Hence in the present Investigation, Delinquent girls have been considered for the study of cognitive styles and learning styles.
CHAPTER III
THE PRESENT STUDY

The present chapter deals with the statement of the problem, the hypotheses formulated and the method of investigation adopted.

STATEMENT OF THE PROBLEM:

The problem of the present study, has been to, “investigate the nature of cognitive and learning styles and their relation to intelligence extraversion, neuroticism, psychoticism and criminal propensity among the normal and delinquent girls”.

HYPOTHESES:

DERIVATION OF HYPOTHESIS:

Criteria of Delinquency:

The legal definition of delinquency would certainly restrict the scope of the study of the delinquent population per se. It is true that a considerable section of the juveniles indulging in delinquency escape the arms of law. However, it can be said that generally those who have been apprehended and committed to correctional institution by the state remain to be delinquents. This fact has been confirmed by the findings of a few investigators who have made departure from the usual procedure of studying institutionalised delinquents by attempting to study delinquent behaviour in the general population. The results of their studies are also in conformity with the findings on institutionalised delinquents. Further seriousness and frequency of delinquent conduct is found to be one major determinant of actions taken against juvenile law breakers in such a study.
(Nye, 1958). From this, it can be inferred that the institutionalised delinquents represent the most serious delinquents distributed in the general delinquent population. This contention receives further support in the study by Erikson and Empey (1963) who studied 50 high school Non-Delinquents Boys, 50 who had appeared once in Delinquents Court, 50 Juvenile repeaters and 50 Incarcerated Delinquents. The results of the findings show that all the boys studied admitted to have acted in Delinquent manner, most of which had gone undetected, the officially recognised offenders were found to have implicated in Delinquency with greater frequency, and the persistent offenders had been involved in most serious Delinquencies. In a similar vein Cortes and Getti (1972) who defended the operational definition of Delinquency in terms of legal criterion contended that 'by limiting ourselves to official offenders, we have been studying a group that, as a whole consists of real Delinquents who have committed some of the most serious offences with greater frequency"

**Sample of the Present Study:**

In line with the above considerations, the legal definition of delinquency has been adopted for the purpose of identifying samples of Delinquents in the present investigation.

Adjudicated Delinquent Girls were chosen as subjects. The subjects were chosen from the Special Home for Girls, which is situated in Kellys, Madras. The Delinquent Girls were between the age group of 13 to 18 years with a mean age of 15.5 years. The size of the sample was 41. The present investigation is intended to control the factor of Crime. Hence Juvenile Delinquent Girls who committed the offence of stealing were taken up for the present study. This is one of the reasons why the
Delinquent sample remained forty one. This forms a representative sample of all the Juvenile Delinquents (Adjudicated) population of the state. Purposive Sampling Technique was utilised in sample selection.

The Non-Delinquent group comprised of 41 Girls, was drawn from a corporation school in Madras with the age ranging from 13 to 18 years with a mean age of 15.5 years. Children from a corporation School were chosen to match the sample regarding Socio Economic factor as the schools run by Corporation of Madras, cater to children from similar economic sectors as that of the Delinquent sample.

Selection of Variables:

In line with theoretical consideration supported by empirical researches in the area of Delinquency, reviewed in the earlier chapter, the variables such as Styles of Cognitive Functioning (Field Independence - Dependence Styles of conceptualisation, Analytical, Relational and Categorical); Learning Styles, Concrete Experience, Reflective Observation, Abstract Conceptualisation and Active Experimentation; Intelligence (Concrete) and Personality Dimension given by Eysenck (E,N,P,CP) were chosen to carry out a comparative study of Delinquent and Non-Delinquent Girls.

COGNITIVE VARIABLES:

Cognitive Styles:

Vinacke's defines thinking as 'The internal process which bring the organisation laid down by past experience and learning to her upon responses to current situations and which shape their responses in keeping with inner needs. (Vinacke 1952). This definition implies that thinking is concerned with adjustment and that experimental study of the higher
Cognitive process is also concerned with forces which direct the individual and so affect his adjustment and personality. The two major trends may be observed in studies of thinking. Some emphasise the conceptualising processes, the manner in which concepts are built up and the meanings that concepts have for the thinker. An alternative approach emphasises the Cognitive aspects of general adjustment, symbolic problem solving behaviour, the actual solution of problems through Cognitive tests, so that concepts are used in directing need oriented behaviour.

Tasks become Cognitive problems when regularity is either masked or is so complex that its patterns exceed the memory span of the observer. Identifying the regularities involves structuring and patterning or isolating structures in the environment. Learning and problem solving may be profitably viewed as identification of temporally or spatially extended patterns. Cognitive processing theories have emerged as the result of some powerful new models and concepts. Stimuli are signals conveying information to a processing system which has the capacity to code and assign representational status to them. Validation of coding procedure depends on a sequence of operations which test the attempted identification by matching them with additional impressions of external stimuli and with existing coded information in a store of past events.

Visual information processing activities can be divided into two broad classes; those which involve memorising visual stimuli and those which involve identifying visual stimuli. Representation exist in the long term memory and the activity involves relating visuals stimuli in the external world to visual information stored in long term memory rather than the memorisation of the visual stimuli.
When an observer fixates a new part of the visual field or when a blank visual field is replaced by a paternal field (a display of letters or pictures) visual information is rapidly collected from the new visual stimulus and a detailed visual representation of that stimulus is set up in iconic storage. The iconic representation is faithful and capacious but it is subjected to decay, fading to nothing in a few milliseconds. Aspects of the visual stimulus which are to be reported or which require lengthy processing must therefore be accorded more stable storage which is achieved by registering selected aspects of the iconically stored material in a more stable storage form which is called double storage. Iconic storage is a purely visual memory mode and selection can be performed only on the basis of purely visual item characteristics such as position, hue, brightness, shape or movement and not semantic category nor any acoustic or phenological characteristics.

Hence, it can be said that in the present study both iconic storage and double storage modes of visual information processing have been utilised. Embedded Figures Test was based on iconic storage mode. The Conceptual Style was based on double storage mode of information processing. Cognitive Style studies are concerned with the characteristic way in which an individual approaches his environment. In the present investigation, Field Independence - Dependence Style of Cognitive Functioning and Conceptual Styles such as Descriptive Analytical; Relational - Functional and Categorical - Inferential have been studied in the context of girl - delinquency. These above mentioned style are the perceptual and conceptual components of Analytical and Global Style of Cognitive Functioning.
Hence, it is hypothesised that 1) "Delinquent Girls and Non-Delinquent Girls will differ significantly" with reference to Field Independence - Dependence Style of Functioning.

2) "Delinquent Girls and Non-Delinquent Girls will differ significantly with regard to their 'Styles of Conceptualisation' such as Analytical, Functional and Inferential".

**Learning Style:**

An individual learns in a way that depends upon his individual Cognitive Styles. Learning Style deals with the formal characteristic of the learner. In other words, it could be said that Learning Style indicates how a person learns rather than what he learns. It is obvious that there are some stable individual differences among people in the way they go about receiving, processing and utilising information given in a learning and memory task. Learning Style refers to the pattern of processing activities which the individual typically engages in during learning. Biggs (1970); Kolb (1971) and Schmeck and Grove (1975); Schmeck etal (1977) and (1978) have attempted to assess Learning Style through self report instruments. Kolb (1974) developed his Learning Style Inventory (LSI) on the basis of Experiential Learning Modes for LSI assesses by describing the extent to which a learner emphasises the importance of each of the four stages, which constitute separate scales, relative to the others. This will clearly indicate the most preferred mode of learning as well as the least preferred mode of learning.

Study of Learning Styles in the field of Juvenile Delinquency is a pioneering work, in India. As has been already mentioned, studies on Female Delinquency is sparse. Females shoulder greater responsibilities
both in the family and also in the society in shaping the personality of the individual. It is high time that efforts should be taken to prevent Female Delinquency.

Hence the investigator made an attempt to carry out a comparative study of Delinquent and Non-Delinquent Girls with reference to their Learning Styles. It is hypothesised that 3) "Delinquent Girls will differ significantly from that of the Non-Delinquent Girls with reference to their four Styles of Learning".

INTELLIGENCE:

The term 'Intelligence' has been derived from a Latin word coined by Cicero to translate a Greek word used by Aristotle to cover all Cognitive processes. It was recognised that every individual was born with a general Cognitive capacity. It was Galton who distinguished special abilities like memory and imagination from the general ability.

The first formal scale for measuring intelligence was developed by Binet Simon in 1905 which was revised in 1908. Weschler (1958) designed tests which were to be given individually by a skilled examiner.

Later on Terman defined Intelligence as ability to carry out Abstract Thinking. This definition was not found to be satisfactory because it expressed a narrow view of Intelligence.

According to Thorndike, Intelligence has three levels of Functioning namely Abstract Intelligence, Concrete Intelligence and Social Intelligence. Abstract Intelligence means 'ability to understand and manage ideas and symbols' Concrete Intelligence is the ability to learn, understand and manage things and mechanisms Social Intelligence is the
'ability to understand and manage individuals in the society and to act wisely in human relations.

Spearman (1904) suggested that intelligence is the capacity for constructive thinking. According to Spearman one's intelligence depends on the clarity with which the individual apprehends his own experience, the speed with which an individual deduces relations and correlates and the complexity of the relations and correlates so deduced. Spearman has stressed the act of 'educing correlates' as the essential function of general intelligence. Of course, the recent topography of the structure of intellect (Guilford 1959) has clearly shown Spearman's conception of 'g' to have only limited value in accounting for various modes of Cognitive operation. Guilford and his Associates (1961) arrived at the conclusion that every mental, Process or intellectual activity can be described in terms of three basic dimensions or parameters known as Operations - the act of thinking contents - the terms in which we think and the deduced products we come up with. The 'Operations' according to Guilford can be further subdivided into cognition, memory, divergent thinking, convergent thinking and evaluation.

Cattell (1963) has suggested that 'g' factor has two related components called Fluid and Crystallised Intelligence. By Fluid Intelligence he means a relatively fixed capacity which influences the rate of intellectual development and the individual's reactions to his environment. Crystallised Intelligence is a measure of learning and of the effects of intuition.

WISC Scales were found to be related to Field Independence and Dependence which assumed to be predominantly measures of fluid intelligence. (Zigler 1963). As per Witkin, Cognitive Styles are
represented in performance on intelligence tests and subjects controlling for I.Q. is not an appropriate issue in studies of Cognitive Styles. Intelligence test does not represent a unitary dimension. If there exists one or more identifiable modes of Cognitive Functioning, it should certainly be true that these Styles would govern atleast some aspects of performance on standard I.Q. tests. field independence, abstract intelligence are found to be related to analytical conceptual styles (Nirmala 1977). But their correlation do not mean that cognitive styles are an artifact of intelligence (Maccoby 1964). Parallel to the Witkin's finding is the Kagan group's finding that analytical conceptual style is more closely related to the scores on the 'performance' than the verbal subjects of intelligence.

In India, Chander Mohan Bhatia constructed battery of Tests to measure Concrete Intelligence of the individuals. The test was known as Bhatia's Battery of Performance Test of Intelligence.

Studies on Delinquency and Intelligence reveal that low intelligence is the causative factor to Delinquency. (Sutherland 1931; Meclune 1933; Merrill 1947; Glueck and Glueck 1950; Kiyonage, Kanji 1973) The studies on Cognitive aspects of Delinquents demonstrate that proneness to crime is no longer to be considered as due to deficit in intelligence. However studies have already shown a few specific differences to exist in regard to certain specific factors of intelligence relating to objective ways of thinking. Instead of posing the question, whether the Delinquent inferior in intelligence, may be reworded to ask whether Delinquent is inferior in specific factors of intelligence.

With reference to the above, concrete Intelligence is tested among the Delinquent and Non Delinquent Girls.
4) In the present investigation, it is hypothesised that "Delinquents and their counterparts (Normals) will differ significantly in their concrete intelligence".

DIMENSIONS OF PERSONALITY

As has been already cited in the review of literature that the Eysenck's Personality Theory has received substantial support in a number of studies done in the field of crime and delinquent behaviour. The relevant propositions of Eysenck's Personality Theory as applied to crime behaviour would run as follows:

Propensity to crime is universal but is held in check in most cases by a given person's conscience. This conscience is essentially a generalised set of conditional responses built up during the childhood and Adolescent stages of development. Extroverted people tended under certain stated conditions to condition less well than introverted ones, that making them more likely to behave in an antisocial fashion. High degree of Anxiety or Neuroticism tended to act as a drive strongly reinforcing the Extroverted or introverted tendencies favouring or disfavouring antisocial conduct (Eysenck and Eysenck 1970).

EXTRAVERSION

Eysenck has described Extroversion as follows:

The typical extrovert 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 for excitement, takes chances, acts on the spur of the
moment and generally is an impulsive individual. He is fond of practical jokes, always has a ready answer and generally likes changes; he is carefree, easy going, optimistic and likes to laugh and be merry. He prefers to keep moving and doing things; tends to be aggressive and loses his temper quickly, altogether his feelings are not kept under tight control and he is not always a reliable person.

NEUROTICISM:

Neuroticism refers to emotionally insatiable condition of an individual. It tends to make an individual emotionally irrespnsive and it presupposes a general state of stirred up condition of the organism. Individuals characterised by neuroticism will have difficulties in returning to normal state after emotional experiences, and that it possesses drive properties. That is, it propels an individual to action. However, it is only a generalised drive. It can only stir up an individual to action but cannot decide the course of his action. The level of neurotics beyond certain point affects the individual, leading to pathological condition.

PSYCHOTICISM:

Eysenck has described the characteristics of psychoticism as follows:

Solitary and not caring for other people, troublesome, not fitting into the group, lack of feeling, insensitivity, sensation seeking, hostile to others, aggressive, liking for odd and unusual things, disregard for danger, making fools of other people and upsetting them. Psychotic traits often resemble traits exhibited by criminals, especially hardened criminals. Psychiatric observational reports disclose criminality to have closer association with psychoses. (Eysenck and Eysenck 1970).
CRIMINAL PROPENSITY:

Criminals are considered to share some genetic endowment with psychotics. Eysenck (1970) has reported a set of behaviour pattern called 'criminal propensity' which characterises criminals in general. Examples of traits are, sadistic tendencies, impulsivity, easy excitability, imagining others as responsible for his problems, tendency to be indifferent to acts punishable under law, worry about catching infectious diseases, imagining that parents have not treated them well. Similar results have been obtained on studies done on Personality-Dimensions. E, N, P, CP in Indian Context. (Shanmugam 1974,1980) Hence, it is hypothesised that 5) "DG will differ significantly than that of NDC with reference to Personality Dimensions with the expectations that DG will be higher in E, N, P, and CP dimensions.

METHOD OF INVESTIGATION

TOOLS FOR THE INVESTIGATION:


2. Conceptual Style Tests constructed by the present investigator, by including some of the items given by Kagan, Moss and Sigel.

3. Learning Style Inventory by Kolb, adapted in Tamil by the investigator.


5. The Personality Inventory (The PI) by Eysenck. Standardised in Tamil by Shanmugam.

To establish reliability and validity of the tests, pilot study was conducted. In the main study, the above mentioned battery of tests were administered as individual tests. The order of presentation was varied to
control the extraneous errors. Among the five tests Embedded Figures Test was the most time consuming test. In the Embedded Figures Test, the maximum time limit for each card was 3 minutes. Rest periods were also allotted in between the trials. The maximum time to administer the EFT for one individual was approximately two hours.

Conceptual Style Tests, Learning Style Inventory, the Personality Inventory and Bhatia's Battery of Performance test of Intelligence, took approximately from one to one and half hours for administration to each individual.

On the whole of the total administration time for an individual was approximately six hours. To avoid fatigue effects, these tests were conducted on each individual with intervals of two days.

DESCRIPTION AND ADMINISTRATION OF TESTS OF COGNITIVE FUNCTIONING

Witkin used Embedded Figures Test (EFT) as a measure of field independence - dependence style of Functioning. The subjects task in the Embedded Figures Test was to locate a simple figure which he had seen previously, within a larger complex figure. The simple figure was incorporated in the complex one in such a way to be obscured perceptually. Its outline might be from the boundaries of several different prominent sub pattern in the complex figure.

For each simple figure there are several different complex figures that contained it. The letter used to designate each complex figure corresponds to the letter of one of the simple figures and indicates that it is present in that particular figure.
Simple figures are assigned by a letter, and the complex figures are designated by a letter and a number, the letter corresponding to that of the simple figure which it contains. Figure P and P-1 are examples for simple and complex figures respectively.

At the beginning of the test, the subject (S) was given the following instructions:

"I am going to show you a series of coloured designs. Each time, I will show you one of these designs, I want you to describe the overall pattern that you see in it. After you examine each design, I will show you a complex figure which is contained in that larger design. You will then be given the larger design again and your job will be to locate the smaller figure in it. Let me give a practice to show how it is done".

The S was then shown the practice complex figure (P-1) for 15 seconds, after which it was removed and the practice simple figure (P) was shown for 10 seconds. When it is removed, the complex figure was presented once more with instructions to locate the simple figure in it. After the presentation of complex figure, the stop clock was started. The S was timed in the task and the score recorded for him was the time taken to locate the simple figure. When the S reported that he had found the figure, the stop clock was stopped and he required to trace it, so that E could be sure, that it was correct one. The S was given a blunt stylus and was asked to trace the figure without touching the paper.

After the practice trial, the S was given the following instructions. "This is how you will proceed on all trials. I would like to add that in every case the smaller figure will always be in the up-right position. There may be several of the small figures in the same larger design, but
you are to look only for the one in the upright position. Work as quick as
you can, I will be timing you, but be sure that the figure you traced is
exactly similar to the original figure both in size and in proportions. If you
ever forget the simple figure, you may ask for it again. Are there any
questions?"

The S's score on each trial was the time taken to locate the simple
figure. A maximum of three minutes was allowed and if the S failed to
locate the figure within that time, the S's score was recorded as 3 minutes
(F). The S was permitted to re-examine the simple figure as often as the
'S' wished. This was done because the task would cease to be the one
intended if S no longer remembered the structure of the figure for which
he was searching. The complex figure and the simple figure were not
shown simultaneously. The subjects were given 10 seconds for re-
examination. The stop watch was stopped during the period of re-
examination so that this time was not included in the final score. When
the S reported discovery of simple figures within the complex figure, the
time was noted and the stop watch was permitted to go on while he traced
it. If this was done correctly, the score recorded for the trial was the time
of discovery, but if the correct figure was not traced, the S continued his
search and the time consumed in tracing the incorrect figure was included
in the final score. The time at which each unsuccessful attempt was made
was recorded. The S's score for the whole test was the sum of the time
taken to locate the simple figure in the complex figure.

A factor analysis of EFT by Vojtisek and Megare (1974) indicated
the presence of the reversible perspective factor in addition to a pure
embedded factor. Two factors were extracted. Factor A contained all
items except the E and H series and had been labelled as pure embedded
figures factor. Factor B contained all 'E' series items and involved the three reversible perspective figures.

Jackson (1956) made an attempt to shorten the EFT. The test was shortened with twelve items. The items were as follows: C-1, D-1, E-1, A-2, C-2, G-1, A-3, H-1, E-3, C-3, D-2, E-5: Time limit for the short form was converted to 3 minutes instead of 5 minutes. But in the short form also E series items were included which are not a measure of pure embeddedness.

Based on the pilot study results, E series items were omitted and only those items that measure pure embeddedness were taken for the main study (Nirmala 1977). Then the short form included 16 items instead of 24 items.
For the present investigation, the short form of EFT (Nirmala 1977) was made use of. The short form consisted of the following items: B-1; C-1; D-1; F-1; C-2; G-1; A-3; C-3; D-2; G-2; A-4; B-2; C-4; G-3; A-5; and C-5.

A pilot study was conducted on a sample of 20 Delinquents. EFT short form (Nirmala 1977) was administered. The items that had the capacity to discriminate the Delinquent's Cognitive Functioning were chosen for the present study. Test retest reliability Co-efficient was found to be .83 which was significant at .01 level. Face validity was established.

Thus the EFT (short form) was standardised in the present investigation.

CONCEPTUAL STYLE TEST:

A consistent preference for analytic categorisation has been identified by Kagan and his colleagues (Kagan, Moss and Siegal 1963) in terms of a tendency to analyse stimuli into differentiated parts as opposed to the non-differentiated global acceptance of the entire stimuli. They used figure sorting task in which the S's were asked to select groups of human figures that went together on some common basis and then to describe the reason for each grouping.

Kagan etal (1963) developed tests of similar type mentioned above, which is called Conceptual Style Test (CST) consisting of several sets of three pictures drawing of familiar objects. S's were required to select two drawings from each set that were alike or went together in the same way.

In the present study, Conceptual Style Test constructed by the investigator was utilised. The CST was based on the items given by
Kagan, Moss and Sigel (1963) in their Conceptual Style Test and also on newly added trials so as to suit the Indian conditions.

Conceptual Styles Test (Nirmala 1977) consists of 24 sets of three drawing drawings of familiar objects. Ss are required to select two drawings from each set that are alike or go together in the same way. The pairs are not independent of each other since almost every grouping is classified as either analytical, relational or inferential. The responses are classified according to the categories developed by Kagan, Moss and Sigel (1963).

STRUCTURE GIVEN TO THE SUBJECT:

"Now I will be showing you a card with three pictures. You have select two pictures that go together in some manner and give reason for ving selected the pictures. There are 24 cards altogether. There is no te limit. But do not waste too much of time over each card".

SCORING:

One point was given to each card. The response were classified o three conceptual categories.

e three conceptual categories are given below:

An Analytic Descriptive Conceptual Style is based on similarity in particular attribute or differentiated part of each stimulus figure in a cup as "people with a bag".

A Relational Functional Style of Conceptualisation is based on a ctional the matic or temporal relationship between the stimulus figures h as "Ink-bottle and Pen-writing".
Kagan, Moss and Sigel (1963) in their Conceptual Style Test and also on the newly added trials so as to suit the Indian conditions.

Conceptual Styles Test (Nirmala 1977) consists of 24 sets of three picture drawings of familiar objects. Ss are required to select two drawings from each set that are alike or go together in the same way. The scores are not independent of each other since almost every grouping is classified as either analytical, relational or inferential. The responses are classified according to the categories developed by Kagan, Moss and Sigel (1963).

**INSTRUCTION GIVEN TO THE SUBJECT:**

"Now I will be showing you a card with three pictures. You have to select two pictures that go together in some manner and give reason for having selected the pictures. There are 24 cards altogether. There is no time limit. But do not waste too much of time over each card".

**SCORING:**

One point was given to each card. The response were classified into three conceptual categories.

The three conceptual categories are given below:

An Analytic Descriptive Conceptual Style is based on similarity in a particular attribute or differentiated part of each stimulus figure in a group as "people with a bag".

A Relational Functional Style of Conceptualisation is based on a functional the matic or temporal relationship between the stimulus figures such as "Ink-bottle and Pen-writing".
An Inferential Categorical grouping was based on similarity in some inferred quality or conceptual label of which each stimulus in the group was an independent instance such as "athletes, leaf".

CONSTRUCTION OF THE CST AND IT's RELIABILITY - VALIDITY

In the present study, some of the items in Kagan's Conceptual Style Test were modified so as to suit the Indian conditions. Some of the new items were also included in the constructed Conceptual Style Test. First the pencil drawings were tried out with Tamil Medium children of 10 +. The responses were classified according to the categories developed by Kagan and Moss. The possible responses were got from a few examiners. Based on the suggestion given by the examiners some of the items were modified and some were eliminated. Then the test was tried on 20 Juvenile Delinquent Girls. Thus pilot study was conducted to establish reliability and validity of the test. The test retest reliability co-efficient was found to be .87. The method of rational equivalent was used to find reliability as well as to test internal consistency and the co-efficient was found to be .86. Face validity was established. In the present study number of Descriptive Analytical Concepts, Relational-Functional Concepts, Inferential -Categorical Concepts were taken as the score for Conceptual Style Test.
LEARNING STYLE INVENTORY (LSI):

Kolb (1974) developed Learning Style Inventory on the basis of Experiential Learning. Learning Style Inventory assesses the extent to which a learner emphasises the importance of each of the four stages (which constitute separate scales) relative to others.

Learning Style Inventory (LSI) is a nine item self-description questionnaire in which each item requires the respondent to rank order four words in the way that best describes his/her learning style. One word in each item corresponds to one of the four modes of learning described below:

(a) Concrete Experience - means involving oneself fully, openly and without bias in new experiences (feeling, accepting and experience).

(b) Reflective Observation - means reflecting out observing experiences from many perspectives (watching, reserved and tentative).

(c) Abstract Conceptualisation - means creating concepts that integrates observation into logically sound theories (thinking, evaluative and logical).

(d) Active Experimentation - means using the theory to make decisions and solve

(e) problems (doing, practical and active).

For the present investigation translated Tamil version of the LSI was made use of.

RELIABILITY AND VALIDITY OF LSI:

Kolb's Learning Style Inventory was translated in Tamil in consultation with experts in the field of psychology and Tamil. Then both
Tamil and English versions were administered to 20 school girls. The correlation was found to be .96 between the Tamil version and English version of LSI.

To establish reliability and validity a pilot study was conducted on 20 Delinquent girls by administering Tamil version of LSI. The test-retest method was used to obtain the reliability coefficient which was found to be .85. Face validity was established.

Then the LSI was administered on 41 Delinquent (Girls) and 41 Non-delinquent (Girls).

**LEARNING STYLE INVENTORIES:**

A factor Analytic comparison of Four Learning Style Instruments was done by Ferrell - (1983). Four learning style instruments, differing in form, length, language and conceptualisation of learning style were administered to 41 high school and college students. Data were factor analysed using a common factor, model and the results of these analyses were compared to the conceptualisation of learning style as outlined by each of the authors. Factors were compared to types of behaviours outlined in the literature by Keefe as comprising learning style.

According to Keefe (1974) learning style is comprised of three types of behaviours namely Cognitive, effective and Physiological/Physical. A Cognitive behaviour is viewed as one resulting from a preference for a given type of information processing or Cognitive style. An affective behaviour is the result of a given attitude or opinion. Physical and Physiological learning style behaviours are of two types such as environmental factors that impinge on learning and biological factors in
the make up of the individual that have an impact on the learning situation.

A Critical analysis of Ferral reveals that Learning instruments tended to emphasise one or two of these behaviours, but not all three. Each author of a learning style instrument had a conceptualisation of learning style that was unique to his or her instrument. Dunn K & Dunn K & Price G.E.

The Learning Style Instruments are as follows:


2. The Kolb Learning Style Inventory (Kolb 1976) which measures Cognitive behaviour.

3. The Dunn Learning Style Inventory (Dunn LSI 1975) and Johnson Decision making inventory (DMI 1981).

The investigator has chosen the Learning Style Inventory which measures Cognitive Behaviour of Delinquent and Non-Delinquents in the present study. The present investigation is based on Cognitive behavioural approach towards delinquency.


**KOLB'S LEARNING STYLE INVENTORY**

**Instructions given to the S**

"The Inventory is designed to assess your method of Learning. As you take the inventory, give a high rank to those words which best
characterise the way you learn and a low rank to the words which are least characteristic of your Learning Style.

You may find it hard to choose the words that best describe your learning style, because there are no right or wrong answers. Different characteristics described in the inventory are equally good. The aim of the inventory is to describe how you learn, not to evaluate your learning ability.

The following instructions were given to the subject: "There are nine sets of four words listed below. Rank order each set of 4 words assigning a 4 to the word which best characterises your Learning Style, a 3 to the word which next best characterises your Learning Style, a 2 to the next most characteristic word, and a 1 to the word which least characteristic of you as a learner. Be sure to assign a different rank number to each of the four words, in each set. Do not make ties.

SCORING:

To obtain the score on the four dimensions measured by the Inventory, Concrete Experience (CE) Reflective Observation (RO), Abstract conceptualisation (AC) and Active Experimentation (AE), the score in each column is to be summed up including only those words whose item number appears under the place for the total score.

For example, the ranks given by the subject for the words 2, 3, 4, 5, 7, and 8 in the first column are to be added to get the total for concrete Experience Style of Learning.
For RO, the ranks for 1, 3, 6, 7, 8 and 9 in the second column are to be summed up. The same procedure is to be followed for AC and AF. The non scored words on each column are to be ignored.

BHATIA'S BATTERY OF PERFORMANCE TEST ON INTELLIGENCE:

This test consists of five sub tests and each test was administered separately to the S. Each sub test was different and had different time limits and scoring methods. The five subjects were (1) Koh's Block Design (2) Alexander's Pass Along Test (3) Pattern Drawing Test (4) Memory Span (5) Picture Construction Test. The testing started with Koh's Block design.

KOH'S BLOCK DESIGN TEST:

This test consists of ten designs to be arranged with sixteen cubes painted on sides with red, blue, white, yellow and red and white diagonally and also blue and yellow diagonally.

The S is told that all the blocks are similar cubes coloured in a particular way. The experimenter places four cubes before the subject and asks the subject to examine them to make sure they are alike. Then he shows number 1 and tells that the design like this should be prepared with the cubes. The E then demonstrates the design even if the S attempts to make the design by himself. Then the E mixes up the blocks and asks the S to make the design number 1. The time taken is noted. The following instructions are given to the subject, "Now I will give some blocks and
also a card with some design. You should make a decision according to pattern in the given time and time limit varies for each card”.

If the S succeeds within the time limit, the test is continued with the second card. If the S fails to finish, the E must demonstrate the particular design. The S is allowed to proceed. The E stops the test when two successive failures occur. When the S reacts the sixth design, the E should give five more blocks. Hence 9 blocks are to be made use of in the sixth and seventh design. In the eighth design, the E adds seven more blocks. So, for the last three designs, sixteen blocks are to be made use of.

Time limit : For designs 1 to 5 - Two Minutes

For designs 6 to 10 - Three Minutes

Scoring : For designs 1 to 5

2 marks for success within a minute.

1 mark for success between one and two minutes.

0 for failure

For Designs 6 to 10

3 marks for success within a minute

2 marks for success between one and two minutes

1 mark for success between two and three minutes

0 for failure.

Maximum possible score is 25.

2. PASS-ALONG TEST:

This test consists of 8 designs. There are four boxes of different types and the sides are painted red at one end and blue at the other end.
The following procedure is adopted. The experimenter takes the first, smallest box and the card no. 1. He points out to the S that the red block has been placed near the blue end the blue block near the red end. The Experimenter tells the subject. "You should bring the red blocks to the red side and the blue block to the blue side, only by moving these blocks. You should not lift them. They can be moved in any direction. Now I shall demonstrate the first design and you can follow the same procedure. Work as fast as you can". Time taken by the S to succeed in each design is noted by the Experimenter. When the S fails in a particular design, within the given time, the E should demonstrate the design. The E stops the test when two successive failure occurs.

**Time limit:**
- For designs 1 to 4 - Two Minutes
- For designs 5 to 8 - Three Minutes

**Scoring:**
- For designs 1 to 4
  - 2 marks for success within a minute.
  - 1 mark for success between one and two minutes.
  - 0 for failure
- For Designs 5 to 8
  - 3 marks for success within a minute
  - 2 marks for success between one and two minutes
  - 1 mark for success between two and three minutes
  - 0 for failure.
THE PATTERN DRAWING TEST:

This consists of 8 patterns of increasing difficulty. The following instructions are given to the subject, "Here is a paper and a pencil. I shall show you a pattern". A card is to be placed before the subject in such a manner that the number of the card appears on the top before the subject. 'now make a pattern like this without repeating your lines, without lifting your pencil once you have started drawing'. The card should remain in full view of the S. The subject can try as many times as he wishes, but within the time limit. The first design is to be demonstrated by the E and to be repeated by the S. When a failure occurs in one of the patterns, the E explain the pattern and proceeds to administer the next pattern. The test is to be stopped when failure is recorded twice in succession. The time limit and scoring are the same as for the pass-along test.

4. IMMEDIATE MEMORY SPAN FOR DIGITS:

This test consists of two parts (1) Digits forward (2) Digits backward.

Digits Forward:

The following instructions are given to the subjects. "I will say something. Listen attentively and repeat it after I have finished. Listen". The E starts with two digits and increases the number of digits till the S fails in three alternatives in the set.

Digits Backward:

The S is given the following instructions. "You must say whatever I say backwards. Start after I finish calling them out". The E starts with
two digits and increased the number of digits. The experiment is stopped when the S fails in the three alternatives in the set.

The memory span on the whole was the sum total of the digits backward and forward.

5. PICTURE CONSTRUCTION TEST:

This test consists of five graded pictures. The first picture consists of two parts, the second one four bits, the third six parts and the four eight parts. The last picture consists of 12 parts.

The S was given the following instructions. "Here are a number of pieces of pictures. The pieces have to be put together to form a picture. Work as quickly as possible". The first construction was demonstrated by the Experimenter and repeated by the subject. The E stopped the test when the S failed twice in succession in the subtests within the time limit. The number of correct pictures are to be recorded by the Experimenter for the fourth subtests in case of failure.

Time limit: For designs 1 to 3 - Two Minutes

For designs 4 and 5 - Three Minutes

Scoring: For pictures 1 to 3

2 marks for success within a minute.

1 mark for success between one and two minutes.

0 for failure

For Designs 4 to 5

3 marks for success within a minute
2 marks for success between one and two minutes

1 mark for success between two and three minutes

0 for failure.

The scores are converted into I.Q. scores by using the conversion table.

EYSENCK'S THE PERSONALITY INVENTORY:

"The personality inventory developed by Eysenck was made use of, to study extroversion, Neuroticism, Psychoticism and Criminal propensity of Delinquents and Non-Delinquents. This personality Inventory consists of 80 questions, 22 items to score Extroversion, 22 to score Neurotics, 24 items to score Psychoticism and 40 items to measure the Criminal Propensity of individuals. Tamil version adapted by Shanmugam was administered.

The S was given the test booklet and the following instruction. 'Please answer each question by underlining 'yes' or 'no'. There are no right or wrong answers and no trick questions. Work quickly and do not think too long about to answer each question. Do you understand? Any Questions?' Doubts are clarified before the 'S' starts answering the Questions.

SCORING:

The responses were scored according to the instructions given to the manual by assigning one point for each answer of the S indicating the four dimensions.
Studies on Cognitive Styles, Personality and intelligence revealed a certain degree of relationship between them. Therefore, in the present investigation,

(2) an attempt has been made to find out the inter-relationship between the variables on Delinquent Sample as well as on Non-Delinquent Sample.

(3) The investigator is curious to know whether the factors differentiating Female Delinquents and that of the Non-Delinquents exist. Hence, Factor Analysis has been carried out to extract factors in each group, say DG and NDG.