CHAPTER - II

REVIEW OF THEORIES AND STUDIES

Theories most relevant to individuality and cognitive performances in children are the psychoanalytic and ego psychologists. In addition to this, there are other theorists with new direction - namely, conceptual systems approach, psychological differentiation and integration pursued by Lewin (1951), Harvey, Hunt and Schroder (1961) and Bruner and associates (1966).

PSYCHOANALYTIC APPROACH:

According to orthodox psychoanalytic psychology, all cognitive functions rest upon a motivational base. The emphasis is that the organism becomes cognitively attuned to its environment (reality principle) only when a wish is unfulfilled (pleasure principle). But, the ego psychologists have placed greater emphasis upon the autonomous functions of the ego. The relation between ego structures and drive system has been described by Klein, (1959) who maintains that cognitive structures intervene between drives and environmental demands. Because the cognitive structures are conceived to have steering and modulating function in respect of both drives and situational requirements, Klein termed them "Cognitive Control Principles". These cognitive controls are viewed as serving an accommodative function in the sense of regulating drive expression to accord with the requirements of the situation. Gardner and his colleagues (1959); Gardner, Holtsman, Klein, Linton and Spence (1959), Gardner, Jackson and Messick (1969) have explored the pattern of cognitive control which help the individual to
organise and mediate his transaction with the environment. Cognitive control dimensions include: levelling - sharpening; scanning; flexible and constricted. Patterning of control functions constitute components of the overall cognitive style of the individual. The distinction between cognitive 'controls' and 'styles' has not been strictly maintained. However, one often finds the terms used interchangeably in the relevant research literature.

Gestalt psychologists have provided a well developed theory of cognition, in which the role of reality in determining perception and thought has been emphasised. But Gestalt theory has neglected the role of personal factors in perception. By showing that a perceptual act cannot be understood without reference to both personal factors and the nature of reality, studies of Witkin help to bridge the gap between Gestalt and psychoanalytic theory and provide a basis for bringing together the main aspects of both into a single comprehensive theory of human psychological functioning.

Let us consider the concepts of differentiation and hierarchic integration. Differentiation and hierarchic integration are the two fundamental concepts for almost all theories of cognitive development. In the course of development cognitive structures have become more differentiated and hierarchically integrated, according to Lewin (1935,1951), Piaget (1952,1954), Werner (1948,1957). A similar view can be detected in the work of Harvey, Hunt and Schroder (1961) and Bruner, Olver and Greenfield (1966).

THE LEWINIAN APPROACH:

In Lewinian formulation, differentiation has two aspects, an increasing 'complexity of units' and a decreasing "interdependence of
parts". The complexity of units refers to the growing variety of skills, emotions, needs and knowledge etc. The interdependence of parts focuses on the trend away from dependence and toward independence of the various parts of the person. Lewin suggested that the kind of differentiation represented by "complexity of units" be designated as "specialisation" or "individualization". While the term 'differentiation' proper be reserved for dependence - independence relations between parts of the person and between the person and the environment.

Lewinian notion of differentiation has been applied to the issue of similarity and difference in the perception of people by Bieri (1961) in the complexity of units sense. In Bieri's system, cognitive complexity is defined in terms of the number of dimensions generated or employed by subjects when asked to specify how familiar others are similar to and different from each other. The other conceptualization of differentiation proposed by Lewin, indicated the extent of dependence and independence of parts within the person and his environment: This had been a fore bearing of Witkin and his associates of the extensive programme on field dependence - independence. (Witkin et al 1962).

Lewin recognised that increasing differentiation implied decreasing 'unity' of the person. Lewin proposed that hierarchic integration showed a discrete step like increase with development. By imposing such integration upon the continually decreasing 'unity' produced by differentiation, Lewin saw development essentially as cyclical.

According to Witkin (1962), differentiation refers to the complexity of a system's structure. Degree of differentiation is an important characteristic of the structure of any systems, whether
psychological, biological or social. The description of a system as more differentiated or less differentiated carries implications about how it functions. The extent of differentiation of a system may be judged mainly through particular functional manifestations. A less differentiated system is relatively homogeneous, whereas a more differentiated system is relatively heterogenous. The major characteristic of the functioning of a highly differentiated system is specialization. When used to describe an individual's, psychological areas, as feeling from perceiving, thinking from acting, specific reactions are apt to occur in response to specific stimuli as opposed to diffuse reaction to any variety of stimuli. For example, parts of a perceptual field are experienced as discrete rather than fused with their background. With respect to relation with the surrounding field, a high level of differentiation implies clear separation of what is identified as belonging to the self and what is identified as external to the self. Degree of differentiation also has implications for the way in which a system is integrated. Integration is an essential property of any system. In psychology, integration refers to the form of the relationship between the system and its surroundings. Witkin's theory distinguishes two aspects of integration, namely, complexity of integration and effectiveness of integration which are the two important characteristics of a system. Effective integration means that there is a more or less harmonious working together of system - components with each other and of the total system with its environment, thereby contributing to the adaptation of the organism. The effectiveness of integration is reflected in the adequacy of adjustment. To say that integration is complex, means that the relationships among system components and between the system and its environment. Complexity of
integration is determined in part by its level of differentiation. That is, more complex relationships among system components and between the system and its environment are possible in a system with many varied components than in a system whose components are few and relatively unspecialised. Psychological development towards greater differentiation must be accompanied by successively more complex reintegration of the system. The integration of ideas and feelings can be cited as an example. This function which is performed by mechanisms of control and defence - necessarily becomes more complex as ideas and feelings become more discrete as differentiation develops. Witkin believes effectiveness of integration is essentially independent of level of differentiation. According to Witkin, both highly differentiated individuals and those with limited differentiation are presumably capable of either adequate adjustment or pathological breakdown. Impairment in highly differentiated persons takes the form of gross separation parts and/or complete detachment from the environment, whereas impaired individuals with low levels of differentiation manifest the dissolution of already weak boundaries between subsystems and between the self and the outside world.

Now let us consider the development theory of 'conceptual systems' proposed by Harvey et al (1961). According to them, development proceeds from minimal to maximal differentiation and subsequently to hierarchic integration. The consequence of this development is presumed to be variation in an individual’s "conceptual systems" along a dimension of abstractness - concreteness. The conceptual system is broadly defined by Harvey et al (1961) as a "schema that provides the basis by which the individual relates to the environmental events he experiences". Four levels
of abstractness - concreteness are distinguished, ranging from minimal differentiation at one extreme to maximal differentiation and hierarchic integration at the other. Harvey et al have placed great stress upon the person's capacity to cope with changing environments. Hence a conceptual system is described as a highly generalized cognitive structure affecting all areas of transactions with the environment. Hunt (1966) has emphasized that a conceptual system has both structural and motivational aspects. The fundamental - developmental postulate in the theory is that the level of differentiation and integration attained is a function of the growing child's interaction with the principal training agents in his environment. In other words, the level of an adult's abstractness - concreteness essentially depends upon the way he was treated by his parents, parent surrogates and teachers. Thus system-I functioning which is the concrete extreme implies a pattern of training in which the child's efforts at environmental exploration were hindered and deviation from the absolute stands of the training agent were not tolerated. In the case of system-II functioning, the child is presumably confronted with "laissez-faire" training practices with the consequences that he experiences more diversity than is optimal. System-III functioning is characterised by a child's training pattern of over protection and over indulgence. In "System-IV functioning", that is, the abstract extreme, the child's exploration is not inhibited and he is free to evolve standards based on his own experience and thought.

Let us turn our attention to the research of Bruner and his associates. The fundamental development theme of Bruner etal (1966) focuses the changes in the child's favoured mode of representations of his world as he grows older. The term 'enactive' is used to describe the very
young child's dependence upon sensori motor activity in the representational process. With growth, the emphasis shifts to the 'ikoncic' mode. The child can represent the world in the form of an image or schema that is independent of motor action. Thus cognitive growth culminates with the achievement of the 'symbolic' mode. In short, it can be said that the child acquires conceptual structures that permit the kind of internal manipulation of symbols that is characteristic of abstract and logical thought. Studies in cognitive growth concerns the child's apprehension of identity and equivalence, that is his manner of coping with similarity and difference. Bruner also offers much evidence to support the fundamental proposition that development proceeds from global and diffuse functioning, through differentiation, to the end product of hierarchic integration.

Bruner et al considered the accurate discrimination of differences as an index of differentiation - whereas the accurate apprehension of similarities is considered as an index of hierarchic integration. Differentiation is achieved only when the child has progressed to the conceptual or symbolic level. The present investigation deals with four cognitive styles - (1) field independence - dependence, (2) analytic, descriptive - conceptual style, (3) functional - relational, (4) inferential, and categorical style of functioning. On considering the individual differences in cognitive styles, the development of the styles of cognition, stability of the styles, and how differences among people in modes of cognitive functioning arise gain much importance.

FIELD INDEPENDENCE - DEPENDENCE:

The study of field independence - dependence provides the basis for the relationship between perception and personality (Witkin 1954).
Previously an explanation of perceptual experiences has been sought primarily in the structure of the prevailing field. According to this view, the nature of what is perceived is determined to an important degree by the nature of the outerworld. In other words, the emotions of the perceiver, his needs, the techniques developed for coping with problems or other personal factors do not influence the perception of the perceiver. In certain other approaches, emphasis has been placed on the nature of the stimuli, giving rise to the perceptual experience and on specific operations of these sense organs and associated neural structures mediating the stimuli. This approach has found it necessary to assign a role to the accumulated effect of the persons past experiences with the stimuli.

Gibson (1941) summarised a larger number of experiments on 'set' including those having a bearing on perception. According to him what was perceived was dependent on habits developed by past experiences and on general expectations arising from the pattern of the total situation. Thus the relationship of motivational factors to perception led to individual differences.

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of personal factors in perception should be derived from ambiguous situations, whereas in the absence of any compelling organisation, the individual has greater opportunity to provide structure to the situation in his own unique manner. To form a comprehensive estimate of the role of personal factors in perception, it is especially important to explore the role of the field factors and employ stimulus conditions to obtain a picture of clarity between the stimulus condition and the environment.

The very first investigation attempted to determine the factors responsible for the maintenance of proper orientation toward the upright in space. This perceptual process is of great and continuous importance to the individual, since it involves his body directly and enters constantly into his adjustment to the environment. Experimental studies were carried out by Wertheimer (1912), Gibson and Mowrer (1938), and Asch and Witkin (1948; 1949). These studies indicated that for a full understanding one must go beyond groups and determine the factors responsible for variation among individuals.

The perceptual trait that Witkin etal succeeded in defining clearly and measuring accurately by the rod and frame test, tilting room, tilting chair test and rotating room test was 'the ability to keep an object isolated from compelling background forces'. The stability and consistency of field dependence - independence as a trait instigated Witkin to evolve a much simpler test which he termed as Embedded Figures Test. Further, the task involved in embedded figures test was that of extracting an item from its contexts and did not involve manifestation towards the upright nor body position. The administration of the embedded figures test will be discussed in detail in chapter - III.
Many studies have supported the interpretation of the field dependence independence dimensions of perceiving. These studies focus on the distinction between embedding and distracting contexts in perceptual functioning and on the relation of field dependence to Thurston's flexibility of closure, perceptual constancies and the perception of reversible figures.

Studies carried out by Jackson (1955) Longenecker (1956) and Karp (1962) support the view that tests of field independence - dependence measure the ability to overcome embedding contexts and that the ability was distinct from the ability to overcome the effects of distracting contexts because the field from which the item must be extracted had no inherent organisation and so merely served as distraction to the subjects in his search for the item in the stimulus context.

Regarding the relationship between field dependence and flexibility of closure, Thurston (1944) identified a dimension of perceiving which he called freedom from "Gestalt binding" or flexibility of closure through factor analysis of perception. Thurston suggested that this dimension might involve the ability to shake off one set in order to take a new one. Factor analysis revealed three tests - Thurston Gottschaldt, Hidden pictures and Two Hand co-ordination - as defining flexibility of closure. Results suggested that flexibility of closure and field dependence were related.

Other perceptual tests on constancy and reversible perspective indicated that a tendency toward a more field dependent or independent approach is a very general feature of an individual's functioning, characterising his perception in a variety of situations.
It has been found that a field dependent individual who cannot keep an item separate from the surrounding field, is likely to have difficulty with class room problems. The emphasis has only been given for a class room problem where the solution depends on taking some critical element out of the context in which it is presented and restructuring the problem - material, so that the item is now used in a different context. Frances Harris (1959) used problem-solving tasks employed by Duncker (1945) in his classical study of functional flexibility. For example, if a subject is required to construct a stand consisting of board resting on two supports, the experimenter in fact makes available the item required for such a structure namely, a board, one support and a pair of pliers with other subjects, to construct the shelf, the pliers are to be used as the second support for the shelf. It must be taken out of its conventional functional context and conceived of in its less common place context of serving as a support. Harris found that people who were field independent in laboratory tests of perception, were more able to overcome the predominant context in the plier’s problems.

Hence, it is clear that the individual differences associated with perception shows itself equally in the Problem solving domain. Thus the common denominator underlying individual differences reflect the extent that the person perceives analytically.

The scores from any test of field independence - dependence form a continuous distribution and these terms reflect a tendency toward one mode of perception or the other. But, it does not imply the existence of two distinct types of human abilities.
STABILITY:

It is suggested that formal aspects of an individual's psychological make-up are apt to be relatively stable in comparison to content approach. Witkin et al (1967) have offered co-efficients of stability for two longitudinal groups, viz - one tested at age 8 and re-tested at 13, the other one tested at ages 10, 14, 17 and 24. The results show that the relative position of an individual on Witkin's perceptual dimension remains fairly constant over a time span of as much as 14 years. In the case of longitudinal groups, the maximal field independence is achieved at age 17.

In the cross sectional data, the developmental curves reveal a progressive improvement in performance upto 17 years, followed by a slight decline until 21. The reason is that the period from age 10 to 24 is characterized by great personal changes including such events as puberty, lessened dependence on the family, choice of occupation and sometimes marriages and the assumption of family responsibilities.

Hence stability of field independence-dependence is considered inter individual and not intra-individual. In other words, the individual maintains the position relative to others. At the same time the field independence is progressively increasing.

FIELD INDEPENDENCE AND INTELLIGENCE:

Many studies considered the possibility that individual difference associated with perception have their counterpart in intellectual functioning also.

As mentioned by Wertheimer (1945) intellectual problem do not involve perception directly, but require the 'parts' to be separated from
the context in which they are embedded and brought into new relationships. This notion has led Witkin to assume that, if a person has the basic ability to 'breakup' a configuration, it will be manifested not only in straightforward perceptual situations but in problem solving situations as well.

Werner and Levine (1950) found a significant relationship between the scores on the three Witkin's perceptual battery and the scores on the Wechsler Intelligence scale for children. A high correlation between perceptual scores and scores on such WISC performances subtests as Block design indicated that aspects of intelligence which involve analytical ability might be contributing heavily to the overall relation between full scale intelligence and perception. The correlation was .71 for boys and .74 for girls between *E.F.T. and W.I.S.C.* performance scale.

A factor analysis was performed on a variety of cognitive tasks such as children's embedded figures test, Thurstones' Hidden pictures test, Recognition - efficient test, Incidental learning, reconciliation of opposites and cancellation including the W.I.S.C. subtests and the three indices of field independence (Goodenough and Karp 1961). Three major factors emerged for 10 and 12 year old. Factor-1 was labelled 'verbal comprehension' with loading on vocabulary, information and comprehension subtests. Factor - II was ' attention concentration' with loading on Digit Span, Arithmetic and coding. Factor III was assigned the label 'analytical field approach, on the basis of the substantial loadings for picture completion, block design and object assembly. Such correspondence across the intellectual and perceptual domain prompted the redefinition of the major construct at issue as "analytic Vs. global field approach". Therefore, field independence- dependence is presently
considered by Witkin and his associates as the perceptual component of a more pervasive cognitive style of analytic global functioning.

Binet and Witkin (1962) reported a significant relationship between I.Q. scores and perceptual index scores for ten year old boys. Spott and Machler (1967) reported significant correlation between quantitative scale of school's and college abilities test and field independence. Otis I.Q. scores were found to be highly correlated with the SCAT scores. Cohen (1959) showed that three WISC subtests which loaded on Witkin's "analytical field approach" factor were substantially loaded on 'g'.

Crandall and Sinkeldam (1964) obtained significant correlations in 10 to 12 year olds among field independence and the three WISC subtests of 'verbal' comprehension. According to them field independence was sometimes empirically linked to verbal I.Q. Hence the control of verbal I.Q. became imperative when field independence was related to other variables. This finding is contradictory to that of Witkin's, for Witkin's group rejected the possibility of any theoretical bridge between analytic functioning and the WISC verbal cluster.

At this point Ziglar's criticism is to be considered. Ziglar's (1963a, 1963b) suggested that the significant link between field dependence measures and general intelligence mediated the findings reported in psychological differentiation. His criticism was that perceptual index was a measure of non-verbal intelligence. According to him, verbal measures of ability was not related to the perceptual index for studies showed positive correlation between verbal and non-verbal measures. Cohen (1959) in his factor analysis of the WISC found that verbal comprehension was related to non-verbal factors. Witkin (1962) found in
the factor analysis of Wechsler Intelligence Scale for Children (WISC), a positive correlation (.34) between verbal and non-verbal measures. He also stated that both the perceptual-index and the verbal-index were measures of different aspects of 'g' intelligence and hence the relationship between the variables was mediated by intelligence. This controversy brings forth the notion of statistical control in the study of field independence dependence.

Elliot (1961) considered the deficit in the field independence may be due to intellectual ability even then, for the deficit in the ability to cope up with new incongruous situations, he admitted that it might be due to failure in personality development.

Elliot's findings reveal that EFT is positively related with quantitative ability. He comments that EFT contains items very similar to those found in aptitude tests, it is timed. There are abundant cues for the arousal concern over evaluation and concern over motivation. Hence, he is of the opinion that EFT is consistently and more strongly related to measures of aptitude and learning.

Rilly and Denmark (1974) conducted a study in a suburban elementary school to ascertain the relationship between the Children's Embedded Figures Test (CEFT), a measure of field independence and tests of verbal ability and general intelligence for lower class blacks. 34, first and second graders and 53 third and fourth graders were given the CEFT, Leiter International Performance Scale and WISC vocabulary subscale. A correlation-analysis revealed strong interrelationship between these tests, contrary to the findings of Witkin (1962). Grade level and sex interacted to produce different correlational structures for each condition. Results questions the assertion that field independence varies
independently of intelligence for all 53, regardless of age, sex and social class.

Satterley (1976) studied the inter-relationship of intelligence, field independence, analytic cognitive style, spatial and perceptual abilities among 201 males of age 10-11 years. The contribution of cognitive style to the prediction of differences in attainment in English and Mathematics was also investigated. Substantial overlap was found between field independence and intelligence, but there were significant residual correlations between field independence, mathematics and haptic perception after intelligence was held constant. Analysis of covariance confirmed the significance of difference between field independence - field dependence and field intermediate males in mathematics and haptic perception. Principal Component Analysis revealed that separability of cognitive style from factors of general ability, spatial ability and perceptual speed, is not distinctly explained.

Cooperman, Edwin (1980) studied the relationship between intelligence and field independence. Cognitive style research has indicated that field dependence is not related to overall intelligence, verbal reasoning or role learning but only to perceptual organizational ability as reflected in particular sets of the WISC. Zigler (1963) maintained that cognitive style is a measure of general intelligence. Field dependents were identified based on the scores of group embedded figures test and were given a group of paired associate learning task and the verbal reasoning subtest of the differential Aptitude test. Results indicated that independent subjects had significantly higher score on both the verbal reasoning and role learning tasks tending to support the position that cognitive style is a measure of general intelligence.
Flexer, Bartana and Roberge, James (1980) focused on the influence of field-independence-dependence on the development of formal operational thought during early adolescence. The group embedded figures test and 3 paper and pencil logical reasoning test involving 2nd order operations were administered to 450 6th and 8th graders. Results showed that the relationships between field dependence-independence and formal operational reasoning abilities were due to their common overlap with IQ. However, the relationship between intelligence and field dependence still remains a controversial issue and no conclusion is arrived yet regarding that issue.

FIELD INDEPENDENCE - DEPENDENCE AND LEARNING:

Goodenough (1976) reviewed the literature relating individual differences in field dependence to learning and memory, arrived at the following conclusions:

a) Field-Dependent Subjects are dominated by the salient cues in concepts attainment problems, whereas field independence subjects sample more from the available cue set. (b) field dependent subjects tend to use 'spectator' approach to learning whereas field independent subjects more often use 'participant' approaches to learning. (c) field independence is related to frequency of dream recall. (d) field dependence is related to the magnitude of stress effects on learning and memory. (e) field independence is related to performance effectiveness under conditions of intrinsic motivation. (f) field dependence is related to the effectiveness of negative reinforcement and (g) incidental learning of
social information is greater among field dependent than among field independent subjects.

The literature relating the role of field dependence in learning and memory was reviewed by Goodenough (1976). The data reviewed suggested that field independent and field dependent people differ more consistently in how the learning or memory process occurs than in how effective the process is.

FIELD INDEPENDENCE - DEPENDENCE AND CONCEPT LEARNING:

Mulgrave (1966), Nebelkopf and Dreyer (1973) have found that field independent and field dependent persons tend to differ only in their approach to concept learning but not in their performance. Better performance by field independent persons were shown by studies (Bay goley 1955, Davis and Haveisen 1976, Davis and Klansmeier 1970, Elkind, Koegler cad Go 1963, Ohnmacht 1966, Shapson 1977).

Goodenough (1976) advanced two hypothesis to account for the less effective performance of the field dependent learner. One hypothesis stated that field dependent-learners tend to accept the organisation of the stimulus field and therefore are dominated by the most salient cues in the stimuli. The other hypothesis stated that field dependent-learners tend to adopt a more passive approach to learning, while field independent learners tend to employ more active approaches.

Combinatorial analysis refers to the ability to systematically generate all possible combinations and permutations of a set of elements (Falvell 1977). Efficient concept learning requires the ability to generate and remember the possible combinations of attributes which define the
concept, and also the ability to remember the nature of past cues that examined the differences in the functioning of either or both of these processes. Combinatorial Analysis & memory might support the notion that field dependence is reflective of a slower developmental rate as compared to field independence.

Field independence is a developmental characteristic found in the works of both Case and Pascual-Leone (Case 1975; Case Globerson 1974; Pascual-Leone 1970). According to Pascual-Leone all cognitive processing takes place in a central computing space which is labelled "H-space". According to him, a large determinant of how successful an individual will be in accomplishing different cognitive tasks depends on whether or not the person is a High M-processor. Field independents are habitually low M-processors and field dependents are high M-processors (Pascual-Leone 1970).

He also claims that decreases in field dependence with increasing age (up to 16) are "exclusively a function of developmental changes in M-space and in the conceptual knowledge or processes co-ordinated in this M-space" (Case and Globerson 1974).

\[ fI = f(MS + CK) \]

Leskow and Smock (1970) found that with increasing age there was an increase in the use of systematic strategies for generating permutations.

Neimark (1975) reported a longitudinal study which examined field dependence and combinatorial processes. A significant positive correlation was found between field independence and Piagetian combination and permutation tasks. Combination skills may be attributed
for the deserved differences between field independent and field dependent learner's performance on concept learning tasks.

Lewine's (1966) finding suggests that part of the deficit in field dependent student's performance may be due to differences in encoding or utilizing negative information. In other words, field independents and dependents might have different encoding strategies.

De Boeck and Claeys (1978) reported that field independent and field dependent individuals differed in encoding information in an incidental learning task.

Gregg & Simon (1967) reported that field dependent children followed a focal consistency model, while field independent children followed a focusing model.

The bulk of concept learning research does not support Goodenough's (1976) contention that field independent and field dependent learners differ in the processes they employ but not in the effectiveness of their performance. The literature consistently shows that field independent learners are more effective than field dependent learners. The greater effectiveness of field independent learners may be related to their ability to conduct combinatorial analysis, a hypothesis consistent with the restructuring dimension of field dependence theory.

FIELD INDEPENDENCE AND PERSONALITY:

The personality characteristics that are found to be relevant to performance in the perceptual tasks have been reviewed under three headings by Witkin, namely (1) the nature of the individual's relation to his environment (2) the way in which he manages his impulses and (3) the kind of conception he has of himself.
Young child's perception is the ability to experience his body as a separate entity distinct from the environment. Experiences early indicate a difference between stimulation from within and the stimulus without and leads to a strengthening of boundaries between body or self or outer world. With the growth of such boundaries, the capacity for imitation of behaviour and active coping with the environmental stimulation increases and this contributes to the further differentiation of self and environment. We may postulate another stage, that is, in which any item whether body or objects, in the field can be kept separate from the surrounding framework. A process that begins with the ability to differentiate self from environment progresses to ability to differentiate figures from ground in any structure, even against strong ground influences.

Witkin's study represents the first systematic empirical investigation of broad features of the personality in relation to a characteristic way of perceiving.

Witkin et al. (1954) conceived of an active coping vs. passive submissive relation to the environment as the personality dimension most closely linked to field independent vs. field dependent functioning respectively. Witkin predicated a global approach when activity assumed the hyper-kinetic form suggestive of lack of impulse control. When activity assumed the character of striving and assertiveness toward well formulated goals, Witkin anticipated an analytic field approach. A TAT assessment of 'active attitude' was carried out among 10 year-old boys. Stories were scored for assertiveness and counteraction. Neither variables showed a stable relation with field independence.

Witkin and his associates (1962) tested that an active or passive attitude would be expressed in the characteristic posture of the body. A
sample of 10 year old boy was photographed with no special instruction given as to the pose to be assumed. With the face blotted out the posture of each boy photographed was evaluated on a 4 point scale ranging from ‘active assertive’ stance at one extreme to ‘passive’ stance at the other. It has been found that children with an analytic field approach tend to give evidence of greater "readiness for action" than children with a global approach.

Witkin's formulation regarding activity/passivity dimension has not helped up well under subsequent empirical examination, for activity-passivity in overt behaviour is multi-determined and outwardly similar behaviour will often have quite different psychological meanings.

An attempt was made to show that modes of field approach reflect deep-seated personality disposition. Witkin et al (1962), hypothesized that children with an analytic-field approach would tend to employ complex, specialized defences, namely intellectualisation and isolation, whereas children with global-field approach would tend toward the use of simple primitive defences such as repression and denial. The highly structured defences would be expected to contribute toward impulse control, which might relate to the kind of attention-regulation necessary to perform in an analytic manner. The degree of structure of controls and defences was evaluated in a sample of 10 year old boys, by means of clinical analysis of protocols from three projective tests namely, Rorschach, Thematic Apperception test and figure drawing procedures. 23 boys were classified on the basis of five point scale ranging from low to high degree of defensive structure. Correlating these ratings against the perceptual-index scores yielded a highly significant of .61. A controversy arose whether the clinical projective test ratings actually reflect the child's defensive
structure. According to Witkin field dependent boys displayed more uncontrolled aggression and at the same time were less likely to perceive salient aggressive stimuli in the TAT cards than their field independent peers. Yet the data obtained by projective tests appeared to attribute greater psychopathology to the field dependent then to the field independent child. This might be due to the reason that the absence of empirical inquiry into hypothesized link between analytic functioning and employment of such specialized defences as intellectualization and isolation.

Brown’s study indicated that there was curvilinear relationship between emotionality and perception-time and that extraverts reach the peak sooner than introverts. The reason was that introverts were slower to show perceptual sensitization effect.

Evan’s (1967) attempted to study the relationship of the cognitive style of field independence-dependence to the Maudsely personality inventory dimensions, neuroticism and extraversion. The results showed that person’s correlation coefficient was \( .39p < .005 \) for MPI and E and \( -0.12. \) for MPI and N, with the implication that there was some relation between field dependence and extraversion.

These studies reveal the existence of relationship between field independence-dependence and extraversion introversion dimension. This also implies how far personality through perception coincide with the personality through behaviour-correlates.

**EFT AND ANXIETY:**

Ruebush (1960) compared the performance of low and high anxious children on the EFT and observed that high anxious relative to
the low anxious children solved more figures in less time. The greater cautiousness of the highly anxious child which happened to 'pay off' given the particular condition under which EFT was administered. These conditions were quite permissive, the child being informed that he could look at the original (simple) figure as often as he liked without penalty and that guessing was permitted and would not count against him. As Sarason (1960) note 'the task is structured so that a cautious approach in which the subject makes sure that he knows the correct response before he makes a guess will be rewarded by success. Ruebush (1963) found moderate negative relationship between measures of anxiety and intelligence scores.

These studies reveal that anxiety interferes with the performance on cognitive tasks.

A study on field independence, anxiety and personality was conducted by Joshi (1974). He administered the short form of the embedded figures test, the junior manifest anxiety scale and junior maudsley personality Inventory. Results revealed that a correlation of .23 (p. < .01) between neuroticism and manifest anxiety but all other correlation coefficients were not significant.

DIMENSIONS OF ANALYTICAL ATTITUDE IN COGNITION AND PERSONALITY:

Messick and Fritky (1963) developed a group administered procedure to measure facility in learning complex designs with sufficient articulation to identify subsequent variations on the designs. Scores for 11 types of design variations and a group measure of embedded figures test performance were correlated and factor analysed producing 4 factors. The
two major dimensions represented two relatively independent modes of stimulus-analysis, one emphasizing the articulation of discrete elements and the other of figural forms. A third mode reflecting the utilisation of background information was substantially correlated with the other two. The fourth factor was the original memory for designs. A significant relationship was obtained between the element, articulation factor and embedded figures performance. Thereby linking the element articulation to the field independent type of analytical functioning, discussed by Witkin et al (1954 and 1962). Both element articulation and embedded-figures scores were also significantly correlated with facility in overcoming cognitive interference and in performing speeded repetitive tasks. Form articulation was discussed in terms of analytic and relational categorizing as formulated by Kagan et al (1960, 1963) and was found to correlate positively with the tendency to reflect model opinions in the sample and negatively correlate with extremity of viewpoint and impulsiveness.

CROSS CULTURAL FINDINGS:

Many studies have been conducted in field independence-dependence in various cultures. Dawson (1967) made a comparison of cognitive style - field independence in two tribal groups in Sierraleone viz. the Temne and Mende. It was hypothesized that Temne children would be relatively more field dependent than Mende children. The hypothesis confirmed the theoretical expectation by giving greater emphasis on socialization practices among the two groups.

Dawson and Berry (1966 a, 1966 b) studied the Temne of Sierra Leone and the Eskimo of Baffin Island. Berry predicted that the Eskimo would be more field-independent than the Temne. This is because of
strong encouragement of personal self-reliance, individualism, skill and ingenuity and discouragement of dependence and incompetence. The personal qualities emphasized in child rearing are of importance for the kinds of solitary activities in which the Iskimos engage like hunting etc.

Zachary, Dershowity (1971) made an attempt to study the Jewish sub cultural pattern and psychological differentiation. It was hypothesized that ten year old American boy exposed to a traditional East European Jewish up-bringing would perform in a relatively field dependent manner. He utilized 3 perceptual tasks such as EFT, BAT series (1) and BAT series (2). He classified the subjects into three groups, namely, the traditional Jewish (TJ) children, (WJ) Jewish children Anglo Saxon Protestant (WASP). The scores are in the expected direction and statistically significant. The study has demonstrated that a relationship exists between personality and culture at formal and structural levels as well as at content levels of cognition.

A study of Mexican students samples (Fernandez, Davila etal, 1956) demonstrated significantly greater field independence in seventh grade than in fourth grade pupils on EFT.

Handel (1973) administered tests of cognitive skill and personality and variations of the Rod-and-Frame series (RFS) and the Hidden Figures Test (HFT) to 557 male students in Grades 7-11. All groups had about the same mean WISC scores (Approximately 114) and the same variances. Scores on personality scales of neuroticism, extraversion and the internal control were not related to measures of field dependence. Correlation between RFS and HFT in the total sample indicates the 2 tools shared only 13% of their variance. While a development trend showing progressive increase in field independence, occurred with advancing age,
a parallel trend also applied to personality dimensions reflected in the Q adjustment score and in the Life Scale tests, conceptually independent of the field construct. 17 of 60 Q sort items correlated significantly with one or both measures of field dependence. Field independent adolescents presented an image of self-confidence and self-centeredness, while field dependent adolescents presented an image of nurturance. Findings call into question the empirical equivalence of the Rod and Frame test and the HFT and the usual explanation of the source of common variance between these measures and tests of ability.

Kagan and Klein (1973) were able to demonstrate a consistent increase in field independence in five separate samples of Guatemalan children from one age level to the next, that is from the age of 4 to 8.

Michelmore (1974) found for male and female Jamaican School children, drawn from grades 1, 2, 5, 7 and 9, an increase in field independence from the first to ninth grade on the Hidden Figures Test, a modified embedded figures type of task.

Witkin, Price-Williams et al (1974) studied two village samples from each of three cultures (Holland, Italy and Mexico) which provided clear evidence of greater differentiation, that is, relative increase of field independence, for older group (13 to 15 years old) than younger group (9 to 11 year old).

An attempt has been made to examine the difference in the FD-1 Cognitive Style of the XI Class students differing in their educational choice. Sex difference with respect to FD-1 cognitive style was also examined. The ANOVA result and the post ANOVA test, ie. HSD Tukey's test result confirmed the hypothesis that the Biology and Maths
students were significantly more field independent than commerce and arts students. Though there was no significant difference in the FD-1 cognitive style of biology and maths students and commerce and art students, the male students were found significantly more field independent than female students (Priyamvada Srivatsava 1995).

In general, the available cross-cultural evidence suggests that the development of the cognitive style, field independence - dependence, follows a sequence in other cultures similar to that originally observed in western studies.

ANTECEDENTS:


He found that field dependent mothers by virtue of their attitudes and behaviour would create the kind of home climate likely to inhibit the development of field independence in their sons, whereas mothers who were field independent would foster differentiation in their sons.

The studies of Berry (1966) Witkin et al (1962) Mebane and Johnson (1970) and Dawson et al (1974) suggest that child rearing practices which foster the development of greater or more limited differentiation tend to be similar across cultures.

Studies on the performance on Embedded Figures Test among Indian college students have been carried out by Pande (1970); and Pande and Kothari (1968) and Nirmala (1978) among school children.
BIOLOGICAL SUBTRACTS OF FIELD DEPENDENCE:

Waber’s (1972) study reveals that males consistently show a more field independent cognitive style than do females. Evidently the sex differences in spatial ability reflects a constellation of genetic, endocrinological, and neuro biological factors. Since perceptual field dependence is strongly correlated with spatial ability, these biological factors probably figure i.e sex difference as well as data reviewed suggest that those matured earlier (physically) are field dependents and those matured late are field independents, on the basis of both personality and cognitive measures. Thus maturational rate may be considered an important intervening variable in the field dependence style of functioning.

According to Neuropsychological theory, aspects of endocrinological development influence the organization of higher functions and variations in such organizations is reflected behaviourally both in cognition and personality, so that the two covary viz. personality and cognitive styles are mediated by a common underlying mechanism - hemispheric organization of function.

This biological endowment of the organism provides a structural basis for its interaction with the environment and for understanding relationships that may not be obvious and that might otherwise go undetected.

CONCEPTUAL STYLES:

Now let us turn our attention to the conceptual styles. A consistent preference for analytic categorization has been identified by Kagan and his colleagues (Kagan, Moss and Sigel 1960, 1963) in terms of a tendency
to analyse stimuli into differentiated parts as opposed to a non
differentiated, global acceptance of the entire stimuli. Before we proceed
further on preference for analytic categorization, some light should be
thrown on cognitive activity in general.

Cognitive activity consists of three processes that normally occur in
sequence namely, the initial selection of the dimension for categorizing
stimuli, the sorting of this coded information and the imposing of
transformation upon the coded data. The storage and transformation
stages are influenced by the availability of categories in which the
incoming information is stored and the possession of rules and segments
of knowledge that allow the individual to impose transformations upon
coded categories. The initial selection of dimensions on which categories
are to be formed, that is, the salience or distinctiveness of stimuli, is a
function of other processes and is characterized by age, sex and intra-
individual differences. Since every cognitive product is a function of the
dimensions initially selected for processing, it is important to ascertain
those factors that govern selection of one aspect of a stimulus rather than
the other and to discover the existence of any unlearned or prepotent links
between certain distal stimulus dimensions and specific behaviours. This
is the reason why children with equivalent ability arrive at different end
states in a problem situation. However, the intimate interaction between
perceptual organization and the conceptual process and the importance of
stable individual differences in mode of cognitive functioning have not
received much attention.

The child's initial perceptions of the world are global but with the
passage of time, becomes more articulated and differentiated according to
cognitive style theories, with perceptual mode of response. Concepts,
which are labels for groups of similar things are also global and over-
generalized initially, but they become specific and differentiated with age. 
Along with age, the child becomes more capable of using abstract 
concepts. Thus, cognitive development is accompanied by more 
differentiated perception and the acquisition of differentiated as well as 
abstract concepts. The concepts the individuals produced could be 
classified as belonging to one of the two orientations. The two 
orientations were defined as follows; The egocentric orientation referred 
to concepts which were based on the individual's personalize, affective 
classification of a group of stimuli or the inclusion of aspects of the 
subject as part of the conceptual grouping. That is, the individual might 
use his personal reactions to the stimuli (e.g.) "People like me", could be 
cited as an example. In the stimulus centered orientation, the concepts 
were based on aspects of the external stimulus. In other words, the 
individual's personal feeling were not part of the categorization, examples 
are 'Men', 'Happy people'. (Kagan et al 1963).

Thus descriptive concepts are assumed to involve an active 
conceptual analysis. While relational concepts seem to involve a passive 
acceptance of the entire stimuli, production of a relational concept will be 
a reaction to the most obvious aspects, whereas descriptive concepts are 
based on more subdued attributes.

At first figure-sorting procedure was administered to adult 
subjects. Later on, a modified version was adapted for children in which, 
pictorial stimuli were presented in trials, the child being required to select 
which of the three stimuli were most similar and to specify the basis for 
subsequent work on the problem of conceptual style in children and 
adults.
Recent work has revealed development trends. As the age increases, the child is more likely to use super-ordinate or inferential categories and less likely to use functional - relational categories. Studies show that children of 4 to 6 years of age usually classify visually presented objects or pictures into functional - relational categories, whereas older children prefer superordinate and analytic groupings (Kagan, Rosman, Day, Albert and Philips 1964).

STABILITY OF CONCEPTUAL STYLE:

A group of 22 boys and 24 girls of third grade were re-tested one year later, that is when they were in the fourth grade. Analytic responses showed remarkably high stability for girls ($r = .70, p < .001$) and moderate stability for boys ($r = .43, p < .05$). A majority of boys showed increase in number of analytic responses over the 12 month period. For the girls, only one half of the group showed a slight increase in analytic response. The increase in analytic concepts for the boys over the one year period was statistically significant at .05 level.

Administration of the conceptual style test to children in the first and fourth grades show that the age trends are linear which indicate an increase in the development of analytic response and decrease in non analytic responses. In sum, analytic and non analytic responses are moderately stable over time. The former style gradually increasing and the latter decreasing during the early school years.

CONCEPTUAL STYLE AND INTELLIGENCE:

In one study, triads of pictures were shown to children from 6 to 11 years of age. The child had to select two pictures that were alike in some way. The pictures were so constructed that analytic, functional and superordinate groupings were possible for classification. It was found that there was a linear increase in number of analytic concepts with age, for children in grades one to six. Results also showed that the children who produced many analytic concepts obtained higher scores on the picture arrangements subtests of the Wechsler Intelligence Scale for children but were found to be not superior to other children on the Information or Vocabulary subtests. In general, the implication is that there is relation between conceptual style and Intelligence.

Kagan and Moss found that their subjects scored high on Wechsler Vocabulary and Information subtests than in global-passive subjects. They argued that analytical style is concerned with degree of clarity and criticalness in one's analysis of the world and is implied that vocabulary and information subtests of the Wechsler concern the same function atleast in part. (Kagan and Moss 1962). This finding is contradictory to the results obtained by Witkin etal (1962) regarding the relationship between field independence and dependence and intelligence.

REACTION TIME AND ANALYTICAL STYLE:

It is assumed that an analytic response should require more time for stimulus scanning than a less differentiated response. If an analytic response involves more scanning time, The average reaction time for analytic concepts should be longer than the time required for relational responses. The average reaction time for
analytic responses on the Conceptual Style Test for the sixth grade children was found to be 5.4 seconds. The average reaction time for relational responses were found to be 4.0 seconds. Since analytic responses were associated with longer response time, it was assumed that children who were analytic on the conceptual style test might be less impulsive in their responses in other test situation.

The children in the Fels Longitudinal Programme were regularly observed from birth through adolescence in their homes and in the Fels Nursery School. The results indicated that an analytic style was associated with a reflective attitude, a tendency to differentiate experience, the ability to resist the effects of distracting stimuli on ongoing behaviour, whereas the non-analytic child was found to be impulsive, more reactive to external stimuli and less likely to differentiate complex stimulus situations.

The notion of a preference for analytic conceptualization is closely related to constructs used by other investigators. It is encouraging to note that though Witkin used spatial orientation technique, to study the analytical-global approach of the individual in his dealings with the environment, the behaviours associated with an analytic performance are found to be similar to those that are found in the realm of conceptual tasks. This suggests that there may be some communality in process across these manifestly different task requirements with different operations. The possible antecedents of an analytic attitude have been given by Kagan, Moss and Sigel (1963). They have the ability to inhibit motor discharge; the ability to modulate behaviour in the face of irrelevant stimulation that tempts reactivity; the ability to reflect in situations that elicit alternative response tendencies. It is also possible that parent child inter-actions that
lead to conflict and tensions in the child would interfere with the ability to be reflective. Witkin (1962) also has found that boys whose mothers restrict their freedom and reluctant to give them autonomy are found to be more field-dependent than the boys whose mothers allow them freedom of action.

Now, we will consider some of the experimental studies on conceptual styles.

In one experiment, children were either told to pause and delay before giving their conceptual grouping or urged to respond quickly. The first instruction produced, increased analytical responses when they were instructed to delay before giving their response on CST. The finding was replicated for non-analytic children, but analytic children did not produce fewer analytic responses when told to respond quickly (Ostfeld and Neimark 1967). It was also found that within a group given the same instructional set, that is to respond quickly and slowly there was a positive relation between response time to produce a concept and the number of analytic concepts.

The production of analytic concepts to pictorial stimuli with analytic detail seemed to be mediated by tendencies to reflect over the validity of the response and to engage in analysis of visual arrays (Lee, Kagan and Rabson 1963). Children were taught to associate a nonsense syllable with a series of geometric designs that had figure and ground components. After reaching, criterion the child was shown the figure and ground components separately. Fourth grade boys who produced many analytic concepts were likely to label the figural component correctly when it was presented alone.
Considering other characteristics associated with a preference for an analytic mode of categorization, observation of normal children who were both analytic and reflective in contrast to those who were non-analytic as well as impulsive, indicated that the first group was more attentive and less destructible in a normal class room setting (Kagan etal 1964). School age children who produced analytic concepts were likely to have spent long periods of time in solitary task activities during the first four years of their lives. Sigel, Tarman and Hanesian (1967) reported that kinder garden boys who produce analytic groupings are rated as more controlled emotionally than boys who produce categorical or relational concepts. Hence, it could be interpreted that the process of generation of alternative hypothesis starts even at an early childhood.

In a study by Kagan, Moss and Sigel (1963) a total of 38 boys and 39 girls from 6th grades were administered the following battery of tests—such as Conceptual Test, Word Association Test, Serial Learning Test and Figure Sorting Test. In the Word Association Test, the subject was required to give his first association to each of the 40 words namely 20 count nouns, 10 adjectives and 10 transitive verbs. The association for the nouns were scored for a variety of categories. The three major categories were (a) noun-noun sequences (b) noun - not noun sequences (c) nouns followed by verbs that were phrase completions. Examples are dog-barks, baby-cries, moon-shines. For the serial learning test, three separate list of 12 words were devised, with two six word groupings in each list. The groups of six words belonged to either an inferential or a relational concept, for Eg. thunder, lightning etc., It was assumed that the words were all related to each other in a functional way. The words dog, cat, cow has no functional inter relationship but belonged to the inferential
category 'animal'. Another two lists contained six words whose parts had similar sounds. For example, blind black, each word having the initial 'b1' sound common. It was anticipated that analytic children might be most sensitive to those similarities in sound and preferably group these words together in the recall.

Results showed that boys who were analytic on the three-figures conceptual style test tended to be analytic in their sorts of the human-figures-test ($r=.37; p < .05$). Analytic approach on the conceptual style test was positively associated with production of noun-noun sequences on the world association test, in contrast to the production of verbs or adjectives to noun stimuli. The analytic children avoided grouping words in the serial learning task on the basis of functional relationship and displayed a categorical approach in their spontaneous associations to nouns.

The results for the girls were less consistent and revealed neither strong relationship between analytic attitude and memory performance nor word-association categories. Moreover, girls displayed no consistency in analytic attitude between these two conceptual tests.

Olver and Hornby (1966) asked subjects of 6 to 19 years of age to state the similarity among group of words. The child was first read a pair of words, a third word was added to the pair, a fourth was added to the trio, and so on until eight words had been presented for successive similar judgements. The use of analytic bases to tie the words together decreased with age, while super-ordinal categories increased. Another group of subjects with an age range of 6 to 12 years age was presented an array of 42 pictures of familiar objects and asked to select those that were "the same in some way". Analytic concepts were more frequently used with pictures than they were with the words. However, analytic concepts
decreased and functional concepts increased with age in the above
mentioned study. This is in contradiction to the findings of Kagan et al
(1964) who also used pictures of objects as instances to be grouped, found
that analytic concepts increased while functional categories decreased
with age.

The above mentioned studies imply that the mode of categorization
differs according to the material presented. This fact is further illustrated
in a study by Gilmer (1968). In the study, 10 year old children were asked
to name some familiar adults and to state how these adults were similar.
The children also sorted pictures of people into conceptual categories. The
findings revealed that reflective-girls produced many analytic concepts
when stating the similarity among the five familiar adults, a verbal task,
but showed no preferential tendency to produce analytic concepts to the
picture-sorting task. The authors also reported that middle class
elementary school children produced many more analytic and relational
concepts, when they were sorting human figures than when they were
sorting objects or animals. However, older children produced more
analytic responses for all classes of stimuli relating to people, objects or
animals (Sigel and Olmsted 1967).

Hence, it could be said that if the strategy changes according to the
test materials presented to the subjects, then the styles could be considered
as response-style rather than cognitive style.

A cross cultural comparison of cognitive styles in Chinese and
American children showed that among the Chinese children, the dominant
style was the relational contextual one. For American children, the most
dominant style was the inferential - categorical one.
CROSS-CULTURAL STUDIES:

Jong-Young Park and Ronal Gallimore (1975) studied the differences in cognitive style between rural and urban children in the Republic of Korea. A total of 271 boys and girls randomly sampled from the fourth to eighth grade in an urban centre and a rural town were administered the Embedded Figures Test and a test of Conceptual styles. The urban children showed higher field independence scores and higher analytic conceptualization. It has been found that the two cognitive variables were moderately correlated for this sample. A hypothesis formulated by Witkin et al. (1974) suggests the rural-urban differences in field independence may be attributed to differential importance attached by parents to social conformity. Differences in conceptual style may be similarly explained.

Stanes and Gorden (1973) studied the relationship between Conceptual Style Test and Children's Embedded Figures Test, on Australian children of 7 to 8 years. The aim of the study was to investigate the relationship in children between analytic dimension of Kagan using CST and field-independence dimension of Witkin, using CEFT. The lack of significant correlation in this study between the scores on CEFT and analytic scores on CST confirms the doubts expressed by Campbell et al. (1967); Wallach (1962) and Witkin (1962) that the dimensions of Kagan and Witkin are not the same.

Wallach (1962) has noted the marked similarity in the dimensions identified by Witkin and Kagan and had discussed possible differences in measuring devices that might generate differential patterns of correlates. In particular, Kagan's measures by virtue of their reliance upon the evaluation of verbal labels or the expression of preference for conceptual
categorizations, may implicate in addition to analytic attitude, certain verbal and conceptual correlates; whereas Witkin's measures, based upon perceptual judgement and Embedded Figure Test performance may share more variance with non verbal, performance skills.

COGNITIVE STYLES AND DELINQUENCY:

Milman (1966) reports that delinquents are significantly more neurotic, more introverted and had a greater tendency to lie.

Kodanda Ram (1985) found that field independent criminals had high scores on socialization indicating that they are more socialized than field dependent criminals. On EPI the field independent criminals had lower scores on Neuroticism than their counter part field dependent criminals. Similar results were reported by Levy (1972).

Kodanda Ram (1986) studied cognitive style in father absent juvenile delinquents. The aim of the study is to investigate the relationship between father absence and cognitive style among delinquents. It is hypothetised that father absent delinquents would differ significantly from father present delinquents with regard to their cognitive style. The sample consists of 60 delinquents drawn from Certified School, Bangalore between the ages of 12-16 years. Of which 30 had experienced father absence due to separation, death or desertion. The other group of 30 had never experienced father absence. Both groups are comparable with regard to age, sex and social class and their educational standards. The results indicate that the experimental group has scored high on the Embedded Figures Test indicating that the father absent delinquents are more field dependent than father present delinquents.
Since much work has been done on delinquent boys, the investigator focussed the attention on field independent dependence style of functioning of delinquent girls.

**PSYCHOLOGICAL THEORIES:**

Hirschi (1961) has stated that all delinquency theories are based on three fundamental perspectives. The first perspective is motivational theories which emphasize that legitimate desires that conformity cannot satisfy, force a person into deviance. According to the second which is a control perspective, a person is free to commit delinquent acts because his ties to the conventional order have somehow been broken and the third perspective is based on the cultural deviance point of view which says that deviant conforms to a set of standards not accepted by a large or more powerful society.

There are many researches who have stressed the psychosocial and psychiatric variables to be highly related to delinquency.

Glueck and Glueck (1950) have described the characteristics of delinquents as follows:

According to them physically a delinquent is mesomorphic in constitution. In attitude, he is hostile, defiant, resentful, suspicious stubborn, adventurous, unconventional and non submissive to authority. He is average in concrete intellectual expression and below average in abstract intelligence. Socio culturally he is reared from a home with parents with emotional instability and who are immoral and who do not show affection to him. He comes from an inconsistent and under privileged home-environment.
Aichhorn (1955) asserted that there must be something in the child himself which the environment brings out in the form of delinquency. Delinquents behave as they do because they are in some way 'maladjusted' persons. Aichhron's statement indicates further that the environment may function as a precipitating force, but never as a primary force in causation.

Wood Mansey (1971) has stated that delinquency is a kind of abnormality in which the delinquent imagines the others to be hostile and becomes hostile to others. With each fresh experience, this hostility to others gets reinforced and finally explodes into overt form of antisocial behaviour.

Personality theories attempt to explain enduring psychological characteristics related to behaviour. Eysenck (1957, 1967, 1970); Eysenck and Eysenck (1970) approach to the understanding of behaviour in general and criminality in particular, speak about genetically inherited characteristics of nervous system as mainly responsible for behaviour and seeks to explain individual behaviour in terms of Extraversion, Neuroticism and Psychoticism.

According to Sykes and Matza (1957), delinquent behaviour like any social behaviour is learned in the process of social interaction. Sykes and Matza feel that family of the delinquent will agree with respectable society that delinquency is wrong even though the family may be engaged in a variety of illegal activities. They say a delinquent is partly committed to the dominant social order in that he frequently exhibits guilt or shame when he violates its prescription, accords approval to certain conforming figures and distinguishes between appropriate and inappropriate targets for his deviance. A process of justification or rationalization takes place in
the delinquent by means of certain techniques of rationalization. The five important techniques are (1) The denial of responsibility (2) The denial of injury (3) The denial of the victim (4) The condemnation of the crime (5) The appeal to the higher loyalties. The authors feel that these techniques lesser the effectiveness of delinquent behaviour. Empirical research in this area is so far fragmentary and the results are inconclusive.

Shanmugam (1980) attempted to investigate a number of psychological and social factors associated with Delinquency on a sample of 150 institutionalized delinquents (boys and girls) and 150 non-delinquents (boys and girls) studying in Corporation Schools in Madras State of Tamil Nadu. The results showed that psychological factors contributing to juvenile delinquency were extraversion neuroticism, psychoticism and criminal propensity. The factors such as creativity, intelligence, level of aspiration, suggestibility, cognitive dissonance and unfavourable attitude towards family also were found to be contributing to juvenile delinquency. The social factors such as educational level of parents, order of birth, broken home conditions and emotional ties in the family were also found to be contributory to Juvenile Delinquency.

COGNITIVE DEVELOPMENT:

Cognitive development as Piaget said, is a continuous process that occurs as a function of total development. According to Piagetian theory, a child undergoes a series of development stages like sensorimotor (birth to 2 years), pre-operation (two to seven years) Concrete Operation (seven to eleven years), and formal operation (eleven years onwards) during which different levels of understanding develop in the minds of the child gradually. He was of the view that in sensorimotor stage a child can recognise only his beloved persons like father, mother and the other
family members. In pre-operational stage, a child can recognise an article through its size, volume, colour etc. He learns visually by perceiving. In concrete operational stage, a child can determine inter-relationships among different happenings around him and hence can compare and classify them. Here the conception of a subject may result from perception through which the cognitiveness of the subject grows in the individual. Abstract reasoning grows in formal operational stage of an individual and as a result, he may face any problem and shall try to solve it with his aptitudes and interest.

A sensation is the first reflected image of the objects of the outer world in man's sensory organs. Perception is an integrated sense-image of objects, the aggregate of their properties, qualities and aspects reflected by sensation. The child can acquire preliminary knowledge about difficult things of his surroundings through this perception, because the perception generates different mental images in a child. Idea is an after effect and perception. It is defined as "an integral sense image of objects and phenomenon perceived earlier, which are not directly perceived by the subject at the given moment:. Idea also can be said as the result oriented event of perception.

Now-a-days abstract reasoning has been included as the true form of cognition. Abstract reasoning is again divided into 3 subform namely concept, judgement and deduction.

Concept is a form of thought which is nothing but the reflected image or outcome of perception. Concepts generally generate from past experience.
Deduction is a system of thinking in which a series of judgement occurs. In other words, deduction is that mental situation in which a new judgement about an occurrence is inferred from any authentic judgement.

Witkin (1965) prefers to define field dependence - independence as a control strategy in the service of an articulated vs global superordinate organizing dimension. On articulated disposition can overcome the constraints of context whereas a global disposition is more bound by the synthetic gestalt of a perceptual as well as a social stimulus field. In the original studies, (Witkin et al 1954; 1962) the influence of motivational and ego expressive superordinate structure was assessed by responses to projective techniques. Field dependence was shown to be related to a passive and dependent personality characterized by submissiveness, low self esteem and self-reliance relatively little insight, and more acceptance of social norms and standards. Field independent subjects showed a significantly greater capacity for mastering their own feelings and shortcomings. They were more dominant personalities and had greater reserves of behavioral autonomy.

STUDIES ON DELINQUENCY:

Several research studies have been conducted by many social scientists both from India and abroad on delinquency. A few of them are done in Madras by Social Scientists from U.S.A. In this chapter, the researcher would like to review such studies and their merits and also their inadequacies.

Clayton Hartjen (1980) conducted a research on comparative study of Juvenile Delinquency and its treatment. This programme was sponsored by the Indo-American Fellowship Foundation Scheme.
High school children were taken up for self-report survey from various schools situated in Madras City. In the Districts boys from various correctional institutional were also included. The results of the survey is that though there are large number of delinquents, only few youngsters in India face the stigma of delinquency. His study was largely Explorative in character because of the absence of extensive sociological data, in this area.

The study conducted by him on the types of delinquent acts does not offer any idea about the causes of Juvenile Delinquency.

A closely related study was done by Hansa Mahesh Dave in 1975 and the study was on institutionalized delinquent girls in Gujarat. The sample size was 77 and he used the case study method. There are 16 causes formulated by the author.

IQ STUDIES:

The works of Schulman (1951), Prentice and Kelly (1963) and Siebert(1962) dealing with both male and female delinquents suggest that when socio economic status is controlled, there is no significant difference in IQ scores between male and female delinquents.

INTELLIGENCE AND DELINQUENCY:

Two studies by Jurjevich (1963) focusing on IQ and dealing with female delinquents only as well as a number of studies of girl delinquents by Diller (1952), Vaneth, Einstein (1954), Compton (1967), Offord (1968) and Miller (1969) report that IQ's of female delinquents tend to be in the normal or dull-normal range. Caplan and Powell compare delinquents both boys and girls with average IQ to those with above average IQ and find that the latter are less likely to throw behaviour
problem in school, more inclined to commit their crimes independently and less likely to be long-term recidivists.

**A COMPARATIVE STUDY OF INTELLIGENCE OF DELINQUENTS AND NORMALS:**

Healy and Bronner (1926) were the pioneers who applied measures of intelligence to understand delinquency. These investigators hold that 27 percent of the delinquents tested by them were of subnormal range in intelligence.

A study by Slawson (1926) showed that delinquents achieve a lesser score on verbal intelligence while no relationship was found between non-verbal intelligence and mechanical aptitude.

Butcher and his co-workers (1929) found a small difference favouring delinquency in this study. They also reported that the variability of the scores resemble those of the non-delinquents belonging to the same socio-economic strata.

A study by Marill (1947) showed that delinquents possess different levels of I.Q. Those who indulged in cases such as forgery and malicious mischief have I.Q. above average of the non-delinquents, while those who indulge in acts of sex, trauma, vagrancy and assault possess intelligence lesser than that of non-delinquents. The results of the study had shown that there was no difference in I.Q. between delinquents who were caught for stealing and non-delinquents.

Wilghosh and Paitich (1974) studied 135 delinquent boys and 51 delinquent girls between the age range of 8-17 with a mean age of 16.06 years indicated no significant differences among various delinquents in intelligence as measured by Standard Progressive Matrices.
Geetha Adinarayanan (1975) studied different kinds of women prisoners and found that women prisoners scored significantly low in standard progressive matrices compared to women non-prisoners.

Ravindranath and Betty David (1982) studied the influence of intelligence on delinquency. It has been hypothesized that the intelligence of delinquents and normals will not differ significantly. The findings support the hypothesis that the intelligence of delinquents will not differ significantly from that of the normals.

The findings contradicts that of Burt’s findings (1944) Sheldon et al (1949) Ferguson (1952), Hirschi (1968) and Shanmugam (1980).

**LEARNING STYLES:**

O Neil, (1978) in his book on 'Learning Strategies' mentioned that the pioneering effort in the study of strategies has been made by Bruner et al (1956) who identified possible strategies. The underlying assumption is that subject tests hypotheses in attaining the concept and that his strategy is directed toward eliminating all but the correct hypothesis. When the student is allowed to select instances for testing, there are two basic strategies, such as focusing and scanning. A strategy is a systematic plan for obtaining information which can reduce the memory load. (Bruner, Goodnow and Austin 1956).

The basic assumption underlying the concept of learning style is that differences in school achievements are not due to 'deficiencies' but merely to variations in the way students learn. Recent research studies have shown that statistically significant increase in student achievement occur when instructional strategies that are congruent with student
learning styles are implemented in the classroom situation (Price, Dann, Sanders 1979; Wheeler 1983).

Clark (1964) and Hamburg (1964) concluded that significantly higher positive correlations were found between creativity test scores and preferences for open structure learning than between intelligence test scores and a preference for open-ended methods.

Torrance (1976) also indicated that creative students exhibited different learning styles than their less creative peers.

Agarwal (1983) reported that high creative students demonstrated preference for flexible, visual, field-independent and environment oriented learning styles while low creative students preferred non-flexible aural, field dependent and environment free learning styles.

Khatena (1978) stated that a lack of awareness exists among educators, concerning the individual styles of highly creative students. He asserted that the students, conforming behavior and divergent thinking skills of the independent students, may lead to conflict and confrontation in educational settings, if they hinder the manifestation of the learning style.

Verma (1992) explored the relationship between creative personality and preferred learning styles of adolescent girl students. The results showed that the two creative personality groups of adolescent girl students appeared to be homogenous with respect to their preferences for learning styles-namely, flexible Vs. non-flexible; individualistic Vs. non-individualistic; visual Vs. aural; field dependence Vs. field independence; short attention span Vs. long attention span; motivation centered Vs. motivation non-centered; environment oriented Vs. environment free
learning styles. In this study field dependence has been considered as a learning style instead of cognitive style.

Since not many studies on learning styles are available, it is decided to explore the styles of learning among delinquent girls and normals.

Pask (1976) performed two series of experiments on learning with more than 100 subjects. One series was conducted in the laboratory and the other in educational institutions. Both used 'Conversational systems which allow mental activities to be described in terms of dialogue and behaviour. Several types of results are reported: (a) the significance of understanding, (b) the existence of and variations in learning strategies, (c) the effect of matching and mismatching a teaching strategy, (d) the nature and classification of cognitive style and (e) transfer effects and learning to learn. A theoretical basis is developed for a classification of learning styles.

Kasten Tallmadge and Shearer (1969) aimed at determining whether learning might be balanced by employing instructional methods which differ in design and use as a function of learner characteristics. Two separate subject matter areas which represent two distinctly different learning situations were selected for investigation. Two separate courses were developed for each subject matter area. One reflects an inductive instructional approach and the other deductive method. Each of the four courses was administered to 55-60 Navy enlisted men. Twenty eight measures of aptitude interest and personality were obtained on each subject. The primary finding of the study is the significant interaction (PC<.0001) among instructional methods, learner characteristics and
subject matters. This finding strongly supports the inductive method of instruction.

LEARNING STYLES:

Taraj Nath Pan (1985) in Research Note on classification of Learners according to their Learning Styles: A new approach, described how the learners were classified and also explained how the tools were constructed and validated for the purpose of classification.

Learners can be classified into (1) Serialist learners (2) Holist Learners (3) Versatile Learners. For the purpose of helping in 'Mastery Learning', it is necessary to ascertain to which group the learners belong.

Pask suggested that mastery of learning upto 90% of content with 90% of children could take place, if the teaching strategy be matched with learning styles. That means the achievement of the serialist learner will be higher if the instruction and learning materials are presented serially and the achievement of the Holist learner will be higher where the instruction and materials are according to their style. Therefore, it is necessary to identify the learners belonging to different styles, if it can divide the learners into mutually exclusive groups.

Keeping the above points in view in the fourth experiment, out of syllabus unknown topics were selected to avoid (1) content relational effect (2) the content coming over effect and (3) the text book effect. To avoid teacher effect no lecture was given to the students with little instructions. It was considered that the 'learners' learning style would be better exposed through self-learning as everybody would get a chance to learn at his own pace and style.
Hence, it is inferred that more than 90% of the students were classified mutually exclusive through the tools and techniques of the fourth experiment.

It may be concluded from the above results that the tools and techniques employed in the fourth experiment are appropriate for learner classification.

Marton and Saljo (1976) attempted to identify different levels of processing of information among groups of Swedish University students who were asked to read substantial passage of prose. Students were asked questions about the meaning of the passages. This approach allows processes and strategies of learning to be examined as well as the outcomes in terms of what is understood and remembered. The starting point of the research was that learning has to be described in terms of its content. From the point differences in what/learned rather than difference in how much is learned are described. It was found that in each study a number of categories (levels of outcome) containing basically different conceptions of the content of the learning task could be identified. The corresponding difference in level of processing are described in terms of whether the learner is engaged in surface level or deep level processing.

If there are qualitative differences in the outcome of learning, it can be scored that there are corresponding difference in the process of learning, i.e., the way different people set about learning. In the case of surface level processing the students directs his attention towards learning the text itself (the sign) i.e. he has a 'reproductive' conception of learning which means that he is more or less forced to keep to a rote-learning strategy. In the case of deep level processing, the student is directed towards the international content that he is directed towards
corresponding what the author wants to say about a certain scientific problem or principle.

These are the types of learning strategies or styles of individuals.

Marton and Saljo (1976) worked on qualitative differences in Learning-outcome as a function of the learner's conception of the task. Two groups of 20 first year students were asked to read three sections of a text book. After the first two sections, the groups received different types of questions-one group received questions which demanded a thorough understanding of the meaning of the passage. The other group was given detailed factual questions. After the final section of reading, a common set of question of both types was asked. Besides providing further evidence of qualitative differences in learning, the experiment showed that students did adapt their way of learning to their conception of what was required of them.

MEASURES OF LEARNING STYLE:

According to Underwood (1975), laboratory research which identifies basic learning process should be supported by attempts to measure individual differences on those processes. The expectation is that there ought to be some stable individual differences among people in the way they go about receiving, processing and utilizing information given in a learning and memory task.

The concept of 'Learning Style' refers to the pattern of processing activities which the individual typically engages in during learning.

Several researchers (Biggs (1973); Kolb (1971); Schemack, Ribich and Ramanaiah (1977), have attempted to assess learning style through self report instruments.
Biggs (1970) has focused on the relationship between learning style and performance in an educational setting. His Study Behaviour Questionnaire was found on the belief that 'Study behaviour' is regarded as the translation, in the context of study, of certain enduring Personality Characteristics. Biggs identified 10 dimensions which assess strategies, attitude and personality characteristics related to the academic learning process.

But Kolb (1974) developed his Learning Style Inventory on the basis of an experiential learning model. According to this model, the learning process is conceived of as four stage cycle, namely Concrete Experience, Reflective Observation, Abstract Conceptualization and Active Experimentation. The Learning Style Inventory assess the extent to which a learner emphasizes the importance of each of the four stages, relative to the others.

Schoneck and his co-workers (Schmeck & Grove, 1979; Schmeck and Ribich 1978; Schmeck et al 1977) developed their Inventory of Learning Processes with the intention of studying the behavioural and conceptual processes which students engage in while attempting to learn new materials. The construction of this instrument incorporated those processes currently investigated in the area of human information processing and memory (imagery, organization, depth of processing and rehearsal strategies). In order to ask college students about these processes, statements were phrased in terms of how the processes would be manifested in the context of the typical academic setting.

The factor analysis indicated that the LSI overlapped very little with the other two instruments. The 'depth of processing' is found to be a common factor. In the case of SBQ and LSI, the scales contributed to the
one significant canonical correlation, all point toward characteristics of integration, absorption, organization, meaning orientation, and the rejection of experimental and neglective process. For the ILP-LSI relationship, scales related to integration, analysis, elaboration and good memory, contributed in a positive way and while experiential and reflective processes contributed negatively.

The concept of depth of processing appears to have its counterpart at the level of individual differences. Individual differences may be used as a crucible in the development of this theoretical framework for understanding human memory.

Strategies which seem to involve synthesizing, elaborating, conceptualizing, analysing, evaluating and being meaning oriented would certainly serve to describe the individual who is a 'deep processor' of information. Deep processes have the advantage when it comes to the retention of meaningful or incidentally learned material.

Evaluation of the studies on cognitive styles such as field independence dependence style of functioning, styles of conceptualization and learning styles reveal the importance of these 'trace elements' for effective functioning of the individual. On close scrutiny it is obvious that studies on female delinquency and cognitive styles are absolutely nil. Of the psychological factors, studied among delinquents, cognitive styles have not been touched upon.

Similarly, research on learning styles came to limelight only in 1970s. Of these, learning styles, on cognitive aspects was studied by Kolb. Studies on field independence - dependence and learning showed that field independents learn better than field dependents.