REVIEW OF LITERATURE

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Eysenck's (1947, 1969) dimensional system of personality proposed the following three dimensions of personality, viz., Introversion-Extraversion (E), Neuroticism (N), and Psychoticism (P). He also proposed a psychobiological model to parallel these three dimensions (Eysenck, 1967, 1981 and Eysenck and Eysenck, 1985). The model is a hierarchical one which conceptualizes that each of the three broad dimensions are subdivided at a lower level into narrower and more specific traits. Eysenck and Eysenck (1975) contended that a large portion of the total common variance produced by the correlations between various personality traits could be accounted for by these three higher-order factors. These super-factors have been sufficiently often replicated to suggest stable and permanent dimensions of personality structures (Eysenck and Eysenck, 1976; Eysenck and Zuckerman, 1978 and Eysenck, 1981).

According to Zuckerman et al. (1988), second-order factor analyses of narrower traits such as Cattell's (Cattell et al., 1970) revealed superfactors, three of which showed a strong resemblance to Eysenckian personality dimensions of Extraversion, Neuroticism and Psychoticism. According to Eysenck and Eysenck (1985), each of these
personality dimensions include certain subtraits. The subtraits of Extraversion are as follows: sociable, lively, active, assertive, sensation seeking, carefree, dominant, surgent and venturesome. The subtraits of Neuroticism are as follows: anxious, depressed, guilty, low self-esteem, tense, irrational, shy, moody and emotional. The subtraits of Psychoticism are as follows: aggressive, cold, egocentric, impersonal, impulsive, antisocial, unempathic, creative, and tough minded. A series of studies (Eysenck and Eysenck, 1982; Eysenck, 1983; Barrett and Eysenck, 1985 and Eysenck and Long, 1986) utilizing both the child and adult versions of the Eysenck Personality Questionnaire (Eysenck and Eysenck, 1975) have shown that the supertraits of Extraversion, Neuroticism and Psychoticism are replicable across sex, age and cultures.

**Sex Differences In Eysenckian Dimensions Of Personality**

Eysenck and Eysenck (1975) found females to score higher than males on the Lie (Social Desirability) Scale. Mohan (1975) in a survey of university students found majority of boys to be stable extraverts and girls to be neurotic extraverts. Singh and Kumar (1977) found no sex differences on the personality dimensions of Extraversion and Neuroticism. Eysenck and Eysenck (1978) found that males scored higher than females on Psychoticism and females scored higher than males on Neuroticism. Misra
and Misra (1980) found males to be more psychopathic deviates than females. Sharma (1981) found that females scored lower on Neuroticism than males. Mohan and Jain (1984) found no significant sex differences on Extraversion, Neuroticism, Psychoticism and Lie (Social Desirability) Scale. Mohan and Virdi (1985) found males to score higher than females on Extraversion and females to score higher than males on Neuroticism. They reported no sex differences on Psychoticism and Lie (Social Desirability) Scale. Bhandari and Sarup (1987) compared college students of both sexes on the Eysenckian dimensions of personality. They found males to score higher than females on Psychoticism and females to score higher than males on Neuroticism. They found no sex differences on Extraversion. Mohan and Sheoran (1987) found sex to be a significant determinant of Neuroticism, Psychoticism and Lie (Social Desirability) Scale. Females were higher than males on Neuroticism and Lie (Social Desirability) Scale. Males scored higher than females on Psychoticism. Mohan and Gulati (1988, 1989) reported that males scored significantly higher than females on Extraversion and females scored significantly higher than males on Neuroticism. They found no significant sex differences on Psychoticism and Lie (Social Desirability) Scale. Mohan and Sethi (1988)
found males to be significantly higher than females on Extraversion and Psychoticism and females to be significantly higher than males on Neuroticism. Zuckerman et al. (1988) found significant sex differences on only two of the three supertraits identified by Eysenck. Males were higher than females on Psychoticism and females were found to be higher than males on Neuroticism and Lie (Social Desirability) Scale. No significant differences were reported on the dimension of Extraversion. Corulla (1989) reported sex differences using Eysenck's Personality Questionnaire (Revised). He found that males scored higher than females on Psychoticism and Lie (Social Desirability) Scale, while females scored higher than males on Extraversion and Neuroticism. Rana (1989) studied sex differences in Eysenckian dimensions of personality viz., Extraversion, Neuroticism and Psychoticism among male and female managers. She reported no sex differences on any of these dimensions.

**Sensation Seeking And Eysenckian Dimensions Of Personality**

The Sensation Seeking Scale was constructed to measure individual differences in optimal levels of stimulation and arousal. Bone and Montgomery (1970) investigated the relationship between Sensation Seeking and Extraversion and Neuroticism as measured by Eysenck's (1959) Maudsley Personality Inventory (MPI) in males
and females. They found a positive correlation between Sensation Seeking and Extraversion and an insignificant correlation between Sensation Seeking and Neuroticism. Significant correlations have been repeatedly found between Sensation Seeking and Extraversion, especially with its impulsive aspect (Kish, 1971; Bone, 1972 and Eysenck and Eysenck, 1977).

Eysenck and Zuckerman (1978) examined the relationship between Sensation Seeking and the Eysenckian personality dimensions in samples from Britain and U.S.A. The Sensation Seeking Scale, Form V and Eysenck Personality Questionnaire (Eysenck and Eysenck, 1975), were administered to 219 American and 879 English subjects of both sexes. These authors found that: (1) there was virtually no relationship between Neuroticism and Sensation Seeking, (2) all Pearson’s correlations between Total Sensation Seeking Score and the Extraversion and Psychoticism scales were significant with the exception of interaction between Sensation Seeking and Extraversion (SSS x E) for American males, (3) the Psychoticism scale correlated with all Sensation Seeking subscales with the exception of Thrill and Adventure Seeking, (4) the correlations between Boredom Susceptibility, Experience Seeking and Extraversion scales were all rather low in magnitude, (5) the Lie (Social
Desirability) Scale tended to correlate negatively with the Sensation Seeking Scale, and (6) the multiple correlations between Total Sensation Seeking Score and the Psychoticism and Extraversion scales ranged from 0.41 to 0.59. Eysenck and Zuckerman (1978) concluded that Sensation Seeking represents a trait which lies between the Psychoticism and Extraversion dimensions and that the multiple correlations indicate that about one-third of the total variance in Sensation Seeking is accountable in terms of Psychoticism and Extraversion. They also suggested that since Neuroticism accounted for none of the variance, the Sensation Seeking Scale, Form V, measures, to some extent something not included in the Eysenck Personality Questionnaire.

Schalling et al. (1981) examined the relationship between Sensation Seeking, its subscales and the Eysenckian dimensions of personality. They found that General Sensation Seeking, Experience Seeking, Disinhibition and Boredom Susceptibility correlated positively and significantly with Psychoticism while only Experience Seeking was positively related to Neuroticism. Both Experience Seeking and Boredom Susceptibility correlated negatively with Lie (Social Desirability) Scale. None of the subscales of Sensation Seeking Scale were found to correlate significantly with Extraversion.
Eysenck (1983) studied the relationship between Sensation Seeking, its subscales and Eysenck's dimensions of personality in 620 females and 214 males. The significant correlations observed were:

(1) Disinhibition was positively related to Psychoticism and Extraversion and negatively to Lie (Social Desirability) Scale in both males and females. Disinhibition was also found to correlate positively with Neuroticism in females only.

(2) Thrill and Adventure Seeking was positively related to Extraversion and negatively to Neuroticism in both males and females. Furthermore, in females Thrill and Adventure Seeking also correlated negatively with Lie (Social Desirability) Scale.

(3) In both males and females, Experience Seeking was positively related to Psychoticism. While a negative correlation between Experience Seeking and Lie (Social Desirability) Scale was found in females only.

(4) Boredom Susceptibility was related positively to Psychoticism in both sexes. A negative correlation was also observed between Boredom Susceptibility and Lie (Social Desirability) Scale in females.
Campbell and Heller (1987) reported a positive correlation between Sensation Seeking and its subscales using Sensation Seeking Scale Form V and Extraversion of Eysenck Personality Questionnaire in male and female undergraduates. Corulla (1988) studied the relationship between Sensation Seeking, its subscales and the Eysenckian dimensions of personality in both males and females. In males, none of the Sensation Seeking subscales viz., Thrill and Adventure Seeking, Experience Seeking, Disinhibition, Boredom Susceptibility and Total Sensation Seeking Score were significantly related to any of the Eysenckian personality dimensions viz., Psychoticism, Extraversion, Neuroticism and Lie (Social Desirability) Scale. In females, Disinhibition, Boredom Susceptibility and Total Sensation Seeking Score were positively and significantly related with only Psychoticism. As in males, Thrill and Adventure Seeking and Experience Seeking did not correlate significantly with any of the Eysenckian personality dimensions in females.

In another follow-up study, Corulla (1989) reported the following significant correlations between Sensation Seeking, its subscales and Psychoticism, Extraversion, Neuroticism and Lie (Social Desirability) Scale in males and females. He reported that (a) In both males and females,
Thrill and Adventure Seeking was positively related to Extraversion and negatively to Lie (Social Desirability) Scale. (b) Experience Seeking was related positively to Psychoticism, Neuroticism and negatively to Lie (Social Desirability) Scale in both males and females. (c) Boredom Susceptibility was related positively to Psychoticism and Extraversion in both the sexes. Furthermore, in males Boredom Susceptibility was positively related to Neuroticism and negatively to Lie (Social Desirability) Scale. (d) In both males and females, Disinhibition and Total Sensation Seeking Score were positively related to Psychoticism, Extraversion and Neuroticism; Lie (Social Desirability) Scale was positively related to Disinhibition and Total Sensation Seeking Score in females and negatively in males.

In the present investigation an attempt has been made to study the relationship between Sensation Seeking, its subscales and Eysenckian dimensions of personality in male and female college students.
Impulsiveness And Venturesomeness

Personality theorists regard impulsivity as an elusive and controversial concept though it has been widely used by clinicians and lay people. Impulsivity is often included as part of the symptom pattern of a wide range of psychopathological learning, social disorders, hyperactivity, violent and aggressive behaviour (Kolb, 1972 and Eleftheriou and Scott, 1971) and childhood learning disorders. As already mentioned, Eysenck's (1947, 1969) three dimensional model of personality is a hierarchical one which conceptualizes that each of the three broad higher order personality dimensions viz., Introversion-Extraversion, Neuroticism and Psychoticism are subdivided at a lower level into narrower and more specific traits. Eysenck and Eysenck (1969) have chosen to concentrate on the highest level of analysis i.e., the supertraits of Psychoticism, Extraversion and Neuroticism as they are more replicable across sex, age and nationalities. Apart from these three higher order dimensions of personality, other dimensions of personality such as Impulsivity and Venturesomeness (Eysenck and Eysenck, 1977; Barratt and Patton, 1983 and Schalling et al., 1983) have also been proposed. Eysenck and Eysenck (1978) have suggested that Impulsivity and Venturesomeness are important individual differences variables.
Impulsiveness has been defined by Eysenck and Eysenck (1978) as a generalized state of high arousal which is characterized by hasty responsiveness, carefreeness, impatience or low impulse control. In the Diagnostic and Statistical Manual of Mental disorders-III (1980), the criteria given for identifying impulsivity in an individual are "atleast three of the following: (1) often acts before thinking, (2) shifts excessively from one activity to another, (3) has difficulty organizing work (this not being due to cognitive impairment), (4) needs a lot of supervision, (5) frequently calls out in class, (6) has difficulty awaiting turn in games or group situations" (American Psychiatric Association, 1980).

Venturesomeness, which is defined as the tendency of people to perceive risk but to choose to take a gamble (Rawlings, 1984), is regarded as a subtrait of Extraversion (Eysenck and Eysenck, 1985). Impulsiveness is subsumed under Psychoticism (Eysenck and Eysenck, 1985 and Zuckerman et al., 1988). Thus, Extraversion and Psychoticism are super-order factors whereas Impulsiveness and Venturesomeness are subfactors/subtraits of these super-order factors showing partial positive correlations with each other, yet in part independent (Eysenck and Eysenck, 1977 and Eysenck and Zuckerman, 1978). In factor analytic studies conducted by Eysenck and Eysenck (1978), these factors of Impulsivity
and Venturesomeness emerged reasonably independent of the higher-order factors of Psychoticism, Extraversion, Neuroticism and Lie (Social Desirability) Scale, both for males and females. Eysenck and Eysenck (1978) devised a questionnaire to measure these dimensions of Impulsiveness and Venturesomeness (I6 Impulsiveness Questionnaire). Alpha reliabilities for the two scales were satisfactory, ranging from .79 to .84 for men and women separately. Both Impulsiveness and Venturesomeness appeared to have a strong genetic basis (Eaves et al., 1977).

**Impulsiveness** has been shown to be a multidimensional factor. Eysenck and Eysenck (1978) divided Impulsiveness into separate oblique factors of narrow impulsiveness, risk-taking, nonplanning and liveliness. Impulsiveness has been found to be related to the eyelid conditioning performance of subjects (Frcka and Martin, 1987), subjective wellbeing (Emmons and Diener, 1986), anti-social behaviour (Eysenck, 1981) and Electroencephalograph – defined arousal (O'Gorman and Lloyd, 1987). Eysenck and Eysenck (1985) reported Venturesomeness to be a unidimensional scale. However, Pearson et al. (1986) and Heaven (1989) have recently questioned the unidimensionality of this scale by showing evidence of the existence of two factors, namely, risk-taking and sensation seeking as components of Venturesomeness scale in factor analytic studies.
Sex Differences In Impulsiveness And Venturesomeness

Eysenck and Eysenck (1978) reported no sex differences on Impulsivity but reported that on Venturesomeness males scored significantly higher than females. Eysenck et al. (1985) and Corulla (1988) also studied sex differences on Impulsiveness and Venturesomeness. They reported that females tended to score higher than males on Impulsiveness and males tended to score higher than females on Venturesomeness though these differences were not significant. In another study Corulla (1989) reported that females scored significantly higher than males on Impulsiveness and males scored significantly higher than females on Venturesomeness.

Impulsiveness, Venturesomeness And Eysenckian Dimensions Of Personality

Eysenck and Eysenck (1978) undertook a study to discover the relationship between the factors of Impulsiveness, Venturesomeness and the fundamental factors of Psychoticism, Extraversion and Neuroticism. Results showed that although both the traits of Impulsivity and Venturesomeness correlated positively with Extraversion and Psychoticism, Venturesomeness correlated more with Extraversion and Impulsiveness correlated more with Psychoticism for both sexes. There was a positive correlation between Impulsiveness and Neuroticism and no relationship emerged between Venturesomeness and Neuroticism. Both Impulsiveness and Venturesomeness correlated negatively
with Lie (Social Desirability) Scale which is probably an indication of low conventionality of high Impulsiveness/Venturesomeness scorers. The pattern of correlations was fairly similar for men and women suggesting that the observed correlations have fairly general validity.

Eysenck and Eysenck (1978) concluded that there was enough evidence to establish Impulsiveness and Venturesomeness as primary factors of personality. Each of these factors were fairly independent of the other and one could locate each fairly precisely in three dimensional space created by the major higher order personality factors viz., Psychoticism, Extraversion and Neuroticism.

Eysenck (1981) found that Impulsiveness aligned primarily with Psychoticism and to a minor degree with Extraversion and Neuroticism. These findings were replicated by Eysenck et al. (1985). Eysenck et al. (1985) also reported that Extraversion is more related to Venturesomeness than Impulsiveness. Neuroticism was found to be negatively related to Venturesomeness particularly for females. Zuckerman (1983) found that persons who scored high on measures of impulsivity also tended to score high on Psychoticism. Schalling et al. (1988) reported that Impulsiveness was positively related to Neuroticism and Psychoticism and Venturesomeness was related to Psychoticism.
Sensation Seeking, Impulsiveness And Venturesomeness

According to Zuckerman (1983) the correlational studies between the traits of Sensation Seeking and impulsivity revealed that these are related, but not synonymous dimensions of personality. Barratt and Patton (1983) identified Sensation Seeking and Extraversion together with impulsivity in the same class of action oriented personality dispositions. They reported a positive correlation between Barratt's Impulsiveness Scale (Barratt, 1959) and Disinhibition factor of Sensation Seeking Scale.

Eysenck (1983) investigated the relationship between Sensation Seeking and the four sub-factors (narrow impulsiveness, risk taking, nonplanning and liveliness) of broad impulsiveness. The results indicated that in females, narrow impulsiveness was positively related to all the subscales of the Sensation Seeking Scale, except Experience Seeking. Risk taking sub-factor was found to be positively correlated with all the subscales of Sensation Seeking Scale in both the sexes. The factor of non-planning was correlated positively with all the Sensation Seeking subscales for females, however, for males only the correlations between nonplanning and Experience Seeking and Boredom Susceptibility were significant. Liveliness was found to be correlated positively with Disinhibition and Thrill and Adventure Seeking in females.
Zuckerman (1983) reported positive correlations between narrow impulsiveness and all the scales of Sensation Seeking Scale for females. However, for males, only the correlations between narrow impulsiveness and Disinhibition and Boredom Susceptibility scales were significant. Risk taking and non-planning were positively correlated to all the subscales of Sensation Seeking Scale for both the sexes. Liveliness was positively related to all the subscales of Sensation Seeking Scale for females.

Campbell and Heller (1987) reported a positive correlation between Impulsivity and Sensation Seeking. Corulla (1988) studied the relationship between Sensation Seeking, its subscales and Impulsiveness. He did not find any significant relationship between Impulsivity and the subscales of Sensation Seeking Scale in both the sexes. A positive correlation was reported between Venturesomeness and Experience Seeking and Total Sensation Seeking Score for males. For females, Venturesomeness was related to Thrill and Adventure Seeking and Total Sensation Seeking Score. In another study, Corulla (1989) found Experience Seeking, Disinhibition, Boredom Susceptibility and Total Sensation Seeking Score to be positively and significantly related to both Impulsiveness and Venturesomeness for both males and females. Thrill
and Adventure Seeking was related only to Venturesomeness for both the sexes.

In the present study, the relationship between Sensation Seeking, its subscales and Impulsiveness and Venturesomeness has been investigated in male and female college students.
Machiavellianism

Machiavellianism, as a personality characteristic of an individual, refers to a disposition, a personality type involving the manipulation of others (Pandey, 1988). According to Christie and Geis (1970a) the term Machiavellianism describes people who express their power motivation by manipulating others in a deceptive and unscrupulous fashion. Ames and Kidd (1979) defined Machiavellianism as an individual's tendency to manipulate other individuals in interpersonal situations by subtle or non-physically aggressive tactics such as flattery, deception, bribery or intimidation. Harré and Lamb (1983) defined Machiavellianism as a personality factor which is characterized by the ability to manipulate others through flattery, threat or deceit.

Schlenker (1980) has depicted the characteristics of Machiavellian persons as an ability to initiate and control the structure of interaction, ability to resist social influences when it is to their advantage; orientation towards a detached cognitive assessment of a situation and willingness to employ 'unethical' methods to achieve goals. These attributes lead Machiavellians to be more successful in college and in professional advancement (Christie and Geis, 1968). Their cynical attitudes towards
others make them less satisfied, more suspicious about superiors and more anxious than others with comparable job status (Gemmill and Heisler, 1972).

Tripathi and Sinha (1918a) have also studied the development of Machiavellianism. They hypothesized that certain social conditions enhance the probability of people engaging in manipulation in social encounters and also facilitate positive outcomes of such efforts. They argue that this leads to the retention of certain behavioural strategies which probably grow into Machiavellianism as a personality dimension. On the basis of their study, they have reported a significant and positive correlation between Machiavellianism and the subject's influence in his family, his family's relative influence in the caste group and the caste group's relative power in the village. Tripathi and Sinha (1918b) reported that Machiavellianism is related to lying for financial gains. Sinha et al. (1982) summarized some of the major characteristics of Machiavellianism as suggested by Christie and Geis (1970a) in their monograph. They are as follows: (a) a relative lack of affect in interpersonal relationships; (b) a lack of concern with conventional morality; (c) low ideological commitment and (d) an instrumental view of others. According to Cooper et al. (1986) a Machiavellian is characterized by his susceptibility to annoyances, a cynical pessimism
about people and a tendency to hold inconsistent attitudes. According to them Machiavellians tend to manipulate others quite unashamedly.

Historically, Machiavellianism, as a psychological concept, has probably a stronger background of cross-cultural origin than any other concept. The original descriptions of the ideas of Machiavellianism can be traced back to the political philosophy of the east as expounded in the Arthasastra by Kautilya in India, and in the Book of Lord Shang in China (both about 300 B.C.). Much later, Nicolo Machiavelli, a 16th century Italian, through his books, 'The Prince' and 'The Discourses' advocated the philosophy and the strategies of manipulating others. Using Machiavelli's work as his starting point, Christie first developed the scale of Machiavellianism back in 1954-1955, when he thought there might be a personality trait associated with guile, deceit and opportunism in interpersonal manipulation. According to Christie and Geis (1970a), a Machiavellian orientation consists of two orthogonal sets of attributes a cynical view of human nature and a willingness to employ manipulative strategies in social interactions. In order to be called 'Machiavellian', a person would have to believe that people are manipulable, be willing to manipulate them and show consi-
The Mach scale, especially Mach IV Scale, has shown a moderate negative correlation with social desirability. It has been found to correlate negatively with test taking defensiveness, as measured by the MMPI lie and K scales. It is possible that high scorers on the Mach scale answer questions as they think life is, whereas low scorers answer as they think it ought to be (Geis, 1978).

**Sex Differences In Machiavellianism**

Most of the earlier studies reported on Machiavellianism were conducted either on males or sex unspecified subjects. Few studies of Machiavellianism as a behavioural personality disposition investigated sex differences and those which did, reported (Christie and Geis, 1970a) males to be more manipulative than females. There are, however, salient reasons for questioning these findings. While females have traditionally been considered as being more submissive and accommodatingly yielding than males and therefore less manipulative in the definitive Machiavellian sense (Maccoby and Jacklin, 1974), it seems in fact, that some females may use submission and yielding tactics to manipulate others. Steininger and Eisenberg (1976) reported men's Machiavellianism scores to be higher than women's. Holley (1978) observed that females were more successful
than males in manipulating only under certain power and motivational conditions.

Cloetta's (1983) research indicated that men were more Machiavellian than women. Burnett et al. (1986) in a study on marketing professionals found women to be significantly more Machiavellian than men. According to them, these findings could reflect the principle of 'self-selection' i.e., it is likely that women who are more Machiavellian may tend to select those vocations e.g., business and marketing, where they perceive that high Machiavellian orientation would lead to success. Bhandari and Sarup (1990) found no significant sex differences on Machiavellianism in college students, however, they reported that the correlates of Machiavellianism were different for the two sexes.

**Sensation Seeking, Machiavellianism And Other Personality Dimensions**

Stone and Russ (1976) found a moderate correlation between Machiavellianism and tough mindedness (using Eysenck's Social Attitudes Inventory). They described a Machiavellian individual as practical and fact-oriented person swayed neither by his emotions nor by sentimentality when dealing with other people. Holley (1978) observed significant differences between high and low Machs on the Sixteen
Personality Factor Questionnaire. High Machs were found to be more independent, happy-go-lucky, bohemian, and experimenting whereas, low Machs were nearer the norm on these factors. Middle Machs were found to be more self-sufficient but closer to average in venturesomeness than the other groups.

Kline and Cooper (1983) did a factor-analytic study of measures of Machiavellianism and reported that the Mach scales were virtually independent of the well known factorial dimensions of personality. According to them, they load on a factor which can be regarded as a Machiavellianism factor. Significant loadings on this factor of Tough mindedness, Psychoticism, Radicalism, Anti-religion and Hedonism have provided support for the validity of the construct of Machiavellianism. Cooper et al. (1986) have also reported Machiavellianism to be associated with Psychoticism.

Nigro and Galli (1985) reported positive correlations between Mach IV Scale and State Anxiety and Trait Anxiety for both the sexes. They hypothesized that moderate anxiety may be associated with higher Machiavellianism. Poderico (1987) reported significant positive but small correlations between Machiavellianism and Anxiety in both sexes, confirming
Nigro and Galli's (1985) results. Bhandari and Sarup (1990) found Machiavellianism to be positively related to Psychoticism in females. They reported no significant correlations between Machiavellianism and Neuroticism, and Machiavellianism and Extraversion.

Miller and Magaro (1977a) did a cluster analysis of the personality traits of 107 college students. On the basis of their study, they identified a personality style which they called the 'Character Disorder' style. Individuals who were identified as having this 'Character Disorder' style were found to be high on Sensation Seeking, cynicism and Machiavellianism. In another study Miller and Magaro (1977b) replicated the above finding on 103 college students using a larger number of personality tests. According to them Sensation Seeking was found to be a characteristic of Machiavellian and 'Character Disorder' style people. One may infer from Miller and Magaro's (1977a and b) studies that Sensation Seeking is likely to be positively associated with Machiavellianism.

The present study also investigated the relationship between Sensation Seeking, its subscales and Machiavellianism both in male and female college students.
Imagery

When psychologists were first interested in the study of consciously experienced events, they were obliged to distinguish between the contents of experiences that originated in the immediate stimulation of a sensory surface (percepts) and the contents of experiences that, although similar in many ways, occurred in the absence of such stimulation (images). For some psychologists (structuralists), the image was a basic theoretical element that could combine the sensory and affective elements to produce every variety of complex experience. For others of a more functionalist persuasion, imagery became an individual difference variable of great potential importance (Betts, 1909). Some investigators viewed imagery as a helpful, if unexplained, mnemonic device (Atkinson and Raugh, 1975). The question asked was, Can those whose imagery has certain characteristics, such as vividness, perform certain tasks with greater accuracy or speed compared with those whose imagery lacks these characteristics? To search for answers to all these questions and with shift of interest from the problems and concepts of stimulus and response (S-R) learning theory to the problems and concepts of cognition, imagery studies have burgeoned. According to Miller et al. (1960) image is some kind of a global cognitive map 'all the accumulated, organized knowledge that the organism has about itself.
and its world.' Paivio (1971) opined that image is, in at least some respects, the equivalent of meaning. Eysenck et al. (1972) defined a mental image as the subjective combination of fragments of earlier perceptions.

Paivio (1971) demonstrated the way in which imagery can affect the acquisition, transformation, or retrieval of different classes of information. Defined conceptually, imagery (typically visual imagery) is one of the two types of cognitive code (the other is a verbal code). Operationally, this code is presumed to be activated either in individuals who have a preference for using this code, in anyone when instructed to image, or when the stimulus can be assumed to require visual imagery processing. Thus in research guided by Paivio's (1971, 1983) theory 'imagery' is defined as the ease with which a word elicits a mental image where the term 'mental image' refers to experiences such as a 'mental picture or sound' (Toglia and Bathig, 1978).

According to Richardson (1969, 1983), "Mental imagery refers to (1) all those quasi-sensory or quasi-perceptual experiences of which (2) we are self-consciously aware and which (3) exist for us in the absence of those stimulus conditions that are known to produce their genuine sensory or perceptual counterparts, and which (4) may be expected
to have different consequences from their sensory or perceptual counterparts."

According to Richardson (1969, 1983) four classes of imagery are distinguished: after imagery; eidetic imagery; memory (now called thought imagery) imagery and imagination imagery.

**After Imagery:** Prolonged and/or intense stimulation in at least four sensory modalities have well-established sensory like consequences when the stimulation ceases. The primary defining characteristics of the visual after image are its content, which appears as if located internally and its movement, which corresponds to movements of the eyes.

**Eidetic Imagery:** Kagan and Haveman (1972) describe eideticism as "the ability possessed by a minority of people to 'see' an image that is an exact copy of the original sensory experience".

**Thought Imagery:** Richardson (1969) gave a description of this type of imagery as 'the common and relatively familiar imagery of everyday life'. It may accompany the recall of events from the past, the ongoing thought processes of the present or the anticipatory actions and events of the future. This type of imagery varies considerably
in vividness and controllability, both from person to person and perhaps within the same person from day to day. Earlier thought imagery was labelled memory imagery but because this description embraces more than images of remembered events, the term 'thought imagery' (Holt, 1972) is now considered a more apt name than 'memory imagery'.

Imagination Imagery: Imagination images tend to be novel, substantial, vividly coloured, when in visual mode and involve 'concentrated quasi-hypnotic attention with inhibition of associations'. Imagination imagery is of two types: (a) hypnagogic imagery - which occurs in the drowsy state between sleeping and waking (Myers, 1903); and (b) perceptual isolation memory imagery - which occurs when the stimulation is boring, monotonous or invariant.

Measures Of Imagery

By far the largest number of tests of imagery ability are the questionnaire or self-report inventories, where subjects are asked to report on characteristics of their imagery such as its vividness and the ease with which it can be controlled. Examples of self-rating measures are Gordon's Test of Visual Imagery Control, (Gordon, 1949). Singer and Antrobu's Imaginal Process Inventory (Singer and Antrobus, 1963, 1972), Sheehan's revised version
of Bett's Questionnaire Upon Mental Imagery (Sheehan, 1967), Paivio's Individual Differences Questionnaire (IDQ) (Paivio, 1971), Marks' Vividness of Visual Imagery Questionnaire (VVIQ) (Marks, 1973) and Richardson's shortened version of Paivio's scale (Richardson, 1977). In the present study Sheehan's (1967) revised version of Bett's (1909) Questionnaire Upon Mental Imagery (QMI) has been used which is a test of thought (memory) imagery.

**Age Differences In Imagery**

The need to control for effects of age on imagery has been recognized (Sheehan, 1972). Galton (1883) observed that after maturity the further advance of age does not seem to dim the faculty of imagery but rather the reverse is true. White et al. (1977 a) while examining effect of age levels on imagery, found that although more vivid imagery was reported with increasing age, only comparisons involving the older age groups were significant. In another study White et al. (1977 b) obtained test scores on a small sample of elderly females in the age range of 68 to 82 years. Differences were observed in all the sense modalities except organic with the oldest female group showing more vivid imagery. However, differences were significant only in the visual, auditory, cutaneous and gustatory modalities. These results thus lend support
to Galton's (1883) comment that after maturity the further advance of age does not dim the faculty of imagery, as well as to White et al.'s (1977 a) earlier findings.

**Sex Differences In Imagery**

Whether males or females have better imagery is a matter of some controversy and researches suggest that variable e.g., age and type of imagery modality influence sex differences in imagery. Galton (1883) reported that 'the power of visualizing is higher in the female sex than in the male'. His view has received support from later researchers who have reported that after photic stimulation females reported more colour imagery than males (Marks, 1962 and Palmer and Field, 1968). Michael (1967) found that visual imagery was stronger in females. Sheehan (1967, 1971) found that females reported more vivid imagery than males and that better imaginal processes of females may be the cause of their superiority in free and incidental learning and in recall of picture detail (Marks, 1973). Using Sheehan's (1967) revised version of Bett's (1909) Questionnaire Upon Mental Imagery, White et al. (1977 a) reported females to have more vivid imagery than males at all age levels.

Christansen (1969), however, reported the superiority of males (at least at younger age levels) in visual imagery.
Lane (1977), Beech and Leslie (1978), Guy and McCarter (1978), Reing (1978) and Ashton and White (1980) using a variety of samples viz., undergraduates, administrators and teacher trainees found no significant sex differences in vividness of self-reported imagery.

**Modality Differences In Vividness of Mental Imagery**

Although, current research emphasizes or focuses on the visual modality, investigators no longer really challenge the notion that subjects have the ability to summon (at request or spontaneously) images in other modalities as well (Sheehan et al., 1983).

Sheehan (1967) reported that few subjects lacked the ability to evoke images when required and there were considerable individual differences in the degree of clearness and vividness of subjects' images. Females typically reported more vivid imagery than males for items of a given modality, but these differences were not as large as some inter-modality differences. Sheehan's study provided no support for the notion of imagery type (visual, auditory etc.); subjects' imagery was not exclusive to particular modalities, concluded Sheehan (1967). Lindauer (1969) examined over 200 words in terms of ease and vividness of their evoked imagery. He found that most imagery was evoked by the cutaneous and gustatory modalities, visual
and olfactory came next and auditory words evoked the least imagery.

Using Sheehan's (1967) revised version of Bett's (1909) Questionnaire Upon Mental Imagery, White et al. (1977 a) studied whether there were any distinctive male-female differences in modality strength. The ranked modality scores were compared for the two sexes. The two orders in males and females, while not identical were significantly correlated. From most to least vivid imagery the orders for males were: visual, kinaesthetic, organic, auditory, gustatory, cutaneous and olfactory; for females it was: visual, organic, kinaesthetic, cutaneous, auditory, gustatory and olfactory. Thus for both sexes, visual imagery yielded the most vivid imagery and olfactory imagery was reported to be the least vivid.

**Sensation Seeking And Vividness Of Mental Imagery**

Research has raised considerable speculation about the role imagery plays in the processes of cognition in periods of normalcy (Barratt, 1953), under prolonged sensory deprivation (Bexton et al., 1954) and under drug administration (Bennett, 1960). The physiological and psychoanalytic interpretations of sensory restriction phenomena suggest that the maintenance of normal thought processes characteristic of waking life are to a large
extent dependent upon continuous and variable stimulation (Schutz, 1965; Zuckerman, 1969 b and c). McKellar (1972) who made a distinction between A-thinking or autistic thinking and R-thinking or realistic thinking suggested that sensory deprivation might increase the former and reduce the latter type of thinking. This classification is somewhat parallel to the original Freudian distinction of the modes of primary and secondary process thinking. Gordon (1972) observed that essential model of primary process is "thing—representation", that is, imagery. It is opposed to the secondary process, which uses verbalization as its mode. McKellar (1972) admitted the interaction of these two modes of thinking in socially useful thought products. He also pointed out the automatic or conscious rejection of irrelevant A-thinking for some other purposes. According to Richardson and Taylor (1982) research has shown that people who can voluntarily form vivid images are able to exert more control over some of their cognitive and affective functions than people who can voluntarily form only weak images. These results suggested a possible relationship between imagery and stimulation need in normal waking states.

Rao (1978) attempted to explore the relationship between Vividness of mental imagery and Sensation Seeking.
Sheehan's (1967) revised version of Bett's (1909) Questionnaire Upon Mental Imagery and Zuckerman's (1971) General Scale of Sensation Seeking, Form IV were administered. Vividness of mental imagery scores correlated negatively with Sensation Seeking. In view of the nature of scoring of Sheehan's revised version of Bett's Questionnaire Upon Mental Imagery, this relationship indicated that Vividness of mental imagery was associated with greater Sensation Seeking.

In the present study, an attempt has been made to investigate the relationship between Sensation Seeking, its subscales and Vividness of mental imagery in seven sense modalities, viz., visual, auditory, cutaneous, kinaesthetic, gustatory, olfactory and organic as well as total score on Vividness of mental imagery in male and female college students.
Needs

The concept of 'need' as elaborated by Murray (1938) resembled that of drive with certain important differences. A need as defined by Murray, has a directional or qualitative aspect as well as an energetic one (i.e., it is defined primarily by its goals rather than its physiological origins). Its direct source is not visceral tensions but the hypothetical activities in the brain that underlie desire and purpose. Some of these brain tensions are classified as 'viscerogenic' and are acknowledged to be expressions of more peripheral body tensions, whereas others are psychogenic, or currently independent of viscerogenic needs (although that may have been subsidiary to them at one time).

Steers and Porter (1975) defined the term need as an internal state of disequilibrium - physical as well as psychological - which causes the individual to pursue certain courses of action in an effort to regain equilibrium. According to Nuttin (1984) needs inspire interaction between the person and his environment. The conception of need is fairly similar to McClelland's (1951) concept of motive. The primary differences between the constructs of needs and motives is that needs are diffuse and innate, while motives are more specific and are learned. Thus, Nuttin (1984) suggested that motives are 'channelized needs'. Needs of a person determine the
direction of behaviour and thus change the organism's relation to its environment. According to McClelland (1985) "motives are defined as nonconscious needs, wants, drives or recurrent concerns about goal states".

Murray, after an intensive study of a number of subjects arrived at a tentative list of twenty needs, viz., needs for abasement, achievement, affiliation, aggression, autonomy, counteraction, defendance, deference, dominance, exhibition, harmavoidance, infavoidance, nurturance, order, play, rejection, sentience, sex, succorance and understanding. Although Murray regarded this list as a rough preliminary plan, it has formed the basis for a number of personality assessment devices, both projective e.g., (McClelland, 1980) and objective (Edwards, 1959). According to Costa and McCrae (1988), Murray's scheme of needs has had far reaching influences on researchers interested in study of personality because of its explicit ties to motivational theory. Murray's list of twenty needs was modified by Edwards (1959), to fifteen needs. He constructed a test called Edwards Personal Preference Schedule to measure these fifteen needs.*

**Sex Differences In Needs**

Klett (1957) found males to have a higher need for achievement, exhibitionism, autonomy, dominance, endurance, heterosexuality and aggression than females. Females were

* A detailed description of these needs has been given in the Method chapter.
found to have a higher need for affiliation, intraception, succorance, abasement, nurturance and change in comparison to males. Sharpe and Peterson (1971) reported significant sex differences on needs as measured by the Edwards Personal Preference Schedule. Males scored significantly higher than females on needs for achievement, autonomy, dominance, heterosexuality and aggression, whereas females scored significantly higher than males on needs for affiliation, succorance, abasement, nurturance and change.

Dhillon and Acharya (1984) also found males to have a higher need for deference and aggression than females, and females to have a higher need for achievement and autonomy than males. In a study by Dhillon and Nagrath (1987) there was a significant main effect of sex on achievement, deference, autonomy, affiliation, intraception, succorance, change, endurance, heterosexuality and aggression. Females scored higher than males on needs for achievement, autonomy, affiliation, intraception, succorance and change and males scored higher than females on needs for deference, endurance, heterosexuality and aggression. Thus, males and females showed distinct need patterns in their study. Murray's twenty needs as measured by Jackson's Personality Research Form (PRF) showed the following sex differences as revealed in a study by Costa and McCrae (1988). Males scored

\[ T_{152} \]

\[ A_{7695} \]
significantly higher than females on needs for achievement, aggression, autonomy, dominance and endurance and females scored significantly higher than males on needs for affiliation, nurturance and succorance.

**Sensation Seeking And Needs**

Zuckerman and Link (1968) studied the relationship between Sensation Seeking, Edwards Personal Preference Schedule and Gough-Heilbrun Adjective Check List (ACL), both the tests measuring Murray's needs. Sensation Seeking was found to be correlated positively and significantly with needs for autonomy, change and exhibitionism on both tests and with need for aggression on the Gough-Heilbrun Adjective Checklist only. The Sensation Seeking Scale correlated negatively and significantly with needs for deference, nurturance and orderliness on both the tests and with needs for heterosexuality and succorance on the Edwards Personal Preference Schedule only. Zuckerman and Link (1968) opined that their results were consistent with prior conceptions of the sensation seeker as one who is independent, unconventional and low in social values or conformity; needs variety; does not value order and routine and probably needs others primarily as an audience to his own performance. The picture of low sensation seeker as it emerged in Zuckerman and Link's (1968) study was that the low sensation seeker seemed to need order and predictability in his environment, valued social affiliation and is willing to give to, or give in to others to maintain stability.
Daitzman and Tumility (1974) reported positive correlations between the General Sensation Seeking Scale and need for change among psychiatric patients. Needs for aggression and exhibition correlated significantly with Disinhibition in male psychiatric patients. Zuckerman (1975) studied the relationship between Sensation Seeking using Sensation Seeking Scale, Form IV and Murray's needs as measured by Jackson's Personality Research Form in male and female undergraduate students. He reported that the General Sensation Seeking Scale correlated positively and significantly with needs for autonomy, change and exhibitionism and negatively and significantly with need for order for both males and females. General Sensation Seeking Scale was related positively and significantly with needs for achievement, aggression and dominance in females only. Thrill and Adventure Seeking was correlated positively and significantly with need for autonomy in both males and females. Thrill and Adventure Seeking was related positively and significantly with need for change and negatively and significantly with need for order in males only. Experience Seeking was related positively and significantly with needs for autonomy and change and negatively and significantly with need for order in both males and females. Experience Seeking was positively and significantly related with needs for aggression, dominance and exhibition in both males and females; it was negatively
and significantly related with need for order in males only. Disinhibition was positively and significantly related with needs for affiliation, autonomy and dominance for females only. Boredom Susceptibility was positively and significantly related with needs for autonomy and change and negatively and significantly with need for order in both males and females. Boredom Susceptibility was positively and significantly related with needs for aggression, dominance and exhibitionism in females only.

In the present study, the relationship between Sensation Seeking, its subscales and needs as measured by Edwards Personal Preference Schedule has been investigated both in male and female college students.
Academic Achievement

Academic achievement is related to the acquisition of principles and generalizations and the capacity to perform efficiently certain manipulations of objects, symbols and ideas (Rao, 1967). According to Kohli (1975), it is the formally acquired knowledge in school subjects which is often represented by percentage of marks obtained by students in examinations. Sween (1984) opined that academic performance is the degree or level of success or proficiency attained in some academic work.

Researches have shown that besides being the criteria of promotion into the next class, academic achievement is an index of future success in life. Superior achievers in the academic world generally tend to maintain their level of achievement in the occupational field also. Ries et al. (1984) reported that academic achievement has a significant effect on self-evaluation of learners. According to Good and Brophy (1977), males have historically outperformed females in terms of post educational achievement. However, in terms of performance in educational institutions, females have outperformed males especially at the elementary school level. Mohan and Gulati (1988) found male university students to score significantly higher on academic achievement in comparison to female students. According to Kaczmarek
and Franco (1986) there are no sex differences in academic performance as measured by the Grade point average.

**Sensation Seeking And Academic Achievement**

There have been a number of studies relating Sensation Seeking with intellectual, cognitive and perceptual variables. Glickman et al. (1961) reported that the degree of exploratory behaviour is positively related to position on the phylogenetic scale in animals. This finding may reflect the operation of an intelligence variable, although variables such as fear, sensory acuity and spontaneous activity may also be important at the animal level. Furthermore, the observations of mentally retarded children suggest that the level of alertness and responsivity to environmental events are impaired in these children. Assuming that Sensation Seeking Scale measures a trait related to alertness and responsivity to stimulation, Sensation Seeking should be related to intelligence to some extent (Kish and Busse, 1968).

In their first study, Kish and Busse (1968) administered the Sensation Seeking Scale to a group of male alcoholics and male hospital employees. The sample was divided into three groups on the basis of their educational attainment. Results indicated that Sensation Seeking was positively related to educational level. In their second study, Kish and Busse (1968) administered the Sensation Seeking Scale
along with General Aptitude Test Battery (GATB) to hospital patients and found a highly significant positive correlation between the Sensation Seeking Score and the General Learning Ability factor and somewhat smaller but significant correlations between Sensation Seeking Score and Numerical Aptitude, Spatial Aptitude and Form Perception. An insignificant but positive relationship was found with Manual Dexterity. The scatter plot of Sensation Seeking Scale scores versus General Learning Ability scores was also examined. This revealed a positive relationship between General Learning Ability and variability of Sensation Seeking Scale scores. Significantly greater variability of Sensation Seeking Scale Scores was found at high General Learning Ability levels and lesser variability was found at low General Learning Ability levels. It was also found that Sensation Seeking and intelligence are positively correlated and that the partial correlation between Sensation Seeking Scale and educational level becomes virtually zero when intelligence level is held constant; however, this supports the interpretation that the relationship with education reflects intelligence differences rather than differential educational experience. This conclusion, of course, must be tempered by keeping in mind the impossibility of disentangling the experiential and native components of intellectual functioning.
To some degree the high stimulus seeker is likely to be better educated, show average or better than average intelligence and to be younger than the low stimulus seeker (Blackburn, 1969); to be more interested in scientific occupations or those occupations which are unstructured and have changing demands and require a problem solving approach (Kish and Donnenwerth, 1969) and to be more creative than the low stimulus seeker (Kish, 1970a).

Pemberton (1971) correlated the Sensation Seeking Scale with Scholastic Aptitude Test (SAT) total score and Grade Point Index in male and female college sophomores. The Sensation Seeking General Scale correlated positively with Scholastic Aptitude Test (measure of intelligence) in both males and females. In males, Scholastic Aptitude Test correlated positively with Experience Seeking and Boredom Susceptibility while in females, Scholastic Aptitude Test correlated positively with Thrill and Adventure Seeking and negatively with Disinhibition. Regarding the relationship between Sensation Seeking Scale and Grade Point Index, a significant negative correlation was found between Disinhibition and Grade Point Index for both males and females, which indicated that high disinhibitors were doing poorly in grade achievement. Experience Seeking also showed a negative correlation with Grade Point Index but only for
males. The interesting feature of Pemberton's study was that in males Experience Seeking was positively related to Scholastic Aptitude Test measure of intelligence but negatively related to Scholastic achievement as measured by Grade Point Index. Pemberton (1971) also reported that the Sensation Seeking Scale correlated negatively with a scale of 'Academic Potential' and positively with a scale of 'Creative Potential' suggesting that the nonconforming style of sensation seekers is not adapted to a routinized classroom situation.

Kish and Donnenwerth (1972) conducted a study to investigate the relationship between Sensation Seeking and academic aptitude (as measured by American College Testing battery). The correlations were all positive and significant for males, while none of the correlations were significant for the female subjects. This suggests the possibility that stimulus seeking functions differently in males and females. Anderson (1973) found that Disinhibition scale correlated negatively with grade achievement in high school students. He also found that Experience Seeking was positively correlated with class absences. According to Zuckerman (1978) the male experience seekers find the classroom somewhat less stimulating than other activities they like to engage in.
Buchsbaum and Murphy (1972) correlated the Intelligence Quotient (IQ) as measured by Wechsler's Adult Intelligence Scale with the Sensation Seeking Scale in a group of male and female high school students and reported positive correlations between Wechsler's Adult Intelligence Scale IQ and the Sensation Seeking General Scale, Experience Seeking and Boredom Susceptibility scales. Waters (1974) reported that although several subscales of the Sensation Seeking Scale and Novelty Experiencing Scale had low but significant correlations with Scholastic Aptitude Test, both tests were relatively independent of ability measures. Carrol and Zuckerman (1977) reported that Wechsler's Adult Intelligence Scale IQ correlated positively and significantly with General Scale of Sensation Seeking, Thrill and Adventure Seeking, Experience Seeking and Boredom Susceptibility in former male drug abusers.

However, Blackburn (1969) and Lamb (1972) did not find significant correlations between the full scale Wechsler's Adult Intelligence Scale IQ and the Sensation Seeking Scale.

Schaeffer et al. (1976) reported that in case of females, creativity, openness to inner experience and Sensation Seeking were moderately intercorrelated. Murphy (1977)
found that for freshmen, drive (need to achieve) and Sensation Seeking were correlated. Fulker et al. (1980) reported that high sensation seekers show a preference for perceptual complexity and tend to be cognitively complex and more creative. According to them, Sensation Seeking predicts vocational interests and certain vocational groups like aviators and airtraffic controllers are expected to be high in Sensation Seeking.

The present investigation aims to study the relationship of Sensation Seeking, its subscales with Academic achievement both in male and female college students.