1957, 1959, 1963), Field (1960), Fitch (1962), Little (1963), Syed (1964),
Hoghughi and Forrest (1965), McErracher and Watson (1968), Schalling and Holmberg (1968), found no significant differences on the E/I dimension between offenders and normals. Burgess (1972), in a recent study (1970), appeared to contradict Eysenck's theory in that when a group of Canadian prisoners were compared with a group of normal Canadian controls, mean scores of E/I were not significantly different, in fact virtually identical. Cochrane (1974) failed to demonstrate a relationship of Crime with E. The lack of consistency in the studies comparing E/I scores in criminals and control subjects may have many reasons (Schalling and Holmberg 1970).

Eysenck (1970, 71) had himself suggested that in the field of criminality especially when dealing with incarcerated subjects, the sociability component is difficult to measure, and that this consideration may account for the failure of some researchers (e.g. Hoghughi et al 1970, Little 1963) to confirm to his criminological theory. Another possible explanation may be that the studies may have methodological inadequacies and may have used different testing devices so that a correct picture is not painted.

According to Schalling and Holmberg (1970) however, the inconsistent results may be related to the fact that I/E is a 'higher order' factor resulting from intercorrelation of primary factors (Eysenck 1964). The impulsivity component of this higher
order factor of extraversion is higher for criminals and the sociability component lower, so that studies where the results are based on overall means may not be giving a true picture. Many studies which have stressed the importance of impulsivity in criminality have obtained positive results to prove this contention and this difference in results may have been highlighted due to the use of different testing devices which have different proportions of items on sociability and impulsivity.

Sanocki (1969), used the short form of the MPI (Eysenck 1959) and found criminals to be significantly more extraverted (p 0.01), and also found by item analysis that it was the impulsivity aspect of E/I rather than the sociability aspect which differentiates criminals from controls.

Schalling (1970) in a study on 'extraversion in criminals and the 'Dual Nature of Extraversion' assumed that solidity in the Swedish Mark Nyman Temperament (MNT) inventory is related to the impulsiveness aspect of E/I and stability of sociability. This assumption was tested by correlational analysis. The results supported the view that there is a relation between solidity and E-impulsiveness. The hypothesis that criminals are higher in impulsivity than non-criminals was proved.

Eysenck and Eysenck (1971) confirmed the above results that the impulsiveness items clearly differentiate between criminals and controls, unlike the sociability items. Burgess (1972) concluded on the basis of a study that E/I is not a unitary factor among groups of criminals.
The complementary nature of these findings suggests that Eysenck's (1970) original suggestion that extraverts tended to be over-represented among criminal groups because of defects in their central nervous system which made them less easy to condition, and thus form the socialized habits which make up what we can call 'conscience' may have been along the right lines, but not sufficiently specific with respect to the precise aspect of personality involved.

Eysenck while explaining criminality has seemingly given a great deal of importance to the dimension of extraversion in the causation of criminality. But Burgess (1972) in the field of Crime and Mohan and Kumar (1976) in research feel that the dimension of N is perhaps equally important to Eysenck's theoretical model. The dimension of N at the most has been given the credit of interacting with E/I by either augmenting the detrimental effects or summing its potential of drive at the autonomic level with the cortical arousal at the ARAS in the case of E/I (Neblitzyn and Gray 1972). Neuroticism by which Eysenck implies various drive levels, complements the E/I in explaining various behavioural patterns.

(b) Neuroticism

By Neuroticism (N), Eysenck (1953, 1957) refers to the "emotional lability or over-responsiveness of a person and likelihood of breakdown under stress". The general nature of N is assessed as instability, unadaptability, depressive moods,
week dependable attitude, narrow interests, symptoms of nervous breakdown. (Mohan 1976). The basis of N is taken to be neurophysiological and elaborated from the Hullian theory of Drive. Neuroticism is thus, considered as a general factor in motivation or striving (Hall and Lindzey 1962). Eysenck (1963) is of the view that "differences between people in emotionality or Neuroticism are mediated by inherited difference in the lability and excitability of the autonomic nervous system. Some people are constitutionally predisposed to react strongly with their sympathetic nervous system toward incoming stimuli of various kinds, whereas other people are predisposed to react much less strongly". Neuroticism which is conceived of as a predisposition to strong autonomic activation, also produces higher cortical arousal (McLaughlin and Eysenck 1967). And, according to Davis and Tune (1970) "arousal is a state of the individual which can affect his behaviour." From the angle of N, arousal has motivational potentials equivalent to 'drive' (Mohan and Malhotra 1974, Mohan 1976). Now, since motivation is linked to learning ability, it could be presumed that from simple deductions, Neuroticism would also be related to learning. Neuroticism and Learning: Eysenck (1965) argues that "under certain conditions, neurotics will condition better than non-neurotics. Where anxiety is a relative drive, it should multiply with habit to produce better conditioning." The evidence of high Drive being favourable for conditioning comes from the Iowa studies (Spence 1957, Baron and Cornor 1960, etc.). Mohan and
Claire (1968) found that Neurotics condition better than subjects.

According to Mohan (1976), on the other hand, some studies have failed to support these above mentioned results. Hilgard, Jones and Kaplan (1951), Field and Brengelman (1961), Mohan, Rajinder and Mehra (1974) failed to obtain a relationship between drive and conditioning. Passingham (1972) said that is important to note that the learning of an avoidance response involves two states; the acquisition of a conditioned emotional response (CER) and the acquisition of an instrumental avoidance response (IAR) (Mowrer 1950, Soloman and Brush 1956). Though high Anxiety may lead to better learning of a CER, it may also lead to poorer learning of an IAR by the operation of the Yerkes-Dodson law (Jones 1960). Thus it is not clear whether neurotics would be predicted to learn such a response better or worse than non-neurotics.

Mohan and Kumar (1976) suggested an interactional or combined effect of N (autonomic Drive) and R/I. Olderman et al (1967) had hypothesized that higher the Drive, the less will be the increment of stimulation required to reach optimal stimulation, and lower the Drive, the greater the increment of stimulation necessary to reach optimal level. But as suggested by Mohan (1976) "how far this motivational force will retain its energizing and directive aspects and not become disorganizing and disruptive one due to the small accompaniments, will determine the prediction of effects on N on performance in learning tasks". Mohan and
Kumar (1976) clearly established curvilinearity in the relation of N and performance.

**Neuroticism and Crime** : Eysenck (1964) had said that antisocial behaviour is a consequence of poor conditionability. Now since behaviour is learned through socialization techniques during childhood, neurotics because of higher autonomic drive levels will tend to fare poorly as compared to stables with a more optimal drive level for learning performance. Antisocial conduct will therefore be more evident among neurotics.

Burgess (1972) and Passingham (1970) reviewed Eysenck's theory of criminality as regards N and said that Eysenck (1970) clearly stated in his theory: (1) neurotics are high on anxiety or emotionality; (2) Neuroticism acts as a drive reinforcing extraverted or introverted tendencies favouring or disfavouring antisocial conduct (3) Neurotics with habitual antisocial response will tend to engage in those responses more strongly than non-neurotics.

The prediction relating N to crime has been tested by various studies. Studies reporting high N in criminals were by Bartholomew (1957, 1959), Feld (1960), Fitch (1962), Syed (1964), Berry (1966), Millman (1966), Forrest and Hoghughi (1968), Price (1968), McWilliams (1968), Schalling and Holmberg (1968), Eysenck (1970, 1973), Wilson and Maclean (1974).

Some Indian studies have also confirmed the above results. Agarwal (1961), Shanmugam (1962, 1973), Singh (1973) all found
criminals to score higher on $N$ as compared to normals.

Mohan and Singh (1976) found that criminals had scores equal on $N$ as compared to those reported by Eysenck (1970). The minor criminals scored higher on $N$ as compared to major criminals. The rural criminals were more neurotic than urban criminals.

On the other hand, there were several studies which reported no difference in scores of $N$ between criminals and normals such as those of a later study by Bartholomew (1963), Little (1963), Moghugi and Forrest (1965), Sanocki (1964).

Banister, Smith, Heskin and Bolton (1973), studied the psychological correlates of long term imprisonment on personality variables and did not obtain any significant differences between four groups of criminals on $N$ measured by the EPI-N scale, nor were there any consistent trends. Cochrane (1974) could not obtain a clear link between $E/I$ and $N$.

(c) **Psychoticism**

Apart from $N$ as a dimension related to criminality, Eysenck has maintained that the third affective dimension of personality, i.e., psychoticism ($P$) is perhaps most consistently linked with crime. This concept has some similarity to the view that benign psychosis may arise from unspecific vulnerability (Welner and Stromgen 1958 and Eysenck 1970c). The hypothesis is based on the finding that quite generally, psychotics of all types tend to behave in experimental situations and on laboratory tests of a psychological nature, very much like one another and
unlike neurotics. The work of Eysenck (1952, 1955, 1959) and in particular of SBG Eysenck(1956) and Devadasan (1964), strongly argues for a separate dimension of psychoticism on the basis of laboratory experiments. More recent studies by Eysenck (1968, 1969), have demonstrated the possibility of embodying this conception of psychoticism in the form of a personality inventory. The nature of this factor may be conveyed briefly by the list of traits characterizing it (i.e., having high loadings on this factor) (1) solitary; not caring for other people, (2) troublesome; not fitting in (3) cruel; inhuman (4) lack of feeling; insensitive, (5) sensation-seeking, "arousal jog", (6) hostile to others; aggressive, (7) liking for odd, unusual things, (8) disregard for danger; foolhardy (9) making fools of other people; upsetting them.

Psychoticism and Crime

According to Eysenck and Eysenck (1970) there are two reasons for believing that psychoticism may in addition to E/I and N, be implicated in the causation of criminality. In the first place, the traits enumerated above resemble rather closely to those which are often exhibited by criminals. It is not suggested that all criminals are like this, but merely that a certain proportion of what are often considered the most difficult, inveterate and incurable criminals seem to resemble in their personality make-up this description. The other more convincing reason lies in the oft. repeated psychiatric observation
that psychosis (particularly schizophrenia) and criminality have a particularly close connection. A detailed presentation of the evidence is given in Eysenck (1970c) who also gives some empirical data linking criminality with P. A few of the relevant studies are noted below.

Odegard (1963) reported that out of first degree relatives of psychotic probands, 10 per cent could be classified as psychopaths, criminals or alcoholics. Many other, earlier reports of such an association have been reviewed by Eysenck (1946) and Planansky (1966). Medor (1914) and Rudin (1916) were already impressed by the number of criminals and alcoholics among the relatives of the schizophrenics but these studies could always be criticized by pointing out the possibility of parental psychotic behaviour being causally implicated in the psychopathic and criminal conduct of their offspring. This possibility has been ruled out by Heston (1966) in a study in which children born to hospitalized schizophrenics were removed immediately after birth and raised in foster homes. Their mental health and behavioural characteristics compared well with matched controls. Nine out of forty seven of these children were diagnosed as sociopathic personalities showing antisocial behaviour of an impulsive, illogical nature, with long police records (only four of the children of these schizophrenic mothers developed schizophrenia as compared with these nine criminal ones).
All these studies reinforce our belief that psychoticism in general may share certain important features with criminality without implying of course that all (or even a large proportion) of criminals are in fact psychotic in the strict psychiatric sense.

In empirical terms, Eysenck and Eysenck (1970) proposed that the scores of a questionnaire measure of Psychoticism would be raised in a sample of criminals, as compared with a sample of normals, matched with them in sex and age.

Hostility is an important aspect of P, and it is interesting to note that Caine, Foulds and Hope (1967), found both psychotics and criminals to have elevated scores on their Hostility scales. The Bristol Social Adjustment Guide (Scott 1960) has been found to distinguish well between criminals and non-criminal adolescents on P items (hostility to adults, hostility to other children withdrawal).

Segraves (1969) found that when he compared a group of drug taking students with non-drug takers, the drug taking students had scores significantly higher on P. Eysenck and Eysenck (1971) in a comparative study of criminals and matched controls, found prisoners to be significantly higher on P and N. Wilson and Maclean (1974) supported Eysenck's three factor theory that criminals tend to be more psychotic than controls.

In the Indian context, similar results were obtained reporting high P in prisoners. Shanmugam (1975) found
delinquents to have high P scores. Mohan and Singh (1976) in a study on the personality of criminals found them to score much higher on P than the scores reported by Eysenck and Eysenck (1970). The rural criminals were more psychotic than the urban criminals, minor criminals more than the major ones.

All the studies reviewed above suggest that criminals would be higher on P than normal subjects. So far these results have been consistently obtained by nearly all the researchers.

(3) A REVIEW OF CATTELL'S PERSONALITY THEORY

In America, Cattell too was carrying out a number of extensive researches in the area of personality almost at the same time as Eysenck was doing in England. Like Eysenck, Cattell also deduced a personality theory based on experimental evidence, which highlighted the trait approach in contrast to Eysenck's type-approach. But both maintained that the respective traits and types ran along a continuum between two extreme descriptions. The chief contribution of Cattell (1950) is the deduction of sixteen personality traits highlighting the extremes between neurotic and normal individuals. These were his primary personality factors and on extraction of second order factors, these emerge as 5-6 basic factors (Cattell, Saunders and Stice 1957) of which two seem to be of particularly consistent pattern, i.e., those of extraversion and anxiety. This latter trait of anxiety, by virtue of its correlation with Eysenck's N and TMAS anxiety, should show a relationship with crime. However,
recent studies show that about six personality traits account for the most marked differences between clinically judged neurasthenics and normals. These six neurosis-associated dimensions are listed below. (1) Factor I: Overprotection, tender-minded, cultured, protected emotional sensitivity vs tough-mindedness (henceforth referred to as Factor I femininity as well) (2) Factor F: Depressiveness-inhibited, sober, seriousness vs Happy-go-lucky cheerfulness (henceforth also referred to as Factor F (desurgency), (3) Factor E: Submissiveness, suggestivity, Dependence vs Dominance (henceforth also referred to as Factor E (submissiveness), (4) Factor O: Worry, guilt-proneness vs assured self-confidence, (5) Factor Q: Ergic tension (from Frustration) vs Calm relaxation (6) Factor C: Ego weakness or Emotional Immaturity and Instability vs Ego strength. The last three factors comprise the second order factor of anxiety (Cattell and Scheier 1957, 1958). Each of these components which are measured through the NSQ scale (Neuroticism Scale Questionnaire) and their total score are discussed below in detail:

(a) Tender-minded overprotected, cultured, protected emotional sensitivity (Component I): According to Scheier and Cattell (1961) the person or group with a high score on this component is tender-minded, sensitive, and fastidious in the sense that women typically are, as contrasted with men. In fact the dimension has occasionally been called femininity-vs-masculinity.

According to Cattell and Scheier (1961) an individual's position on this dimension seems to be largely a product of his
earlier environment, i.e., it has little genetic determination (Cattell 1957). Cattell’s contention regarding component I is that it represents overprotection and sheltering from the realities of life, often by an unrealistic indulgent home education. The I(+) person tends to be sentimental kindly, sometimes artistically and otherwise "cultured", often somewhat affected and imaginative even to the point of being fanciful. By contrast, the low-score or I(-) person might be described as unfeeling, a "Philistine", often brusque in manner. He tends to lack artistic interest and sensitivity, inclining to be a practical, no nonsense type, tough hard and responsible.

(b) Serious, Inhibited Tendency (Component F) : "The person with a high score on this component shows an almost classical picture of depression: glum, sober, serious, subdued, and pessimistic. He tends to withdraw from others; he is taciturn incommunicative, smug, seclusive, retiring ("wallflower"), and introspective. His quietness does not mean serenity for when, as often, he is upset, he simply simmers and broods, without easily detectable outward signs, such as restlessness. Finally there is a definite slowness and inability to accept and adapt to situations. The person is rigid, bound by habit, phlegmatic and slow to move." (Scheier and Cattell 1961).

By contrast the low-score pole person is "cheerful, happy-go-lucky" the life of the party. He is humorous and witty, cheerful to the point of mancication, enthusiastic, and likes excitement and social contact. He is expressive, sociable,
talkative, adaptable, original, clever, energetic, fast-moving
and impulsive. Often, however, his cleverness is only super-
ficial and he is too impulsive" - (Scheier and Cattell 1961).
Research has shown conclusively that this component is one of
the main elements in Introversion-Extraversion though by no
means all of it (Cattell 1957, Scheier and Cattell 1961).

The depression component is almost completely unfixed
genetically or hereditarily in any given person. Like the
I component, it is almost completely free to change in response
to environmental manipulations. Cattell (1957), Scheier and
Cattell (1961) discovered that the "inhibition and soberness
of component F stems from a history of hard, punishing
experience". This may arise either from economic or personal
poor endowment in what is needed for success; or from higher
more exacting levels of aspiration, with unrealistically high
or agonizingly distant goals.

(c) Submissiveness, Dependence (Component E) : According to
Scheier and Cattell (1961) "the person with a higher score
on this component is submissive, obedient, complaisant,
dependant - a milk toast type who lacks the drive to win
("will power") and does not assert himself". He does not
"make trouble". He is modest, quiet, retiring, tactful, not
"defensive", in general not demanding attention, ready to concede
the center of the stage to others, rather than argue or clash
with them, and sensitive to social approval or disapproval. In
The submissive persons' behaviour may appear quite "considerate", kindly, and soft-hearted, probably mainly because he fears and avoids the clashes which would result from assertive-hostile behaviour towards others. If there are unavoidable conflicts with others, or any form of social disapproval, he is profoundly upset.

The person with a low score on this NSQ component is "dominant, assertive, ascendant, aggressive, and competitive, even pugnacious. He tends to be domineering, unshakable in his determination to have things his own way, vigorous, forceful, decisive, tough and stern. He is independent-minded, wilful, stubborn, and self-assured, often to the point of being boastful and haughty. He seeks attention, but is relatively insensitive to social approval or disapproval of his behaviour" (Scheier and Cattell 1961).

The submissiveness-dominance dimension appears to involve differences in the expression of hostility (rather than the amount i.e., presence vs absence of hostility); the submissive role is "intropunitive" (covert hostility against oneself) and the dominant role is "extrapunitive" (hostility against others). Consistent with this interpretation, extremes at both poles are found to be associated with maladjustment - the submissive-intropunitive with neurosis, narcotic addiction etc., the dominant-extrapunitive with psychopathy.
There is considerable hereditary fixing of this trait in a given individual but there is enough scope for environmental modification. Scheier and Cattell (1961) suggest that (a) sensitivity to social approval is a crucial point of attack at the psychological level, (b) physiological variables seem to be quite directly related, e.g., male hormone as related to aggressive behaviour.

(d) Anxiety: This component groups together, as one score, three related factors, shown to form a single second-order factor - guilt proneness, frustration tension and emotional immaturity (Cattell and Scheier 1957, 1958).

Psychiatric and clinical correlations (Cattell and Scheier 1957, 1958, 1961) show that this anxiety factor - measure conforms to the consensus of clinical judgement as to the nature and level of free anxiety. Research also shows that about half the differences between neurotics and normals can be accounted for as differences in anxiety level (Cattell and Scheier 1961). But Neurotic tendency in Cattell's system and anxiety are distinct phenomena. Neurotics do not always and necessarily show high anxiety, and normals can be highly anxious.

The person who scores high on this component has feelings of anxiety, dread, guilt, inferiority, frustration and 'loneliness'. He is easily upset, tense and excitable, restless, irritable, emotionally immature and unstable, with low frustration tolerance. This is mainly unbound, free-floating anxiety, but some 'binding'
is shown. The low scorer shows absence of anxiety feelings and symptoms. This person is emotionally mature, secure, calm and composed, self-confident, realistic, stable, resilient and in a broad sense, psychologically healthy.

According to Scheier and Cattell (1961), there is almost nothing good to be said about high anxiety scores. True, people can continue to operate affectively at rather high levels of anxiety, but the probabilities are definitely and consistently toward disorder. High anxiety is associated not only with neurosis, but also with almost all the other disorders and maladjustments so far measured, including character disorders such as alcoholism, homosexuality and exhibitionism, physical disabilities, psychosis etc. Thus anxiety is apparently what comes closest to being the common element in all forms of mental disorder, while lack of anxiety, conversely, comes close to what is usually meant by the term 'mental health'.

(e) The Total Composite Neuroticism Score: This score is the simple unweighted sum of the raw scores of the four components. There is more information in the separate component scores than in the total score, because the same total level of Neuroticism (henceforth called 'Overall Neurotic Trend' to distinguish it from Eysenck's dimension of Neuroticism) can be due to all manner of different combinations of relative contribution from the components. (Cattell and Scheier 1961).
A COMPARISON OF CATTELL AND EYSENCK'S PERSONALITY THEORY

It has been shown through factor analytical studies that Cattell's personality factors emerge as higher second-order factors which are then related to Eysenck's personality dimensions of E/I and N. On factoring the principle dimensions of personality, as represented by these 16 primary factors of Cattell (Cattell, Saunders and Stice 1957), one obtains 5-6 second order factors of which two have persisted in different experiments with high consistency of pattern, i.e., (1) Extraversion versus Introversion and (2) Anxiety vs Lack of Anxiety (or adjustment).

According to Eysenck and Eysenck (1970a), Extraversion is defined in terms of the following primary factors (given together with their factor loadings on E/I). (1) F(surgency) : + 0.70; (2) M(autia) : + 0.54; (3) E (dominance) : + 0.54; (4) A (cyclothymia) : + 0.38; (5) (parmia) : + 0.17. Cattell and Warburton (1961) also attribute five primary factors of Cattell to the E/I dimension, i.e., factors A (cyclothymia), F (surgency), and H (parmia), M (autia) and Q2.

According to Banister, Smith, Haskin and Bolton (1973), the second order factor dominance on the 16 PF consists of three scales which could reasonably be said to measure the sociability aspect of E/I in Eysenck's system: (1) Factor A (sociability), (2) Factor E (dominance), and Factor Q2 (self-sufficiency) - and two which could reasonably be said to measure impulsivity: (1) Factor F (enthusiasm) and (2) Factor H (spontaneity).
This also does not seem very clear-cut. Factor F according to Cattell's own description appears to be a mixture of impulsivity and sociability of Eysenck's E/I rather than a measure of impulsivity alone. The factor which Eysenck calls Neuroticism is one which Cattell and his coworkers have called regression (Cattell and Scheier 1961). According to Eysenck and Eysenck (1970a) the main primary factors defining Neuroticism in his system are: (1) C(ego-strength) - 0.50; (2) I (protension) - 0.47; (3) E (dominance) - 0.32; (4) H (armia) - 0.20. (It should be noted that Cattell prefers to call this factor anxiety versus integration or adjustment).

Adcock (1965), comparing Eysenck's personality system with that of Cattell, concluded on theoretical grounds that Eysenck's factors of N and E/I were substantially the same as Cattell's second order factors of A and extroversion-inversion (EI) (also now called Extroversion).

Crookes and Pearson (1970) tried to obtain a relationship between EPI scores and 16 PF second order factors. These correlations are given below:

<table>
<thead>
<tr>
<th>16 PF</th>
<th>Anxiety</th>
<th>Neurotic Trend</th>
<th>Extroversion/Inversion</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPI N</td>
<td>+0.71</td>
<td>+0.73</td>
<td></td>
</tr>
<tr>
<td>EPI E</td>
<td></td>
<td></td>
<td>+0.71</td>
</tr>
<tr>
<td>E/IMP</td>
<td></td>
<td></td>
<td>+0.39</td>
</tr>
<tr>
<td>E/SOC</td>
<td></td>
<td></td>
<td>+0.74</td>
</tr>
<tr>
<td>16 PPN</td>
<td>+0.89</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
They found that the highest correlations is between 16 PF Anxiety and 16 PF Neurotic trend. The interesting feature is that the 16 PF Exvia/Invia is much more related to the sociable half of the EPI E/I score than to the impulsivity, and the two values of EPI Extraversion are only moderately correlated with each other. There is however no one to one relationship.

The fact that EPI N had a substantial r with 16 PF Anxiety and more especially the fact that the criterion based 16 PF Neurotic trend was not more related to EPI N than was Anxiety, gave some support to Adcock's suggestion that Eysenck's N and Cattell's Anxiety are estimates of the same basic variables.

As for E/I it is the sociability part of Eysenck's measure which is related to Cattell's. This would mean that in a scale like the PEN (Eysenck 1970) which is a measure mainly of sociability, correlations with 16 PF Exvia/Invia would be obtained. These relationships seem to suggest the NSQ factors would be similarly related to crime as predicted by the theory of criminality put forth by Eysenck.

NSQ and Crime: Scheier and Cattell (1961) had given NSQ profiles for some important clinical criterion groups and their findings suggested that psychopaths have a very high anxiety and very marked hostility - dominance (low E).

Warburton (Eysenck 1964) administered the 16 PF test of Cattell to some 2000 inmates of a penitentiary. He found that on five traits, which are grouped under the E/I heading, four showed highly elevated scores. The fifth, dealing with social
behaviour (sociability) did not properly apply to these men. Of five traits related to N, all the five showed highly elevated scores. When a combined score was derived for E/I, and another for N, these men were found to be very much in the psychopathic quadrant, that is to say, they had high scores on Extraversion and Neuroticism.

Cattell and Eber (1957) found criminals to be above average on Factor C (emotional maturity), Factor E (dominance) and Factor H (spontaneity), but below average on Factor O (worry proneness). In another study, Cattell, Eber and Tatsuoka (1970) found criminals to be decidedly below average on Factor C, Factor G (responsibility) Factor Q (self control) and Factor F (enthusiasm) and above average on factor O, while factor E (dominance) was noted to be somewhat low. The results are controversial and do not suggest any definite conclusions regarding 16 PF factors and crime. Banister, Smith Heskin and Bolton (1973) suggested that these discrepancies may be due to the failure of the researchers to take length of imprisonment into account or the type of prisoners.

These various results fail to reach consensus. Although some of Cattell’s primary factors are related to Eysenck’s affective personality dimensions, there seem to be considerable overlap among the primary factors themselves. The same factor (e.g. H (paramia) is being used to describe both Extraversion and Neuroticism in Eysenck’s system. This would suggest that even
among Cattell's trait level factors there are intercorrelations and much more work needs to be done in this area before clear-cut relationships are obtained. As independent, trait-level factors, Cattell's primary personality factors could be of special significance in the investigation of crime and criminals.