CHAPTER - 2
CONCEPTUAL FRAMEWORK

The major goals of this Chapter are:

(i) to clarify the concept of anxiety in terms of its nature, kinds and state-trait distinction; and

(ii) to briefly review the various theoretical models of test anxiety, delineate the distinction and interplay of worry and emotionality components of test anxiety in terms of a cognitive attentional interpretation, based on Wine's theory (1971b, 1980, 1982), and recent research evidence.

2.1 The Concept of Anxiety: Its Nature and different kinds

According to Sarason (1984) the concept of anxiety has been researched extensively, but many of its findings have been conflicting. One factor responsible for much of this confusion has been a broad, all-enveloping definition of anxiety both what it is and precisely how it affects performance. The cognitive approach to anxiety—the information processing view that anxiety arises from a self-assessment of personal deficits in meeting situational demands has helped in the process of clarification. However, how this relationship affects performance is still unclear. The major conflict among researchers about a clearcut definition of anxiety is because diverse investigators have invested the term with different meanings. The point of contention is whether anxiety is a response, a stimulus, a trait,
a motive or a drive. Spielberger (1972a, 1972b), Deffenbacher and Suinn (1980), clarifying the concept of anxiety, suggest that by its very nature it is a human inference with different referent points in different individuals. They contend that rather than argue about the true nature of anxiety, its inferential nature be accepted, and that in assessing and describing a given case, clinicians should specify concretely the defining characteristics of the individual's responses and relate these directly to treatment, selection and design.

Research evidence that has accumulated since 1950 indicates that much of the ambiguity and confusion that exists in the terminology of anxiety stems from the fact that the term anxiety has been used to refer to at least three related, yet logically different, constructs

(i) Anxiety is often used in psychological research to denote or describe the complex *psychophysiological processes* that occur as a reaction to stress; in other words the terms **stress** and **anxiety** are often used interchangeably.

(ii) Anxiety is most commonly used in an empirical sense to describe an *unpleasant emotional state* or condition, which is transitory in nature and fluctuates over time in the same individual.

(iii) Finally, the term anxiety is also used to refer to relatively stable individual differences in anxiety proneness
i.e. as a **personality trait**. Anxiety is a type of cognitive response marked by self-doubt, feelings of inadequacy, and self-blame. Whereas stress often inheres in one's interpretation of a situation, anxiety is a response to perceived inability to handle a challenge or unfinished business in a satisfactory manner. It is experienced when one feels unable to do anything significant about what Klinger (1975) has called one's "current concerns".

In order to elucidate the precise nature of anxiety, Spielberger (1966, 1972a, 1975b, 1976) has distinguished between the concepts of **stress**, **threat** and **anxiety**. He proposes that the terms stress and threat be used to denote different aspects of a temporal sequence of events which lead to the evocation of anxiety as an emotional reaction to stress. From this perspective, **stress** refers to the stimulus properties of situations that are characterized by some degree of objective physical or psychological danger. A stressor may be defined as a threatening or aversive event. The stressor may acquire its threat value from its own characteristics, such as an event, which is physically harmful or life-threatening. A stressor may also acquire its value by virtue of its meaning for the person. The personal characteristics and history of the individual influence the stress value of an event. If a person possesses inadequate coping skills, has been faced with a number
of stressful circumstances recently, does not believe in his or her ability, or perceives the stressor as beyond personal control, then the event may have more threat value. Threat refers to an individual's perception of a particular situation as more or less dangerous or personally threatening. This depends much upon the stimulus characteristics of the situation, the individual's past experience with similar situations, and the memories and thoughts that are evoked or redintegrated by the situation. Whether a situation is interpreted as threatening or non-threatening depends upon the individual's appraisal of the situation as such. Whereas stressful situations are perceived as threatening by most people, an objectively stressful situation may not be perceived as threatening by an individual who does not recognize the inherent danger or who has the necessary skills and experience to cope with it. Conversely non-stressful situations may be subjectively appraised as dangerous or threatening by individuals who for some reason perceive them as such.

Thus, irrespective of the presence of real or objective danger (stress), a person who perceives a situation as dangerous or threatening will experience an increase in anxiety or more specifically state anxiety (A-State) in this manner:

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\text{Stress} \rightarrow \text{Perception of Danger (Threat)} \rightarrow \text{Increase in A-State}
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Historically, one of the first and most influential conceptions of achievement stress views anxiety as a reaction to perceived threat. Most often investigators have presumed this threat to arise from an anticipated loss of self-esteem caused by failure (e.g., Covington, 1983, 1984b, 1984c; Schwarzer & Cherkes-Julkowski, 1982; Spielberger, 1972). The degree of threat arousal is thought to be a fraction of: (i) the value or importance of the failed task, (Atkinson & Raynor, 1977); (ii) the circumstances of failure - whether or not excuses are available (Covington & Omelich, 1979, 1981; Covington, 1983a); and (iii) the degree to which individuals are prone to link their sense of worth to their accomplishments (Beery, 1975; Covington & Beery, 1976).

The question of the potential stability and inconclusiveness of this latter predisposition has led in part to the trait/state anxiety distinction.

Further, Achievement anxiety is viewed as arising from a realization that one's abilities are insufficient to the task in hand, and thus failure with its implications for worthlessness becomes inevitable. In such a case poor performance and anxiety along with irrational goal setting and negative patterns of self-re-enforcement are all viewed as the consequences of feelings of inadequacy. In effect, when anxiety is cast in the role of a dependent variable, the negative relationship between anxiety and performance is moderated by the individual's
degree of self-perceived incompetence (Covington & Omelich, 1982; Covington, 1985). According to Morris, Davis & Hutchings (1981), anxiety is not a single unitary response, it's more of a cluster of inter-related processes or responses, it's various elements can be learned independently and thus come under the control of different environmental cues.

Various kinds of anxiety have been identified and of all these kinds, ego-threatening anxiety has mainly been divided into Test Anxiety and Social Anxiety.

Test Anxiety can be understood as a rather general emotion related to all kinds of achievement situations which are perceived by the individual as evaluative. More specifically this emotion can be limited to academic subject matters, as is the case with mathematics anxiety (Richardson & Woolfolk, 1980), with aptitude tests (Deffenbacher & Hazaleus, 1985), problem-solving and anagram solution tasks (e.g. Covington, 1983; Deffenbacher, 1978; Carver, Peterson, Follansbee & Scheier 1983) learning tasks (Gupta, 1983; Sarason, 1972; Spielberger & Smith, 1966; Sud, A. 1984), and Sports Anxiety (Hackfort, 1983)

Social Anxiety can be subdivided into shyness, embarrassment, shame and audience anxiety, and of all these audience-anxiety is closely related to test anxiety because the individual is afraid of being under the scrutiny of others. Both kinds of apprehensions in the face of tests and social interactions share
this aspect of evaluation-anxiety (Wine, 1980). Social anxiety is more general, whereas test anxiety can be conceived of as being rather specific with respect to written examinations. In the case of oral exams or any other tests performed in public, test anxiety as well as social anxiety are adequate variables to be taken into account. Test anxiety researchers have usually neglected this social aspect or have defined test anxiety in a manner too broad to be of use.

Hætvet (1983, 1984) has suggested to make a distinction between worry and fear of failure as two cognitive variables in test anxiety. Stephan, Fisher and Stein (1983) also concluded that one single cognitive dimension might be too heterogeneous, they determined empirically four specific cognitive factors: existential worry, actual worry, actual confidence and escape cognitions. The last seems to be of specific importance and is in line with the tendency of "mental withdrawal" in the work of Carver and Scheier (1984, 1985). Recently Sarason (1985) proposed to differentiate four factors in test anxiety as well as in social anxiety: Worry, irrelevant thinking, tension and perceived bodily reactions. Adding "irrelevant thinking" to the worry facet is an useful enrichment. People who have withdrawn mentally from threatening tasks are mostly day dreamers, and by doing so have directed their attention away from the task in hand. A broad conceptualization
of anxiety should consider this aspect too, which by itself would not be sufficient enough to be defined as "anxiety".

2.2 The State-Trait Theory of Anxiety

In order to elucidate the nature of anxiety and how it affects performance, a conceptual distinction between anxiety as a *state* and anxiety as a *trait* was first suggested more than two decades ago, by Cattell and Scheier (1961). Over the past 15 years, this distinction has been clarified and operationalized by Spielberger (1966, 1972, 1972b) and has proved useful in stimulating research on stress and anxiety.

Research findings have suggested that it is meaningful to distinguish between anxiety as a *transitory state* (A-State) and as a relatively stable *personality trait* (A-trait) (see Cattell & Scheier, 1961; Cattell, 1966; Laux, Glanzmann, Schaffner & Spielberger, 1981; Spielberger, 1966) and to differentiate between anxiety states and the stimulus conditions that evoke them and the defences that serve to avoid them (Spielberger, 1966a 1972a).

According to Spielberger (1966), State anxiety is a transitory emotional state or condition of the human organism that is characterized by subjective, consciously perceived feelings of tension, apprehension, nervousness and worry, and by heightened autonomic nervous system activity. State
anxiety may vary in intensity and fluctuate over time as a function of perceived threat. In contrast, Trait anxiety refers to relatively stable individual differences in anxiety proneness, i.e. "a tendency to perceive a wide range of objectively non-dangerous circumstances as threatening and to respond to these with heightened A-state reactions disproportionate in intensity and magnitude to the objective danger" (P,17).

The proposed state-trait conception of anxiety which postulates two anxiety concepts, A-trait and A-state, is not presented as a theory of anxiety, but rather as a means of classifying the concepts of A-state and A-trait as a conceptual framework for viewing theory and research on anxiety phenomenon. A-states may vary in intensity and fluctuate over time as a function of the stresses that impinge on the organism. The level of intensity of an anxiety state may be measured by self-report scales such as the AACL or by changes in physiological measures that reflect activation of the autonomic nervous system, such as heart rate, blood pressure and galvanic skin response. A-trait dispositions are reactive and remain latent until activated by the stress associated with a specific danger situation. On the basis of a series of studies in Stress, Anxiety and Learning, investigators (Hodges, 1968; Katkin, 1964, 1965; Spielberger, 1966; Spielberger & Smith, 1966; Spielberger,
deduce, that persons who are high in anxiety proneness are disposed to perceive greater danger in relationships with other people that involve threats to self-esteem and to respond to these ego-threats with greater elevations in state anxiety or drive level than persons low in anxiety proneness. However, high and low A-trait persons do not appear to differ in their reactions to threats posed by physical dangers (e.g. Katkin, 1965; Spielberger, 1966; Spielberger, Gorsuch & Lushene 1970).

The stimuli that evoke these A-state responses involve a process or sequence of temporally-ordered events. This process may be initiated by an external stimulus such as threat of an electric shock in a laboratory situation or an internal cue - a thought or sensory representation of muscular and visceral activity associated with "feeling angry". If the stimulus situation is cognitively appraised as dangerous or threatening then an A-state reaction is evoked. Through sensory and cognitive feedback mechanisms the A-state reactions serve as a signal that initiate a behaviour sequence to avoid or otherwise deal directly with danger situations. The A-state may also activate the cognitive or motoric defensive processes that have been effective in the past in reducing the A-state by altering the cognitive appraisal of the danger situation, in other words, how learning to cope with the danger situation.
Schematically, the A-state reaction can be represented thus:

A-state Reaction — Cognitive Reappraisal — Coping, Avoidance
                                Behaviour or Psychological Defenses.

On the other hand, A-trait is assumed to reflect residues of the past experiences that in some way determine the individual differences in anxiety-proneness, i.e., in the disposition to see certain types of situations as dangerous and to respond to them with elevated A-states. Those experiences that have the maximum influence on the level of A-trait probably can be traced back to childhood, involving parent-child relationships centering around punishment situations. A-trait levels do not influence A-state responses to all stimuli but only to a particular class of stimuli. Those stimuli which have only marginal levels of threat value, elicit no A-state response; on the other hand, the threat of an objectively painful stimulus, like threats to self-esteem or an electric shock, may be sufficiently general so that most subjects will respond with higher levels of A-states, irrespective of the levels of A-trait.

From the stand-point of the state-trait conception of anxiety, the most important stimuli are those which produce
differential changes in the A-state in individuals who differ in their A-trait levels. There is yet not much experimental evidence that bears directly on the identification of such stimuli, since most experimental investigations of anxiety have been considered either with A-state or with A-trait, but rarely with both. However, differences in task performance of high and low A-trait individuals are most often found under conditions of failure or ego-involvement or under circumstances which involve risk of failure such as that found in academic achievement situations. Simply put, anxiety as a trait-like entity (akin to a stable personality dimension) is thought to interfere with achievement only when the particular conditions of evaluations are sufficiently threatening to elicit transient (State-like) emotionality.

Recently Eysenck (1982) proposed a model in which the inter-relationships among trait anxiety, state anxiety, environmental stress and performance were elucidated: the degree of anxiety experienced (state anxiety) would be determined jointly by the individual's susceptibility to anxiety (trait anxiety) and by the amount of environmental stress. Furthermore, state anxiety would have stronger effects on processing activities than trait anxiety thus producing stronger decrements in the quality of performance.

In line with Spielberger's trait-state theory of anxiety,
one inference repeatedly drawn by researchers is that high anxious persons report more intense feelings of tension in ego-threatening situations, i.e. they report feelings of arousal and anxiety, as measured by the state-inventory, more often and more intensely than less-anxious persons; but studies fail to provide empirical evidence associating high autonomic arousal in such persons, i.e. on a physiological level such a differentiation between persons reporting more or less arousal of anxiety has very seldom been empirically proved. In a review Holroyd and Appel (1980) evaluated empirical findings on this matter, and support the assumption that differing degrees of threat or stress in various situations are reflected in corresponding changes in most of the physiological systems, which is shown by significant main effects in physiological measures when comparing different situations. But if several persons with differing intensities of reported tensions or anxiety are compared in one situation, attempts to prove a physiological response pattern parallel to the verbal reactions usually fail. In their experiments, several researchers (e.g. Born, Lazarus-Mainka & Stolting, 1980; Holroyd, Westbook, Wolf & Badhorn, 1978; Hollandsworth, Glazeski, Kirkland, Jones & Van Norman, 1979; and Lazarus-Mainka, Krause & Feige, 1979) found that differences in objective autonomic arousal in an ego-threatening situation were reflected neither by trait nor by situational measures as assessed by Inventories.
Since the concept of anxiety is quite complex, Becker (1980, 1982) has suggested that test anxiety should be conceptualized not only as a state and a trait but also as a process. The concept of anxiety-as-a-process implies a theory of anxiety that includes stress, threat, and state and trait anxiety as fundamental constructs or variables. The development of a comprehensive theory to account for anxiety phenomenon must begin with a definition of the response properties of anxiety states. After these properties are conceptually identified, appropriate procedures for measuring them must be constructed (Spielberger, 1972b, p. 489).

According to Becker (1980) the periods of time before, during and after examination are of great importance, for example:

(i) The period of time when subjects are preparing for the exam, the changing levels of test anxiety can be measured. Some preliminary studies have been done in this area by Becker (1980, 1982), Becker and Schneider (1976) and Martin (1971).

(ii) Studies analyzing the behaviour of students during a written or oral exam are also of importance (Jacobs, 1981; Stephan, Stein & Fisher, 1982); i.e. the investigation of the circumstances under which during an exam different kinds of interfering cognitions occur.
Finally, the investigation of the short-term and long-term effects of an exam are also important. The conceptual distinction between the trait and state components of anxiety are gaining importance in the domain of test anxiety too (Becker, 1982). Investigations of the state-level of test anxiety are important because heightened preoccupations with one's current concerns account for much performance losses or other future actions. Kuhl (1981) views cognitive interference and state-orientation as synonymous.

According to Spielberger, "... it is not possible to classify the test anxiety scales definitely as either measures of A-trait or A-state, but the bulk of evidence is consistent nevertheless with the assumption that test anxiety is a situation-specific measure of anxiety proneness (A-trait) in test situations" (Spielberger, Gonzalez, Taylor, Algaze & Anton 1978, p.166).

2.3 The concept of Test Anxiety

The recent interest in test anxiety research (see, Ploeg, Schwarzer & Spielberger, 1984) is not surprising, for as Sarason (1980) has stated "at least in Western industrial societies... performance evaluations take place all the time and.... can be of great personal importance" (p.3).
Sieber (1980) discusses "the difficulty of arriving at a comprehensive definition of test anxiety" (p.15). She has identified two major sources of this difficulty, one is inherent to the complex nature of this topic, the other pertains to the nature of behavioural science and to the incapacity of most behavioural scientists to deal with complex phenomenon of the mind such as anxiety.

It is argued that test anxiety is not a single unified reaction to perceived threat, but rather a cluster of interrelated factors whose various relationships to test performance change as the individual progresses through the achievement cycle from a test preparation stage, to test-taking and finally to a test reaction phase. In recent years the quality of test anxiety research has improved resulting from advances in theory and methodology. Dividing the theoretical construct of test anxiety into cognitive and emotional components, and relating these components to achievement, as well as to behaviour and physiological arousal, has become a standard procedure which has contributed finer insights into this very complex human phenomenon.

According to Sarason (1975), test anxiety can be interpreted as a form of self-preoccupation, which is characterized by objective thoughts of self-awareness, self-doubt and self-depreciation, which influences overt behaviour and psychological
reactivity. The self-preoccupying thoughts of the highly anxious individuals interfere with adaptation at several points in the course of information processing. They narrow or otherwise influence the attentional focus on environmental cues; distort encoding, transformation and planning strategies and influence responses that may be selected to cope with challenges confronting the individual. Schwarzer, Ploeg and Spielberger (1982), following Liebert and Morris's (1967) conception profess, that "test anxiety may be defined as a situation-specific personality trait that contains a cognitive component called 'worry' and an affective arousal related component called 'emotionality' "(p.4).

The nature of test anxiety has been characterized as multifaceted and inclusive of task-irrelevant cognitions, heightened physiological arousal and inefficient study behaviour (Spielberger, Anton & Bedell 1976). More than two decades ago, Mandler & Sarason (1952) professed that two kinds of learned drives are prevalent in test situations. One set of drives, the "learned task drives" are elicited by the demand characteristics of the task and stimulate 'task relevant' responses that facilitate the reduction of the drive through task completion. The second set of drives, the "Learned anxiety drives" elicit "task relevant" and 'task-irrelevant' responses and of these the anxiety mediated 'task-relevant' responses are functionally
equal to the "Learned anxiety drives", because these lead to task completion. The 'task irrelevant' responses characterized by "feelings of inadequacy, helplessness, heightened somatic reactions, anticipations of punishment or loss of status and esteem and implicit attempts at leaving the test situation" (Mandler & Sarason, 1952), interfere with effective performance, because they are self-oriented, rather than task-oriented; These incompatible drives have been labelled by Alpert & Haber (1960), propounding the bi-dimensional theory of test anxiety, as Facilitating and Debilitating anxiety. Facilitating anxiety is parallel to task-relevant drives and induces successful task completion. Debilitating anxiety, on the other hand, tends to distract the student from the demand characteristics of the task and thus interferes with successful performance, and is apparently responsible for performance decrements in evaluative situations of the high test-anxious persons. The high test-anxious subject therefore is a poor performer in evaluative situations (Deffenbacher, 1978, 1980, 1984; Sarason, 1980, 1984; Schwarzer, 1985).

In comparing the performance of the high and low test-anxious subjects, hardly any attention has been focussed upon the subjects level of preparation for the task under study. Some major approaches accounting for the interdependence of anxiety, performance and preparation, further elucidating the complex domain of test anxiety, have been brought to the forefront such as:
(i) Test anxiety theory has been based on an interference model (Mandler & Sarason, 1952, Wine, 1971). Test anxious individuals are characterized by task irrelevant, self-centred worry responses that distract them from task requirements and interfere with performance. The negative impact of anxiety occurs in the testing situation and hinders the individual from utilizing task specific cues and activating relevant knowledge or skills.

(ii) Culler and Holahan (1980) propose a learning deficit model, and suggest that high anxious students have ineffective study habits leading to deficiency in learning during preparation, in other words performance decrements of high anxious subjects are due to inefficient preparation caused by poor study related behaviours.

(iii) Carver and Scheier (1981) propose a reassertion model, with its predictions paralleling those of the older Hull-Spence behaviour theory, though it arrives at these predictions very differently and without assuring a direct affect of arousal level. Carver and associates (Carver, 1979; Carver & Scheier, 1981) have advanced a rather different theory regarding the role of attention in the performance of test anxious individuals. They posit that in evaluative situations people are more inclined to focus their attention on themselves. This heightened self-focus increases people's tendency to conform to social expectations.
and to assess their chances on success or failure, but it does not in itself interfere with performance. Performance depends on the resulting expectancy. If a person expects success, high self-focus increases the tendency to comply with situational norms and hence facilitates performance, if the person expects failure, high-self focus leads the person to withdraw mentally from full engagement with the task and hence it debilitates performance. Applying this concept to test anxiety, Carver et al. (1981) assert that in non-evaluative situations, trait anxiety does not affect performance. However, evaluative situations heighten people's self-focus and hence test anxious individuals respond with pessimistic thoughts and mental withdrawal from the task, because of their past experiences with failure in evaluational settings, and thus perform less well than they would in non-evaluative situations. According to them "the same level of anxiety can be facilitating for one person and debilitating for another, based on the person's expectancy of being able to cope with the anxiety and/or to successfully execute the behaviour at hand" (p.228). They also assess that anxiety can be separated from expectancies. Since being well-prepared for a task is likely to improve one's prospects for success, a sense of being well-prepared should moderate the relation of test anxiety with performance, i.e. anxious individuals who feel well prepared should be better than non-anxious ones who also feel well-prepared, and anxious
individuals who fell poorly-prepared, should do worse than non-anxious individuals, who are poorly-prepared. If the students' sense of being poorly-prepared reflects actual inferior preparation, and, therefore, poorer preparation is a factor in the poorer performance of test anxious students, the more frequent task-irrelevant thinking of test-anxious students could also be attributed to their having fewer task-relevant thoughts to offer. This view is sharply at odds with the conventional view among psychologists that the test-anxious individual is as bright and prepared as the non-anxious but is handicapped by emotion or worry.

(iv) Quite in line with Carver and Scheier's (1981) postulations, Klinger (1977, 1982, 1984) has suggested a reaction-to-performance theory which construes test anxiety as a realistic response of an individual who has a history of failure with tests. The test anxious individual comes to the test less well prepared or skilled than others, has fewer productive thoughts or has more unproductive thoughts during the examination, does more poorly and after it is over, is emotionally more disturbed by the perception of inferior performance. In this model, anxiety simply plays the usual role of emotion as evaluative feedback (Klinger, 1977, 1982).

According to the reaction-to-performance-model, test anxiety is more an effect than a cause of poor performance.
The model predicts that inadequate preparation reduces the students' capacity to emit effective problem-solving thoughts, which reduces performance and through the students' awareness of failure, elicits anxiety during and after the examination.

An application of the information processing approach by Was advanced to the test anxiety domain Tobias (1977a, 1980) and Mueller (1980). Tobias (1977a, 1980) formulated a model that attempted to identify specifically where exactly the debilitating effects of anxiety in instructional situations could be most easily observed. The model divides the instructional process into three basic information processing components: input, processing and output. Reviewing the model in the light of recent research findings, Tobias concludes that many of the studies support the predictions of the model. Mueller (1980) using this model, reviewed the effects of test-anxiety on memory, showing debilitating effects of anxiety on encoding, organization and retrieval of information and that the high test-anxious spent maximum time studying. Culler & Holahan (1980), and Benjamin, McKeachie, Lin & Holinger (1981) also found similar results.

Test anxiety can be measured by the employment of the Test Anxiety Inventory or the TAI. The TAI developed by Spielberger et al. (1978) and Spielberger (1980), is documented as being the most important and widely accepted and used test
anxiety measure in the world, as has been stressed by the first four volumes of *Advances in Test Anxiety Theory and Research* (Ploeg, Schwarzer & Spielberger, 1983, 1984, 1985; Schwarzer, Ploeg & Spielberger, 1982).

The Test Anxiety Inventory (TAI) has been adapted for different languages and age groups. Sharma, Sud & Spielberger (1983) are credited with developing the TAI in Hindi language, which provides separate scores on Worry (W) and Emotionality (E) components of test anxiety, and its high factor loadings have been established by Jutshi (1983). Among its other adaptations are: Dutch (Ploeg, 1982, 1983), German (Schwarzer, Jerusalem & Lange, 1982; Hodapp, Laux & Glarzman, 1983; Schwarzer, 1983), Norwegian (Hagtvet, 1983, 1984), Hungarian (Sipos, Sipos & Spielberger, 1984), Spanish (Bauermeister, Collazo & Spielberger, 1983) and Korean (Schwarzer & Moon-Joo Kim, 1984). In fact, the availability of the Hindi TAI and other language versions, assures not only meaningful cross-cultural comparisons of test anxiety and its W and E components, but it can also be used for effectively testing test anxiety theories in different parts of the world.

2.4 **Components of Test Anxiety: Worry and Emotionality**

The distinction between the cognitive and emotional components of anxiety is a notable mile-stone in the comprehension of the Cognitive-Attentional Theory of Test Anxiety.
In recent years, the distinction between **Worry** and **Emotionality** has been widely accepted in test anxiety research (Liebert & Morris, 1967; Ploeg, 1983, 1984b; Spielberger et al., 1976, 1978; Spielberger, 1980; Schwarzer, 1984b). Introduced into the test anxiety domain almost two decades ago by Liebert & Morris (1967), Worry and Emotionality were assigned to be the two main components of this complex field.

**Worry** refers to the cognitive side of anxiety, i.e., preoccupations in the form of concerns about the consequences of failure, doubts about one's own competence and negative self-evaluation.

**Emotionality** refers to the subjective perceptions, i.e., the person's awareness of bodily arousal and unpleasant feeling states like tension, uneasiness or nervousness.

Scholars are faced with a great array of propositions when confronted with defining these multiple dimensions. In fact the operational definitions are very strict in Liebert and Morris's (1967) studies, they are broader and less strict for Osterhouse (1972, see Deffenbacher, 1980) and much broader and lesser for Spielberger and his associates (1978).

**The Worry Component:** In general, the Worry component of test anxiety is described as constituted of the following elements:
(i) self-focused attention (Schwarzer et al., 1982a), worrying a great deal (Liebert & Morris, 1967; see Deffenbacher, 1980);

(ii) lack of confidence in ability or about performance (Schwarzer et al., 1982a; Liebert & Morris, 1967; see Deffenbacher, 1980);

(iii) feelings of inadequacy and insecurity (Schwarzer et al., 1982a; Richardson, 1973; see Meichenbaum & Buttler, 1980);

(iv) poor self-evaluation comparative to others (Schwarzer et al., 1982; Liebert & Morris, 1967; see Deffenbacher, 1980 and Richardson, 1973; see Meichenbaum & Buttler, 1980).

(v) self-concept of vulnerability to failure (Schwarzer et al., 1982a) or feelings of not being as prepared as possible (see, Deffenbacher, 1980);

(vi) thinking about the consequences of failure (Liebert & Morris, 1967; see Deffenbacher, 1980 and Richardson, 1973; see Meichenbaum & Butler, 1980),

(vii) worrying about lack of time to complete the test (Osterhouse, 1972; See Deffenbacher, 1980); and

(viii) helplessness reactions as letting oneself down (Osterhouse, 1972; see Deffenbacher, 1980) or defeating oneself (see Spielberger, 1977).
Also borrowing from Klinger's (1977) "current concerns" concept, Meichenbaum & Butler (1980) propound the following concerns of the worry response: "concern over loss of control, fear of being over-whelmed by anxiety, concern over the possible negative consequences of success, and concern over future goals and so on".

The Emotionality component: In contrast to this all-enveloping definition of 'Worry', Emotionality has simply been defined as composed of two main types of reactions:

(i) feelings of tension, apprehension, nervousness, uneasiness (panic); and

(ii) somatic symptoms associated with autonomic arousal such as rapid heart-beat, sweating, upset stomach (and sometimes dryness of the mouth), headache and other similar reactions.

Task-Generated Interference

Deffenbacher (1978) isolated a distinct anxiety response category which he precisely labelled "task-generated interference" and which he found more linked to Worry than to Emotionality (see Deffenbacher, 1980). This concept, derived from the drive theories of anxiety, suggesting that highly anxious individuals are most susceptible to distraction from task-produced, competing responses under conditions of high drive, has been defined as the
tendency to be susceptible to, or distracted by irrelevant task parameters e.g., in-ability to leave an unsolved problem, preoccupation with time limits (Deffenbacher, 1978).

Although the Worry and Emotionality components are highly inter-related, empirical evidence suggests the notion that it is especially the Worry factor that accounts for the performance decrements in evaluative situations for the high test-anxious persons (Deffenbacher, 1980; Ploeg, 1984b; Sarason, 1980, 1984 etc.) Evaluation generally leads to heightened autonomic arousal or "Emotionality" but at the same time test-anxious subjects also experience cognitive arousal characterized by apprehension or "Worry". Research has shown that high levels of emotionality have little, if any effect on performance, perhaps because such arousal (within normal limits) demands little attention. One doubt frequently faced by theorists is, whether Emotionality is objective or subjective arousal and one logical and sound inference - drawn by some researchers, is that 'Emotionality is not the arousal itself', thus clarifying the objective/subjective dichotomy, but is it the subjective perception of the internal events? Items that assess Emotionality in test situations inquire about rapid heart rate, tension, upset stomach nervous feelings, uneasiness etc.

Several researchers (Holroyd et al., 1978; Hollandsworth et al., 1979; Holroyd & Appel, 1980; Deffenbacher, 1980) have
suggested that while Emotionality may appear akin to physiological arousal, it is not arousal per se, but more attention paid to physiological arousal, as Emotionality has been found to correlate minimally with physiological arousal (Morris & Liebert, 1970).

High levels of Worry are generally debilitating for not only performance but behaviour as a whole, presumably because these irrelevant cognitions take up the processing capacity. Recent reviews (Deffenbacher, 1980; Morris, Davis & Hutchings, 1981; Tyron, 1980) have suggested that Emotionality and Worry are inter-related but different constructs. Emotionality appears to be elicited by the immediate presence of testing cues, whereas Worry appears to be elicited by external or internal cues related to evaluation and possible failure. Worry consistently correlates negatively with performance and performance expectations, whereas Emotionality is either unrelated or less consistently related to performance indices. Additionally, researchers (Bruch, 1978; Deffenbacher, 1980, 1984; Galassi, Frierson & Sharer, 1981; Sarason, & Stoops, 1978) employing Worry-like constructs, have supported the importance of considering 'Worry' in their studies. Recently, Covington, 1985; Deffenbacher, (1980) Hodapp & Hennberger (1983); Sharma & Rao (1983), Sarason (1984), Schwarzer (1984b) and Salamé (1984); have added to the already established fact, of the importance of the Worry factor; by
determining the Worry component as the more influential antecedent of performance impairment.

According to Morris et al., (1981), the Emotionality and Worry responses are not only qualitatively different (affective versus cognitive), but develop through different learning experiences which may or may not coincide for a given individual, and come under the control of different situational stimuli which may or may not coincide in a given situation. Thus, one may have learned one component of anxiety alone, or both, or neither. The strength of the Worry response to a test situation, varies (i) as a function of the social learning history of the person and of his or her cognitive interpretation resulting from the accumulation of past experience; and (ii) as a function of environmental circumstances capable of eliciting the same type of cognitions, largely independent of past learning experiences.

The Worry construct has also been incorporated in the framework of Trait-State anxiety theory (Spielberger et al., 1976; Spielberger et al., 1978) as a major component of test anxiety indicating self-centred responses. The self-focusing aspect of Worry has been considered a key construct in the cognitive attentional approach to test anxiety (Sarason, 1972, 1975a, 1975b, 1984; Wine, 1977, 1980).

The distinction between Worry and Emotionality as the two
components of test anxiety has proved valid and useful, especially because it has helped clarify the complex and unexplored domain of the test anxiety-performance relationship. Researchers (Deffenbacher, 1980; Morris et al., 1981; Hodapp & Henneberger, 1983; Sarason, 1984) have provided useful insights into this domain by determining that it is the 'Worry' component which is the most useful antecedent of performance impairment, and thus calls for effective interventions.

The initial distinction between Worry and Emotionality focused primarily on the state level of anxiety, that is, on subjective experiences in specific test situations, later, it was applied to the study of trait-test anxiety. Deffenbacher (1980), concludes, that although both components constitute separate elements of state anxiety, they may cluster together as components of trait anxiety. Fortunately, the research of other investigators focuses on Worry and Emotionality as components of trait anxiety too (Deffenbacher, 1980; Hodapp, 1982; Jerusalem, 1985; Jutshi, 1983; Schwarzer, 1984b; Spielberger, 1980), and this empirical evidence has given rise to the commonly acceptable definition of test anxiety as a situation specific personality trait that contains cognitive and arousal related components. Hence, both aspects refer to inter-individual differences in the probability, number and intensity of experience like self-doubts and affective arousal in achievement-related situations.
One possible way to explore the distinctiveness of the Worry and Emotionality component, as specified by Becker (1982) is to study or measure the levels of state anxiety and especially state-worry at three different periods in time, i.e. before, during and after the examination, and this has been found to have special implications in treatment studies (Morris et al., 1981). Investigators (Becker, 1983; Deffenbacher & Parks, 1979; Deffenbacher, Mathis & Michaels, 1979; Deffenbacher, Michaels, Michaels & Daley, 1980; Diner, 1978; Depreeum, 1984; Finger & Galassi, 1977; Kirkland & Hollandsworth, 1980; Snyder & Deffenbacher, 1977; Thompson, Griebstein & Kuhlenschmidt, 1980) employing the study of the treatment of state-worry and state-emotionality measures, have established the reduction of the Worry-state measures more often than the reduction in Emotionality-state measures. Therefore, cognitively-oriented treatment approaches hold the most promise in alleviating state-worry scores, but since a reduction in state-worry does not necessarily lead to the reduction in trait test anxiety or trait-worry for future research a distinction between trait anxiety and state anxiety needs to be taken seriously (Becker, 1982; Morris et al., 1981; Spielberger, 1966). Furthermore, sex and age seem to be moderator variables that should be taken into consideration when dealing with Worry and Emotionality differences in predicting academic achievement (Ploeg, 1982, 1983; Wine, 1980, 1982).
2.5 **Cognitive-Attentional Theory of Test Anxiety**

(i) **I.G. Sarason's Views**


Sarason and his collaborators on the basis of a series of studies have stressed that when achievement aspects of performance are emphasized, the high test-anxious individuals perform more poorly than do individuals who are low in test anxiety (I. Sarason, 1960, 1961, 1984). High test-anxious persons in such situations are more self-centred and self-critical than individuals low in test anxiety. They emit personalized, self-centred, derogatory responses that interfere with task performance. He describes the behaviour of test anxious persons in evaluative situations as follows: "Whereas the less test anxious person plunges into a task when he thinks he is being evaluated, the highly test anxious person plunges inward. He either (i) neglects or misinterprets informational cues that may be readily available to him or (ii) experiences attentional blocks" (Sarason, 1972, p. 393).
Sarason's views, closely parallel Wine's (1971) assertions that high test-anxious persons are distracted from the requirements of the task because their attention is focused upon self-centred worry rather than upon task-relevant variables. These cognitive interpretations have won considerable empirical support from various researchers (Carver & Scheier, 1983; Deffenbacher, 1978; Mahoney, 1974; Meichenbaum, 1972; Rimm & Masters, 1974; Sarason, 1984; Spielberger, 1980). Sarason's studies (1972, 1973, 1975, 1978, 1984) suggest an attention-directing interpretation of test anxiety and worry, and suggest that simply reminding high test-anxious subjects to be task-oriented can have a salutary effect on their performance and intrusive thoughts. Attention-directing instructions provide these subjects with an applicable coping strategy. Therefore, gearing high test-anxious individuals towards cognitive modeling procedures and teaching them methods of maintaining a task-focus are gaining predominance. (Meichenbaum, 1972, 1977; Meichenbaum & Butler, 1980; Sarason, 1973, 1984; Wine, 1971, 1980, 1982).

(ii) Wine's Attentional Theory of Test Anxiety

Wine (1971) propogated an "attentional" interpretation of the adverse effects of test anxiety on performance. According to her, during examinations the high test-anxious individuals divide their attention between task requirements and task-irrelevant activities such as worry and self-criticism. These
Worry cognitions distract the high anxious subjects from task requirements and interfere with the effective use of their time, thereby contributing to performance decrements. In effect, Wine (1971) assesses that the high test-anxious persons respond to evaluative testing conditions with ruminative self-evaluative worry and, thus, cannot direct adequate attention to task-relevant variables.

In her words "test-anxious people carry around with them a set of habitual, negative self-related thoughts, an unnecessary loop built into the cognitive system; readily triggered by the threat of evaluation. These thoughts may take a variety of forms, but most of them are of a self-deprecatory, worry nature. In an evaluative situation, test anxious people may worry about how they are doing, brow-beat themselves for poor preparation, think about the time passing, worry about the consequences of doing poorly or how other people are doing, think about how tense and upset they feel, etc. Whatever, form the thoughts take, they invariably are irrelevant to the task in hand and interfere directly with getting the task done. As a result high test-anxious people consistently perform more poorly on cognitive tasks given under evaluative conditions than do the low test-anxious, who attend to the task fully" (Wine, 1971, p. 99).

In fact, the direction-of-attention-hypothesis propounded by Wine (1971, 1980) most appropriately claims that highly test-
anxious individuals turn their task-relevant cognitions into task-irrelevant cognitions as soon as the situation is appraised as threatening. Test situations are appraised by such persons as a threat to their self-esteem. They are also characterized by self-doubts and concerned with possible failure (Heckhausen, 1982); they worry about their performance, directing their attention to the self as actor instead of the task in hand. In line with these theoretical assumptions, a causal chain is postulated connecting appraisals and feelings of anxiety: cognitive appraisals of threat lead to worry cognitions, that for their part trigger emotional arousal. In the course of personality development, a high worry disposition may be a precursor of a high emotionality disposition. However, it is the cognitive component of state test-anxiety that seems to be responsible for its debilitating effects on academic achievement. In contrast, autonomic arousal appears to have little or no effect on performance in evaluative situations (Deffenbacher, 1978, 1980, 1984; Ploeg, 1984; Sarason, 1978, 1980, 1984, Schärzer, 1984).

The validity of Wine's attentional theory has been tested in the United States (Deffenbacher, 1978, 1984; Deffenbacher & Hazaleus, 1985) and in India (Sud. S, 1983), in asserting that the high anxious students under high stress conditions report higher worry and task generated interference, perform poorly and have negative feelings about their selves, abilities and the task,
and also spend less time on the task as compared to their high anxious low stress or even their low anxious counterparts regardless of stress conditions. Additional evidence in line with Sarason's (1972) and Wine's (1971) viewpoints of the high negative self-preoccupations and self-defeating thoughts of the high test-anxious has been provided by Covington, Spratt & Omelich (1980), Covington (1984), Covington & Omelich (1981,1984), Heckhausen (1982), Hodapp (1982), Kohnle (1980), Many and Many (1975), Meichenbaum (1971), Sarason (1978,1984) and Wine (1980, 1982).

Recently Wine (1980) has proposed a Bidirectional Model of Test Anxiety, according to which she contends that test anxiety is a multi-dimensional and not a unitary construct; and this view has gained support from various researchers (Dusek, 1980; Meichenbaum & Butler,1980; Sieber,1980; Salamé,1984). In the cognitive-attentional bidirectional approach, the high test-anxious persons rather than the low test-anxious, are assumed to resemble each other on a variety of multiple dimensions. Wine (1980,1982) also asserts that the best comparison group for the high test-anxious are the low test-anxious, and that the ideal state during a test is one of low test anxiety. According to her the low anxious are not the exact opposites of the high anxious. Through her bidirectional approach, Wine has provided useful insights into the characteristic response patterns or rather feelings and cognitions of the low-anxious individuals. The
low-anxious individuals meet with highly stressful situations, as a challenge and an opportunity to exercise their problem solving skills. Their self-statements vary with the nature of the situation, such as they usually say, "What are the demands of the situation and what can I do to meet these demands"? Hardly, if ever, do they indulge in negative ideation either about themselves, the task, or the test situation, therefore, their performance is usually better as compared to that of the high test-anxious. Wine (1980) has appropriately differentiated between the response characteristics of the high and low test-anxious individuals. In a recent study, Korte, Jerusalem, Faulhaber and Schwarzer (1984) have determined worry and irrelevant thinking to be clearly distinct from each other. However, people who have withdrawn mentally from threatening tasks are mostly day-dreaming and, by this, have directed their attention away from the task in hand. This is quite in line with Wine's (1971, 1980, 1982) cognitive attentional interpretation of test anxiety.

The cognitive attentional theory has emerged dominant in recent years. On the basis of this view, the impairments resulting from test anxiety are not based on disruptive over motivation, rather they are the result of cognitive tendencies that are themselves maladaptive. These cognitive tendencies are not present or are less present among persons who are not test anxious. Extensive evidence in their use have shown that test
anxious subjects report more task irrelevant thought content than do others (e.g. Depreeuw, 1984; Mandler & Watson, 1966; Marlett & Watson, 1968; Wine, 1971, 1980, 1982) especially under achievement orienting conditions (Deffenbacher, 1978, 1983, 1984; Deffenbacher & Hazaleus 1985; Sarason, 1984; Sarason & Stoops, 1978) and they volunteer more task irrelevant comments (Ganzer, 1968; Wine, 1980, 1982).

The cognitive attentional perspective is far superior to the analysis derived from the Hull-Spence drive theory. Treatment strategies arrived at modifying the negative self focus of the high test-anxious to a more positive task focus, and directly reducing the "Worrying" component in test situations as suggested by Wine (1971) and Meichenbaum (1972) are deemed most suitable in the cognitive attentional treatment of test anxiety. In other words, this type of test anxiety therapy often concentrates on directing attention away from such cognitive interference (cf. Wine, 1971, 1980, 1982). Recently, cognitive processes have been regarded to be essential in the treatment of test anxiety both in either individual or group treatment. Based on the cognitive attentional treatment of test anxiety, Wine (1971a,b) has devised an "attentional training programme" that aims at directly modifying the task irrelevant thoughts that test anxious persons entertain during tests. High test-anxious subjects who receive this training are given a rationale of the treatment
that stresses that test anxious individuals waste much of their time in self evaluative worry, with the result that they do not pay adequate attention to many task-relevant variables, rather they tend to spend their maximum time making task-irrelevant comments. "An Attentional approach is explicitly concerned with how the subject uses his task time... his cognitive activity, what he is thinking about and attending to ... this approach implies little interest in autonomic arousal per se. In this context, degree of arousal is irrelevant unless S is attending to his arousal" (Wine, 1971). Thus, with this intervention, because of its brevity and ease of teaching it to children, and its ready transferability to classroom situations, the most poignant and deletrious effects of worry, in the test situation can be successfully treated.

In effect, students who are high in test anxiety are taught certain coping self-statements, that they can make to themselves while taking the test, which are in other words self-instructions in relaxation. This has been proved in studies by Wine (1971, 1973, 1974) as an excellent means of gaining control over one's attentional processes, and she has rightfully asserted that, "when arousal becomes quite extreme, it is attentionally demanding" (Wine, 1971). Recently, Sarason (1984) has highlighted the importance of the attention directing instructions as a successful behavioural intervention in having a salutary effect on not only
the performance measures of the high test-anxious subjects but also in modelling their intrusive thoughts.

2.6 Role of Evaluative Stress in Test Anxiety

An important and difficult exam is a stressful situation for many students and the level of stress depends upon the personal importance of the exam, on the estimated difficulty of the exam and on the intensity of preparation (Becker, 1983). It has already been stressed that the performance of the high test-anxious person is deleteriously affected by evaluative stress or ego-threatening instructions (Deffenbacher, 1978, 1980, 1984; Sarason, 1978; Sud, S. 1983). Therefore the question repeatedly raised is: Why is it that under achievement-orienting conditions, the performance of the high test-anxious deteriorates? One interpretation is that the high test-anxious individual becomes self-preoccupied, indulging in self-deprecatory rumination, rather than attend to the task in hand (Sarason, 1971, 1972a, 1978); another interpretation is based on the direction-of-attention-hypothesis put forth by Wine (1971, 1980, 1982) assessing that the highly test anxious turn their task-relevant cognitions into task-irrelevant cognitions in the face of an evaluational stressor; be it a difficult exam or a situation in which ego-stress is induced experimentally by way of verbally transmitted or written high-stress instructions.
Two commonly used psychological stress factors employed in investigations of the effect of anxiety on intellective-academic performances are

a) ego-involving instructions, emphasizing the evaluative relevance of the experimental task, stressing the intelligence testing nature of the task etc., and

b) negative feedback, or failure instructions. Typically, though not without exception, the effect of both these manipulations is debilitative in nature (Spence & Spence, 1966; Wine, 1971).

However, ego-involving instructions, as Wine (1971) has demonstrated, lead the high test-anxious persons to spend more of their time (a) worrying about their performance and about how well others are doing; (b) ruminating over alternatives; (c) being preoccupied with such things as feelings of inadequacy, anticipations of punishment, loss of status or esteem, and heightened somatic and autonomic reactions. In other words, a Worry component diverts attention away from the task and results in performance decrement. According to Deffenbacher (1984), highly test anxious students perform poorer than the less test anxious. This performance decrement is not a simple function of ability, but appears to be a function of interfering state anxiety (Sarason, 1972). Thus, a treatment procedure aimed at controlling the "cognitive state" and attentional style of the
high test-anxious client should improve test performance.

When stressful events occur in social or academic situations, persons will shift their attention to the self in order to assess their competence expectancy or outcome expectancy (which can be regarded similar to Bandura's (1977, 1983) notion of self-efficacy). If this is appraised as insufficient, the situation will also be appraised as threatening (cf. Lazarus & Launier, 1978; Schwarzer, 1981; Schwarzer, Jerusalem & Stiksrud, 1984), followed by anxiety as a cognitive-emotional process. The severity and intensity of the process depends upon how self conscious and state oriented the person is. If there is more perceived loss of control than challenge, then the individual will not invest enough effort and persistance in the task or in the social interaction, increasing the probability of real failure. When this happens, a person with an unfavourable attributional style will have detrimental cognitions, reinforcing his low competence expectancy (as a feedback loop), finally resulting in the individual becoming disorganised in behaviour, despondent and disengaged which acts as a pre-stage of learned helplessness.

In stress, research, the cognitive appraisal of situations with regard to challenge, threat or loss of control plays an important role for coping behaviour and emotions. Information processing occurs in two directions, concentrating on the
environmental demands or on the situation on the one hand, and concentrating on the self, i.e. on one's coping ability or on the perceived competence in taking appropriate and effective actions on the other. If, from the individual's point of view situational demands threaten the personal resources for coping, feelings of anxiety are likely to occur. As anxiety or a feeling of stress increases, the cognitive focus tends to shift from the task in hand to thoughts about the self and to worry about possible failures (Sarason, 1960, 1975). In other words, evaluative stress elicits a sort of state anxiety (A-state) in the high test-anxious individual, whose performance thus suffers as less time is spent by him upon the task, the high test-anxious individual attends less to the task and more to task-irrelevant variables.