AIMS AND HYPOTHESES
The present investigation aims at observing that how personality, and intelligence, affect problem solving when three types of problem solving tasks are being used i.e. set problems (anagrams problem and candle stick problem), insightful problems (problem solving squares and prisoners problem), conceptual problems (sorting cards problem and the Hanfmann-Kasanin vigotsky Sorting problem) in both the sexes under stressful and non-stressful conditions.

HYPOTHESES

In the preceding chapter, the effect of extraversion, intelligence and stress on variety of problem solving tasks in both the sexes have been studied in quite detail. Presently, for the purpose of forming hypotheses only salient researches in this area would be presented.

Extraversion/Introversion and Problem Solving

A review of studies clearly substantiates that introverts are better problem solvers than extraverts on variety of problem solving tasks. Eysenck (1959) and Mohan and Kumar (1976) have clearly demonstrated the better performance of introverts over extraverts on problems taken out of various intelligence tests. Kumar (1975) found that on difficult insightful problem solving tasks introverts consistently and significantly performed better.
than extraverts on both trials and time taken. These results were explained through the arousal and inhibition-excitation hypotheses of Eysenck (1967) and Gray (1972). Recently, Kumar and Kapila (1987) on insightful problem solving tasks substantiated the superiority of introverts over extraverts. Kumar and Kumari (1987) on set problem solving tasks found the same results i.e. introverts were significantly superior than extraverts.

Presently where three types of problem solving tasks are being employed for the experimentation, it is presumed that where different strategies would be required for solution, introverts would perform better than extraverts.

Intelligence and Problem Solving

The review of literature in Chapter II indicates that there is a positive relationship between intelligence and problem solving (Maltzman, Eisman and Brooks, 1956; French, 1958; Klausmeir and Longlin, 1961; Mendelsohn, Griswold and Anderson, 1966, Laughlin, 1967; Laughlin, Doherty and Dunn, 1968; Vasiliyeva and Zemtsova, 1982; and Ajwani and Upadhyay, 1983). On the three types of problem i.e. set problems, insightful problems and conceptual problems high intelligence subjects would bring different strategies for solution than above average
intelligence and average intelligence subjects.

So it may be hypothesized that if different strategies would be required for solution, the high intelligence group would perform better than above average intelligence and average intelligence groups and above average intelligence group would also perform better than average intelligence group on all the three types of problem solving tasks.

Stress and Problem Solving

A review of studies clearly substantiates that subjects working under non-stressful conditions or task orienting instructions perform better than the subjects under induced stress conditions on variety of learning and problem solving tasks (Bardack, 1960; Marlett and Watson, 1968; Silverman and Waite, 1969; Dusek and Hill, 1970; Deffenbacher, 1978, 1985; Ruisel, 1982; Shaw, 1983; Mathew et al., 1984; Vander Ploeg and Hulshof, 1984; Ravindar, 1977; Naidu and Thapa, 1978; Chatterjee, Bhattacharya and Bhattacharya, 1978; Srivastva and Naidu, 1982; Ajwani and Upadhyay, 1983; Sud, 1983; Verma and Nijhawan, 1984).

In the present study where three types of problem solving tasks are being used for experimentation, it may be hypothesized that induced stress would be detrimental to performance.
Sex and Problem Solving

By and large it is clearly observed that males are better than females to solve the different kinds of problem solving tasks right from school children to adults (Bedell, 1934; Billings, 1934; Sweeney, 1953; Terman and Tyler, 1954; McNemar, 1955; Stass, 1957; Priested and Hunskar, 1969; Maier and Burke, 1967; Maier and Casselman, 1970; Roll, 1970; Constantinople, 1974; Raaheim and Kaufman, 1974; Felen, 1975; Maxwell, 1975; McWay, 1975; Singer, 1975; Hayes, 1978; Benbow and Staney, 1980; Jacob, and Dominowski, 1981; Johnson, 1984; Luchins and Luchins, 1984; Pesch, 1985 and Kumar and Kumari, 1987). A variety of reasons have been offered for the poorer problem solving of females. (1) Attitude towards problem solving (Carey, 1958; Hoffman and Maier, 1961; and Kumar, 1983) (2) Masculinity/Femininity (Parson and Bales, 1955; Milton, 1957; and 1959) (3) Fear of success (Horner, 1968; 1972 and 1974). Since women's attitude towards problem solving is poor and are high on femininity and low on masculinity and again high on fear of success hence they perform poorly.

In the present study, it is expected that males would perform better than females keeping in view the bulk of evidence.

In the present investigation aside from the hypothesis for the main effects certain expectations regarding the interaction effects were also kept in view especially stress with other variables since stress is an experimental variable.
1. **Personality x Intelligence**

In the present study interactions between personality x intelligence are expected (as already proposed that high scores on intelligence and introverts would perform better).

*Introverts and extraverts may significantly differ among high scores because of high arousal of introverts and higher cognitions and intellectual capacity of high scorers on intelligence but not among low scorers of intelligence because in the absence of high cognitions and low intellectual capacity the arousal differences in extraversion dimension may be nullified.*

2. **Personality x Stress**

It was presumed that stress would effect the performance of introverts and extraverts differently in line with the latest contentions of Gray (1972) where in the states while putting forward a major modification of Eysenck's theory that since introverts are characterized by higher states of arousal hence are more susceptible to punishment. And stress may be akin to punishment.

*An expectation in the form of interaction may follow that stress would more adversely affect introverts than extraverts.*

3. **Personality x Sex**

In a recent study, Kumar, Malhotra and Jerath (1986) while
explaining an interaction of personality x sex have argued that females were inferior to males in learning because females were significantly more extraverted. Some other studies have also indicated that females are generally more extraverted than males (Kumar, 1975).

In the light of the results of the certain studies it may be hypothesized that since females generally score higher on extraversion than males hence significant differences between males and females in problem solving efficiency in extraverted group may be expected.

4. Intelligence x Stress

In the present study it may be expected that stress would affect more adversely high intelligence and above average intelligence groups than the average intelligence group. This hypothesis was framed keeping in view the latest trend of studies (Ploeg, Schwarzer and Spielberger, 1983, 1984 and Gupta and Sharma, 1986, 1987). These studies have been shown that the effects of induced stress are nested at the higher levels of intelligence.

A intelligence x stress interaction may show the deleterious effects of stress in high scorers on intelligence.
5. **Intelligence x Sex**

In the present study three types of problems are being used i.e. set, insightful and conceptual, so different strategies might be required for the solution of the problems. Since women are deficient in problem solving because of lack of motivation, positive attitude and are more feminine and higher fear of success inspite of the fact that they are equal in intelligence to males.

Keeping in view these facts it is expected that on all the three levels of intelligence females may perform poorly than males.

6. **Stress x Sex**

The review of studies regarding sex differences by and large indicate that males are better problem solvers than females even in the studies where induced stress was not taken as a variable (Kumar, 1983; Kapila and Kumar, 1986). In the study undertaken presently stress would be given to half males and half females.

Hence the interaction may depict the deleterious effects of stress more among females than in males.

7. By and large the studies (Bardack, 1960, Watson, 1968; Silverman and Waite, 1969; Ravindar, 1977; Goldstein and Dorfarman, 1978; Deffenbacher, 1978; Chatterjee, Bhattacharya
and Bhattacharya, 1978; Naidu and Thapa, 1978; Murphy, 1980; Harris and Johan, 1982; Srivastava and Naidu, 1982; Srivastava, 1982; Mills, 1983; Shaw, 1983; Sud, 1983; Ajwani and Upadhyay, 1983; Vander Ploeg and Hulshof, 1984; Zarantonello et al, 1984; Verma and Nijhawan, 1984; and Deffenbacher, 1985) have shown that stress is detrimental to performance but so far to the best of the investigator's knowledge no effort or attempt has been made to measure the effect of stress in terms of test or state anxiety since stress and anxiety are related but not identical variables (Cattell and Scheier, 1961; Schwarzer, 1981 and Krohne and Laux, 1982). In the present study an attempt is being made to measure the effect of stress in terms of state anxiety in pre-instructions after instructions and after the completion of the tasks.

It may be hypothesized that stress may significantly interact with state anxiety especially in after instructions conditions. The interaction may depict that in after instruction condition there would be significant differences between stress and no stress groups in their respective state-anxiety scores.