CHAPTER II
HISTORICAL RESUME

This chapter is an attempt to review the studies conducted to test the relationship between the various variables undertaken in the present investigation. However, studies pertaining to crowding and SWB are hardly any. Therefore an attempt in the first section would be made to review the studies indicating that crowding has an impact like a stressor on both animals and human being. The relationship/impact of crowding and/or sex & personality will also be investigated. The second section of the chapter would be related to SWB in a similar way. Keeping the space constraint in mind all of the studies may not be discussed with the procedural details.

Crowding in Animals

There is a considerable amount of research on animals that suggests that high density can have serious consequences. In a classic study, Calhoun (1962) put a number of rats in an enclosed area, gave them all the food and water they needed, kept the cage clean, and simply let the rats do what they would. The population of the colony grew rapidly under these more or less ideal conditions. However, at a certain point the situation changed dramatically, and the population declined sharply. It has been demonstrated in the laboratory with rats, mice, voles
and various other creatures (Southwick 1955, Christian 1963; Snyder, 1968). The same phenomenon has been observed in natural settings when a large group of animals is confined to a small area. A group of dear stranded on an Island was seen to go through the same population fluctuations (Christian, Flyger, and Davis, 1960). The most famous example of this phenomenon is the march of the Lemmings in Norway. These mice like creatures live on the Frozen Tundra and their population goes through this kind of cycle with considerable regularity. The colony thrives for a while growing steadily until there is a vast number of lemmings and then declines sharply with some of the remaining lemmings actually ending up falling into the sea (Dubas, 1965).

This has been attributed to the fact that high density is associated with changes in a number of body organs, such as the kidneys, liver, and brain (Myers et al., 1971), and other physiological changes, e.g. high social and spatial density lead to abnormalities in endocrine functioning, which may be seen as an indicator of stress (Christain, 1955).

One important effect of high density on endocrine functioning is that it leads to decreased fertility in both males and females (Christian, 1955; Snyder, 1966, 1968). It has been found that males living under high-density condition produce fewer sperms than males living under low density (Snyder, 1966). With females of 'low density', estrous cycles have been found to begin at an earlier age.
occur more frequently, and last longer than those of ‘high density animals’ (Snyder, 1966).

Burgess and Coss (1982), investigated the effects of crowding, on the development of neurons in the major teleostean brain area, the optic tectum. Adult jewelfish were reared for approximately, four years under conditions of moderate density, or under uncrowded control conditions. Chronic crowding did affect body size or gross tectal growth. However, crowding significantly decreased the density of dendritic spine formation on apical dendrites of pyriform inter neurons in the basal region of the tectum. Additionally, the shapes of spine on this segment of the apical dendrite were altered by crowding. Relative frequencies of overall spine length and spine stem length changed significantly.

Armarioa (1986) studied the effect of crowding on the pituitary-gonadal axis in adult male rats. Crowding reduced body weight gain, did not alter relative adrenal weight and increased relative testis weight. Prolactin levels did lower in crowded rats, (although in significant). Impaired testosterone secretion was observed in crowded rats, at least in part due to reduced Leydig cell responsiveness to gonadotropin release.

Similarly Viveros, Hernandez, Martinez, Gonzalez, (1988) observed that all female experimental groups showed higher corticosterone levels and heavier adrenals than their male counterparts. Socially housed rats showed a more intense
adreno cortical response and also a greater behavioral reactivity to electric shock than the isolates. Given such differences it is not surprising to find both smaller litter sizes and less frequent births in crowded populations. Michalska and Borycz and Bugajski (1994) suggested on the basis of his studies results, that social stress of crowding considerably desensitizes central histamine H2-receptors involved in stimulation of the hypothalamic-pituitary-adrenal axis. Marchlewksa (1997) has further summarised that stress from crowding; in animals; during pregnancy can affect reproductive activity even through the second generation. During postnatal development, sexual maturation of juveniles can be delayed by the presence of group-living adults. In adult females, disturbance of homeostasis after fertilization can evoke untimely termination of pregnancy. In monogamous rodents, removal of the male partner reduces the number of partitions. In several species, recently inseminated females exposed to a strange male lost developing embryos. Thus sociogenic stressors are among the most important factors affecting fecundity in animals. Karackow (1997). Observed a reduced sex ratio variance under single mating and crowded conditions and speculated it to follow from competition for resources between pre-implantation embryos, which may be further, increased by stressful effects of crowding Loss of embryos after implantation appeared not to be responsible for the above effects.
Martrenchar et al (1997) concluded that it seems that high-density acts as a social stressor, which leads to severe effects. In a study Aureli (1997) reported for one group of animals under the high-density condition, allogrooming and submissive greetings decreased, but juvenile play increased. Remarkably, the rate of various forms of agonistic behavior, such as aggression, bluff charge, bluff display, and hooting, occurred less frequently. This general decrease in adult social activity, including agonistic behavior, can be interpreted as an inhibition strategy to reduce opportunities for conflict when inter individual distances are reduced. This strategy is probably effective only in the short run, however. Behavioral indicators of anxiety, such as rough scratching and yawning, showed elevated rates, suggesting increased social tension under the high-density conditions.

Similarly individual differences and behavioral inhibition to novelty were assessed by Boyce et al., (1998). He observed that a 3-fold increase in the incidence of injuries was documented during confinement stress, and an interaction was found between the stressor and behavioral inhibition in the prediction of injury incidence. Highly inhibited animals had significantly higher injury rates during confinement, compared with their uninhibited peers, but equal or lower rates in the low stress periods that preceded and followed targeted for violence during the group stressors but were protected under normative, more
predictable conditions. Thus the animal studies reviewed above indicate that crowding, undoubtedly leads to negative consequences & causes stress.

Crowding and Humans:

According to Linder (1976) controlled observational studies of the effects of density on human behavior are very rare and the results are tentative. A variation in the results occurs as will be seen in the following studies.

There is evidence that crowding is related to density. Schmitt (1957, 1966) correlated five measures of population density with nine measures of social pathology. The measures of population density were population per acre, number of dwelling units with 1.51 or persons per room, average household size, the number of married couples without their own household, and the number of multiple dwelling units with more than four units. Nine indicators of social pathology in his study, were: (1) death rate; (2) infant mortality rate; (3) suicide rate; (4) incidence of tuberculosis; (5) incidence of venereal disease; (6) admissions to mental hospitals; (7) illegitimate birth rate; (8) Juvenile delinquency rate; and (9) adult crime rate. Four of the five indicators of population density correlated significantly and positively with the measures of social pathology. Smith further found that population per acre was the strongest indicator of social pathology and this held true even when the sample was stratified by educational level and income. This indicates that even when socioeconomic factors are held constant, population acre
is related to measure of social pathology.

Hutt and Vaizey (1966) observed children playing in both large and small groups. The children were observed in the same playroom with the same play material at hand. In large groups children were observed to be less socially oriented and more aggressive than children playing in the small groups. Linder points out that, it may have been function of the increased numbers of children in the large groups, rather than the increased density.

Many studies have been done to find out the effect of density on task performance. In a series of studies (Freedman, Kalanasky an Ehrlich, 1967), people under high-or-low-density conditions performed a number of tasks ranging from very simple ones, to much more complicated problems. If crowding were a stressor it would be expected that it would have familiar effects on these kinds of tasks. It should improve performance on simple tasks and interfere with performance on more complicated tasks. Or if the stress were great enough, it might be expected to hurt all of tasks. None of this happened. Instead there was absolutely no effect of density on performance. This held for several different subjects populations and for many different tasks, strongly suggesting that high density is not a stressful situation in the normal sense of the world. The results indicate that high density is not an aversive situation nor does it operate as a simple stressor such as pain or hunger might.
Saegert (1974) found that exposure to a large number of others leads to arousal as measured by Palmer Sweat. Haller (1974) tested the notion that crowding is an arousing stimulus by giving subjects either an easy task or a complex one to perform under crowded conditions or uncrowded. Haller concluded that overcrowding does lead to detrimental effects.

Langer and Saegert (1977) found that subjects asked to choose the most economical product for specified commodities in a grocery store were less economical in their decisions when the store was crowded, but did better if they were forewarned that the store might become crowded, but crowding sometimes made people anxious and aroused. Forewarned subjects also felt more positive, less interfered with and less crowded. On the other hand the subjects in the less dense conditions who received the warning also did better and felt more positive than those who were neither crowded nor forewarned.

In another study, Love & Saegert, (1978) found that subjects could improve their ability to remember the environment when it was crowded if Experimenter told them ahead of time that they would be asked to draw a map of it, to locate items within it, and to estimate the number of people in the setting. However, crowded subjects who received this information, and performed better on the recall tasks, felt negatively about the experience, more so than the subjects who were not told of the task, and more than uncrowded subjects.
Jain (1984) conducted a study to examine the feeling of crowding and task performance under varying levels of density in distracted and non-distracted subjects. 100 female 10th grade students randomly drawn from several schools were used. The experiment employed a 2 x 2 design with two levels of density (High and low) and two levels of distraction (Distraction and non-distraction). Significant effect of density was obtained on the measure of task performance. High density condition yielded lower level of performance as did distraction. Significant effect of high density and distraction were also obtained for the feeling of being crowded in the subjects.

Nagar and Pandey (1987) studied the affect and performance on a cognitive task as a function of crowding and noise. 63 undergraduates males participated in an experiment with a 2 x 3 factorial design, involving two levels of noise. It was found that crowding and noise led to deterioration of subjects performance on a cognitively complex but not on a simple task. Also both variables generated a negative feeling in the subjects. Significant 2-way interaction for complex task, showed variation in performance of subjects of high and low density under low and high noise condition.

Some researchers have tried to find out the relationships between crowding and pleasant affect.

Smith and Haythorn (1971) confined men for periods of up to twenty days.
In either very small or considerably larger isolation chambers. There were either two or three men in each group. They reported that there was actually less hostility and aggressiveness between the participants in the small than in the large room. In other words, in this instance, high density seemed to have positive effects. General men adapt very well of these conditions. They can live in very small quarters totally cut off from the outside world for fairly long periods of time without showing any negative effects. They continue to perform complicated tasks extremely well, their health is good, and their mental and psychological functions seemed fine. Although the situation may not be entirely pleasant, even the combination of isolation and high density does not produce particularly negative effects.

Haller (1972) held the size of groups constant, but varied the amount of space available for each individual by varying the size of the room with movable partition. He then measured affect on a pleasurable-unpleasurable dimension. He found that, generally speaking, the more space there was, up to about 13 square feet per person, the more pleasurable the affect was. At 16 squares feet per person, however, the experience became less pleasurable. It seems that low density leads to more pleasurable feelings, at least up to a point.

In a later study (Freedman, Heshka, and Levy, 1973) the pleasantness of the situation was explicitly varied. For some subjects the group interaction was
inherently pleasant while for other subjects it was inherently unpleasant. Under these circumstances, it was found that for all-male groups, all-female groups, and mixed sex groups, the same pattern held when the situation was pleasant—it was more pleasant under high density conditions. When it was unpleasant, it was more unpleasant under high density condition. Thus, density serves as an intensifier of the typical social response rather than as a negative or positive factor itself.

Other studies have shown that density does have complicated effects on emotional and social behavior. With interest in air-raid shelters, sub-marines, and space ships.

An interview study of people’s perceptions of urban stress was done to find out whether the experience of crowding in very different settings leads to different consequences of the 80 residents of Manhattan questioned in an open-ended manner about urban stress, all but four mentioned crowding as stressful. Distinctive patterns of crowding experiences for different settings emerged from their accounts. They also reported a variety of definitions of crowding, responses to it, and reasons for considering it stressful, and coping strategies. Crowding stress was most frequently reported in public settings, particularly on public transportation, in streets and traffic, and in service facilities such as stores, agencies and entertainment places. In this sample, only seven people mentioned crowding as problems in their homes. Most respondents were middle class and
lived alone or with only one other person. A moderate number of responses involved a general feeling of crowding in the city as a whole (Roberts and Saegert, 1978).

Jain and Preet (1983) considered crowding as an emotional stress experienced in a specific cultural contexts with bearings on resource management.

Kulkarni (1984) conducted a survey in Ahmedabad city and found that the densely populated walled city had a high incidence of crime. Tripathi (1986) conducted a survey in Varanasi and noted the adverse effect of high density on feeling in terms of experienced stress.

Jain (1987) explored the effect of outside and inside residential density on the feeling of crowding and competition tolerance. The measure of these two variables were administered on 960 (480 pairs of husbands and wives) residents of a city in India. These were drawn equally from three income groups and four density conditions. The results revealed the role of outside density as a context to the inside density, however, economic factor was found to be more significant for determining the impact of density on the feeling of crowding and competition tolerance.

Lepore, Evans and Schneider (1991) proposed that initially social support has a buffering or moderating effect on psychological effect but if exposure to the
environmental stressor continues, the buffering effect disappears and chronic stress leads to psychological distress.

Phookan (1999) studied feeling of crowding and social behavior of residents living in apartments and independent houses (N=597). Social behavior pertained only to neighbors and differed in terms of personal involvement. The sample was also differentiated in terms of inside density of residences and income level. The results indicate that residents of independent houses experienced less feeling of crowding. Greater friendship with neighbors and trust on neighbors was also reported by independent house dwellers. When inside density was high both low and high-income residents, felt crowded. The low-income residents, however, felt crowded under low-density conditions too. Residents of low density reported greater neighborhood cooperation the theoretical concept of behavior constraint, control and social overload explain the results.

Sinha and Nair (2000) examined the effect of self-control and social support among a representative sample of 300 older people, 150 in high density and 150 in low-density household in India. The results indicate that the participants in high-density household evaluated their home environments more positively and reduced their personal space requirements.

Psychologists have examined the effects of loss of control due to crowding (Wortman and Brehm, 1975; Seligman 1975). Seligman postulated that an
individual who perceives that he or she has no control over the environment would experience a state of learned helpless. Because of the feeling that they have no control over the environment, such individuals stop trying to affect their surroundings.

Rodin et al (1978) applied the concept of loss of control to crowding. They suggested that some high-density situations cause individuals to lose control to social interaction. In these conditions individuals are forced to interact with one another and have no means to regulate that interaction. According to Rodin, this loss of control leads both to the experience of crowding and to feeling of learned helplessness. In another study Rodin (1976) found that children from high-density homes did show symptoms of learned helplessness. Children who came from high-density homes were more willing to let the experimenter or a machine determine what happened to them, even when they had opportunity to make their own choices.

Paulus, Cox, McCain, and Chandler (1975) had inmates at a Federal correctional institution fill out a scale that measured affective responses to their physical surroundings. High-density inmates lived in single cells. It was found that high-density subjects were more negative to their immediate surrounding than were low-density inmates.

Heshka and Pylypuk (1975) compared cortisol levels (indicative of stress)
of students who spent the day in a crowded shopping area and students who stayed on a relatively uncrowded college campus. When compared with the control group, males who had been in crowded conditions had elevated levels, but females did not.

In another (Schwab, Nadeau and Warheit - 1979) epidemiological investigation of the mental needs and services of 645 respondents, aged 17-92 years and living in a representative South Eastern country in Florida, revealed that 7.8% of the sample lived in crowded conditions. The crowded respondents scored significantly higher than did the uncrowded on both a depression scale and on the health opinion survey. Associations between crowding and high scores on both scales were strongest Consistently, the crowded black population and particularly, crowded white women had much higher scores than did the uncrowded women. The discussion emphasis that the relationship between crowding and higher scores on indices of emotional distress is quite complicated. In crowded situations, depression may be a costly, semi-adaptive reaction to excessive interpersonal stimulation. Women living in crowded situations appear to be at high risk for depressive illness.

Waddell (1983) examined the relations between select social morphological factors of population size and density and rates of deaths due to heart disease. This study supports the findings of that earlier study: population having a stable
morphological structure have a negative relation with that rates; population experiencing a change in morphology, particularly an increase in the number of person per housing unit, have a positive relation with mortality rates.

Backer, Mencholas, Garrett, Johns, Stewart, Stein and Lennon (2000). A case control study was conducted to identify potentially modifiable risk factors for meningococcal disease in Auckland children. Results indicated that some of the identified risk factors for meningococcal disease were modifiable. Measures to reduce over crowding could have a marked effect on reducing the incidence of this disease in Auckland children.

Many studies have focused on the effect of household density (number of persons per room) and social density (number of people and individual interact with) on an individual's physical and mental health.

Duckitt and John (1983) conducted a study to find out the relationship between household crowding and psychological well being (as measured by the Affect Balance Scale) in a community sample of 433 "colored" South Africans (aged 18-65 years) living under varied but generally high levels of crowding. Findings indicate that after controlling for a variety of demographic and SES variables, crowding was associated with significant elevations of negative affect. Relationship proved to be non-linear, with increasing levels of crowding associated with a sharp initial rise in negative affects followed by a flattening of
Evans, Palsane, Lepore, and Martin (1989) studied the mediating effects of social support between residential density and mental health. They found that less crowded residents in comparison to crowded residents expressed greater non-specific psychological distress, after controlling for income and education. The adverse effects of residential crowding on psychological health are mediated by a breakdown of social support in turn may contribute to some of the pathological consequences of chronic high density living conditions.

Fuller, Edwards, Sermsri and Santhar (1993) investigated the impact of housing conditions and household crowding in Thailand. Objective indicators of housing quality and household crowding were found to be little related to health. However, subjective aspects of housing and of crowding, especially housing satisfaction and a felt lack of privacy, were found to have determinable effects on health. Furthermore psychological distress was shown to have a potent influence on physical health. Analyses suggest that all 3 factors have independent effects on health outcomes bearing on both men and women.

Fuller, Theodore, Edwards, Vorkitphokatarn (1996) examined the effect of household crowding on psychological well being. Objective household crowding was detrimental to psychological well being. The effect of objective crowding is mediated by subjective crowding, which has strong, consistent and direct
detrimental effects on well-being. There is no evidence of a gender effect. The effects of objective and subjective crowding are similar in two and three generation household, as well as in one and multiple-couple household. Findings suggest that crowding, as a chronic source of stress, constitutes a major threat to psychological well being.

Evans et al (1998) found that chronic residential crowding is associated with difficulties in behavioral adjustment at school, poor academic achievement, heightened vulnerability to the induction of learned helplessness, elevated blood pressure, and impaired parent-child interpersonal relationships among a sample of working class, 10 to 12 years old children living in urban India. The significant main effects of residential crowding on blood pressure and learned helplessness are moderated by gender. Residential crowding is positively associated with blood pressure only among boys and with helplessness only among girls. It was demonstrated that perceived parent-child conflict functions as an underlying, intervening process that largely accounts for several correlates of household crowding among children.

In some studies it was found that crowding was associated with aggression.

Nijman and Rector (1999) found the association between crowding and aggressive behavior among psychiatric in patients. A modest correlation between number of patients on the ward and number of aggressive incidents per patients
was found. Enlargement of the physical space by the addition of a county yard to one of the wards midway through the study did not lead to a significant decline in incidence. Possibly, a lack of psychological space having no privacy or not being able to get sufficient rest may be more important in triggering aggression than a lack of physical space.

Kumar, Ranclaud & Robinson (2001) examined the relationship between ward occupancy level and staff to patient ratio and incidents of aggressive behavior, both physical and verbal. Among 381 admissions during the study period, 58 incidents were recorded-25 incidents of verbal aggression and 33 incidents of physical violence. Logistic regression demonstrated that the occupancy level was positively associated with the occurrence of any type of violent incident. The average occupancy level when an incident occurred was 77 percent, compared with 69 percent when no incidents occurred. The average occupancy level was significantly higher when verbal incidents occurred (80 percent) than when physical incidents occurred (70 percent). Crowding was found to be significantly associated with aggressive incidents, and in particular with verbal aggression.

Although only two study has been discussed above on SWB, yet it seems plausible that SWB may be affected by crowding. All the study reviewed above clearly indicate a negative impact of crowding on tasks performance, human
physiology and affect. All effects are directly comparable to the effect of any other
stressor and it won't be erroneous to call crowding as a 'biologically relevant
stressor'.

Sex differences

Some evidence suggests that the negative feelings caused high density may
be stronger in males than in females. Some other experiments have demonstrated
that high density seems to intensify typical responses in females. Contradictory
results have found for both sexes. In two experiments (Freedman et al, 1972), all
male or all female groups were put in high or low-density conditions and various
measures were taken of their competitiveness and the severity of sentencing they
gave in a mock jury situation. It was found that men tended to respond more
competitively and to give more severe sentences in the high-density condition than
they did in low-density condition while women were actually the less competitive
and gave milder sentences under conditions of high density. A second series of
studies however, showed that this was not due to a difference in how they
responded to the social situation. Apparently the men saw the situation as
threatening whereas the women saw it as fairly friendly. Several studies
(Freedman, Levy, Buchann & Price 1972; Ross, Layton, Erickson and Schopler,
1973) found that while males experience more negative moods in high than in low
spatial density conditions, the reverse is true for females.
Dooley (1974) observed that males were less likely to volunteer for another experimental session after high social density, and groups of males refereed larger personal space and recalled fewer names after exposure to high density.

Epstien and Karlin (1975) conducted an experiment, in which male and female subjects participated in same sex groups of six. Consistent findings on a variety of measures indicated that while males responded more negatively to group members in high than in low spatial density conditions.

By Karlin et al (1976) in a follow up experiment, it was found that when females were not permitted to interact with each other, their positive reactions to high density were attenuated. It also appears that males need more personal space than females.

Joy and Lehmann, (1975), Sechettino and Borden (1976) reported that males and females reacted quite differently to high-density conditions in college classroom. Under high-density conditions males reported greater aggressiveness, whereas females reported more nervousness and crowdedness as density increased.

Baum and Koman (1976) found sex differences in aggressive response to anticipated crowding as well, but only when spatial density increased. Men in small rooms expected to be crowded behaved more aggressively than did women in the same situation. Further, they were more aggressive in the small room then
when a larger room was as used.

Burch et al (1978) found that females are more anxious in crowded conditions than males. Patterson et al (1979) claim that this is because females react more to be affected than males in crowded conditions.

Leventhal and Matturro (1980) observed the differential effect of the spatial variables on males and females for accuracy of perception of some aspects of the environment; for males, number of people in the group was the critical factor, for females density was the critical factor. Other results indicated that all subjects, regardless of sex, felt less comfortable in large groups than in small ones but that density influenced the judgment of how many people could fit comfortably in the room. There was no significant effect of the spatial variables on memory.

Aiello et al (1981) found that females seem to be affected more than males in crowded dormitories because they spend much more time there then the males. So it can be concluded that some situation of crowding seem to affect men more than women while others affect women more than men. It is possible that high social density is equally aversive to men and women, but that high spatial density is only bothersome for males.

In a study 167 married couples were selected using the stratified random sampling procedure by Ruback & Pandey (1991). The results of the study
indicated that household density was related to negative affect for both men and women. But when other factors were held constant it had no independent effect on physical symptoms.

In the case of husbands, it was related to lower rating of their house, less interaction with their spouse, and more quarrels with neighbors. For wives, higher density was related to more physical symptoms, lower rating of their house, neighborhood, and children, less interaction with their spouse, more quarrels with other adults in the household and with neighbors and greater punishment for their children. Density was related to perceived control over environment in the case of females but not in the case of males. Thus, females appeared to be more affected by household density than males.

In one another study, Ruback & Pandey (1991), investigated an urban Indian sample for household crowding and found that males and females and household, density were negatively correlated with their ratings of their house, place of their activity in the house, and amount of space in the house. Males reported more perceived control over their lives. Males rated their living conditions more favorably than females. They also reported having more social support compared to females.

Ruback and Pandey (1996) examined whether women, compared to men would react more negatively to long term household crowding. Results reveal
consistent gender differences, such that women, compared to men, rated their homes more negatively, experienced more physical symptoms, had less perceived social support, and thought the supply of resources was insufficient, women also had less belief that they controlled their life. However, women believed that their homes could house more people and were significantly more likely to want more children.

Ross et al (1973) suggest that research on personal space may provide a clue as to why there is a differential reaction to crowding by males and females. That is there is a different socialization process operative for men and women. Women are trained to be more dependent and to express love and affection for each other. Males are trained to be independent not express affection for other males openly under high-density conditions, females may be more used to the invasion of personal space that occurs than are males and better able to cope with it.

**Personality and Crowding**

Personality characteristic also moderate our reaction to high density. It has been found that internals who field they control their fate display a higher threshold of crowding than externals who feel events are controlled by outside forces (Schopler and Walton, 1974, Schopler et al, 1978).

Aiello et. al. (1977) studied the role of interpersonal distance preference. A
sample of 32 female undergraduates was used. It was expected that subjects with far interpersonal distance preference (Comfortable Interpersonal Distance Scale) would experience greater stress related arousal in a crowded environment than subjects preferring closer interpersonal distances and consequently would display more psychological, behavioral and subjective indication of discomfort. During the crowding experience subjects preferring far interpersonal distance were most psychologically stressed (as measured by electrodermal responses) and later reported having greater somatic stress.

McCallum, Rusbult, Hong, Walden, Schopler. (1979) feel that according to the interference formulation, participants in a crowded settings will experience interference to the extent that behavioral goals conflict with environmental conditions. The importance of the behavioral goals directly affect not only the magnitude of the interference but also the mechanism by which people cope with interference. It was reasoned that important goals would induce a more active coping strategy in a crowded setting than in an uncrowding setting and would maintain task performance at the price of increasing crowding stress. When the behavioral goal is unimportant, decrements in task performance preclude a rise in stress. A laboratory study manipulated group size, in order to vary the availability of resources and the importance of the task behavior. The predictions were
confirmed, and partial confirmation was obtained for predictions involving the effects of the internal external personality dimension.

In another study Klien, L.M., Bell, P.A. (1983) compared the effects of interpersonal distance, number of people, acquaintance level and sex on perceived crowding and discomfort between two cultures, those of united states and West Germany. 90, 8th and 9th graders were shown diagrams of crowded situations. Results indicated that the number of people and acquaintance level was of more importance in German culture than in American. Also Germans tend to feel more comfortable than Americans when they have more people around them. The results showed that the personal space requirement of Germans is less than that of Americans.

The effect of crowding varies with the screening tendencies of the individuals. Screening is conceptualized as part of coping style in which social events are structured and ranked according to priority. Baum et. al (1982) studied the mediating effects of screening tendencies on student response to high density dormitory setting. A sample of 214 residents of long and short college dormitories was used. Residents who displayed deliberate coping style were more successful in adapting to crowded environment.

The individuals need for privacy is also an important determinant of response to crowding. Kline and Bell (1983) tested the hypothesis that a low need
for privacy would lead to closer privacy among 83 male and 78 female undergraduates. Subjects completed the privacy preference scale before seating themselves or being seated a certain distance from a confederate. Not supporting the hypothesis results suggested that the expected relationship between preference for privacy and distancing may not hold in all circumstances.

The personal space requirement of the individual and the response to crowding vary with the personality type of the individual. Cook (1970) in his study on orientation and proxemics studied high extroverts and low extroverts in five situations. He found that extroverts choose to sit opposite, across the table or down the length of it and eschew positions that place them at an angle to the other. Furthermore their choices showed more consistency than those of introverts. The author concluded that extroverts maintain less personal space than introverts.

Miller and Mardini (1977) hypothesized that personality variable concerned with perception of and reaction to social stimulation are related to an individual's susceptibility to crowding. The sample consisted of 50 male and 50 female undergraduates who were placed in a model room, until they perceived that the room was crowded. Extroversion as measured by Eysenck Personality Inventory, was found to be only marginally related to crowding. The researchers suggests that both sex and subject's perception of the nature of social situation could have been the more important determinants of response to crowding.
Studying the two personality types introverts and extroverts attempted to study for the effect of crowding on their performances. Katsikitis and Brebner (1981) administered Eysenck personality questionnaire to 36 females and 28 males undergraduates. The subjects were presented with a letter checking task to be complete either in a crowded or in non-crowded setting. The 3 way Extroversion x Crowd x Task, interaction showed that, extroverts did not differ in a consistent fashion from introverts. However, subjects with high neuroticism missed more signals than comparable introvert-extrovert low scoring subjects.

Khus and Brebner (1985) carried out an analysis of variance (ANOVA) on 64 male and 64 female undergraduates. Subjects were tested with a letter-cancellation task under 4 experimental condition, 2 levels of each crowding and disconfirmation of expectancy. Eight type of subjects were distinguished based on sex and high or low scores on the extroversion and Neuroticism scales of Eysenck Personality Questionnaire. The crowding situation and dis-confirmation of expectancy were found to affect extroverts significantly more than introverts. The researcher concluded that personality is an important variable in crowding research and this could account for differences in performances found in experimental condition.

Matthews (1985) studied the effect of extroversion and arousal on an intelligence test performances. A sample of 80 subjects was used. The time of the
day when subjects performed was one of the important variable. The results obtained showed that extroverts tended to perform relatively better under high activation at midday than did introverts. On the other hand introverts performed relatively better under high activation in the evening.

**Subjective Well Being and Sex Difference**

In a nation wide survey in 1960, American women reported having more emotional problems than American men (Gurin, Veroff and Feld, 1960). Women reported more of the unpleasant affect symptoms of depression than do men (Comstok and Helsing, 1976; Eaton and Kessler 1981; Frericks, Aneshensel and Clark, 1981). Campbell, 1981 concluded that women report more dissatisfaction with their marriages and their health than men and women state that they “have had less than their share of happiness in life more often than do men”. Haring, Stock and Okun (1984) showed that men were slightly happier than women, but the magnitude of this difference was very small (Mean r = .04). In an analysis of two large international data sets, it was found that women experienced more unpleasant affect the majority of nation's studied.

Fujita, Diener and Sandvick (1991) investigated a college sample of 66 women and 34 men on both positive and negative affect using 4 measurement methods; Self report, Peer report, Daily report, and Memory performance. Results
indicated that women report more negative affect than men, but equal happiness as men.

On the other hand, working women reported more positive affect that housewives. Mathur, (1993) Compared marital adjustment and subjective well-being in Indian-educated housewives (N=200) and working women (N=200) who were administered a marital adjustment Questionnaire. Results indicated significantly better marital adjustment and subjective well-being for the working women than for the housewives. Specifically, working women reported higher scores on general health, life satisfaction, and self-esteem measures and lower scores on hopelessness, insecurity, and anxiety, compared with the housewives, although the housewives, had lower scores on negative affect than the working women. Findings were insignificant on positive affect and depression.

Women in comparison to men show more functional disability & they use greater personal assistance. Penning Strain, (1994) focused the study on gender differences in function disability among older adults, their reliance on personal assistance and technical aids, and relationships among the use of these sources of assistance, functional disability, and subjective feelings of well-being. The results revealed (a) greater disability and somewhat greater use of personal assistance among women, and (b) differences between men and women in relationships
between both personal and technical resources and subjective feelings of well-being across levels of functional disability.

Nagata, Yamagata, Nakamura, Miyamura & Asaka (1999) evaluated the Sex differences in factor related to subjective well-being among people in their late old age by interviewing individuals aged 75 years. Results indicate a sex difference in subjective well-being (1). In elderly females, subjective well-being was related to many factors, in the activities of daily life and particularly to the health related factors (2). In elderly males, the factors related to subjective well-being were fewer than in females, consisting only of “social opportunities”, “hobbies”, and “grip strength”.

Lou (2000) examined conjugal congruence on 4 role experiences – spousal, parental, filial, worker – and on subjective well being (SWB). Conjugal congruence on role experiences (except the worker role) and SWB was generally high. However, some conjugal discrepancies persisted. The husband were more committed to the worker role, whereas the wives were more committed to the parental role. Further more conjugal discrepancies in role experiences were related to conjugal discrepancies in SWB as well as to husband’s happiness.

There is another set of findings indicating a totally different picture. The finding indicates that, in the general population, depression is more prevalent in woman than man (Eaton & Kessler, 1981) and reports of unpleasant effect are
higher among women (Nolen-Hoeksema & Rusting). Paradoxically in most surveys women report as much overall happiness as do men. In the same 1960 American National Sample in which women expressed having more emotional difficulties, they reported nearly the same overall level of happiness as did men (Gurin et al. 1960).

In a European sample women reported being more satisfied with their overall life than did men (Haavio-Mannila, 1971). In a cross-cultural study, Alex Michalor, (1987) surveyed six thousand college students in three countries and his data revealed that women reported being as happy as or happier than men. Wood et al. (1989) found that women report higher levels of positive affect on average and more often report extremely high levels of SWB.

In a similar study vein, Lee Seccombe and Shehan, (1991) found that women are more lightly than men to report being very happy.

Across five large quality of life surveys conducted between 1972 and 1978, women consistently reported that they were happier than men, although the magnitude of the difference was not considered large (Herzoy, Rodgers and Woodworth, 1982). Thus women frequently report being just as happy as men, and women frequently report being depressed at twice the rate that men do (Fujita, Diener and Sandwick, 1991).
A number of potential explanations have been reviewed and concluded that the difference comes mainly from socially prescribed gender roles. The traditional female gender roles include greater care giving responsibilities, which encourage more emotional responsiveness in women than in men. As a result, women may be more willing to experience and express emotions. Grossman and Wood (1993) observed that when no gender specific emotion norms were mentioned, women generated more extreme emotions rating than men.

**SWB and Personality:**

The traits that have received the most theoretical and empirical attention in relation to SWB are extraversion and neuroticism. Costa and McCrae (1980) posited that extraversion influences positive affect whereas neuroticism influences negative affect.

Dimenas, Wiklund, Dahlof, Lindvall, Olofsson, Faire (1989) conducted a study. In this study, previously untreated subjects were randomly recruited from a blood pressure screening program. After repeated measurement of blood pressure levels, the subjects were divided into three major groups: normotensives (n= 95), borderline hypertensive (n= 69) and hypertensive (n= 30). Three self-administered standardized questionnaires were used. The results indicate gradual differences between the three groups, the most pronounced symptoms being seen among the hypertensive. Statistically significant differences were found for cardiac and
gastrointestinal symptoms as well as for emotional reactions, home life, social life, sex life and sleep. The differences in well-being and subjective symptoms noted between the groups are important in the evaluation of new anti hypertensive agents.

Other researchers suggest that extraversion is related to positive affect through more indirect mechanisms.

Pivot et al. (1990) found that extraverts were happier than introverts, however even when alone. Diener, Sandvik, Pavot and Fujita (1992) found that extraverts were happier than introverts whether they were alone or with others, worked in non social jobs or in social jobs, lived in rural or urban areas.

Argyle and Lu (1990) reported that about half of extravert's greater happiness could be attributed to their participation in certain types of social activity. In some there are a number of models for why extraverts may experience more pleasant affect than introverts but an intriguing possibility is the idea that the characteristics of extraverts are actually an outcome of higher level of positive affect.

The relations among these constructs are so strong and consistent that Watson and Clark (1984) re labeled the trait of neuroticism as negative affectivity and suggested that positive affectivity forms the core of the abroad trade of extraversion (Watson and Clark 1997).
Lu, (1993) examined the psychosocial factors that may influence subjective well-being. The random sample of 581 Chinese adult’s living in a metropolitan Taiwanese city completed questionnaires concerning demographic variables. The results indicated that (a) extraversion and social support were related to better mental health, whereas neuroticism and stress were related to poorer mental health; (b) older age, better education, and social support were related to higher life satisfaction, whereas neuroticism and stress were related to lower life satisfaction; and (c) older age, extraversion, and social support were related to higher happiness, whereas neuroticism was related to lower happiness.

In a similar vein, Derryberry and Reed (1994) found that extroverts and introverts inhibited differential attention to positive stimuli, with no difference in attention to negative stimuli, whereas the converse was true for neurotic participants compared with low neurotic participants.

It seems extraversion is related to high morale and low tension. Adkins, Martin, Poon (1996) investigated effects of personality traits and states upon morale. Results indicated that low tension and high extraversion predicted high morale for centenarians. Guilt was the most important Personality State predicting morale for the 60s age group, and control variables gender and health were significant for the 80s age group. The assessment of personality traits and states
has important implications for working with centenarians and other older adults to maintain or improve their subjective well-being.

Extraverts posit higher levels of positive affects. Larsen (1997) tested that the hypothesis extraverts are characterized by greater sensitivity to rewards by exposing introverts and extraverts to positive and negative mood induction procedures. The extraverts were sensitive to the positive mood induction (i.e. extraverts had higher level of positive motion than introverts) but there were no differences between groups for the negative mood induction.

The findings indicated that personality may be a good predictor of positive affect. DeNeve & Cooper, (1998) found personality to be equally predictive of life satisfaction, happiness, and positive affect, but significantly less predictive of negative affect. The traits most closely associated with SWB were repressive-defensiveness, thrust, emotional stability, and locus of control-chance, desire for control, hardiness, positive affectivity, private collective self-esteem, and tension. When personality traits were grouped according to the Big Five factors, Neuroticism was the strongest predictor of life satisfaction, happiness, and negative affect. Positive affect was predicted equally well by Extraversion and Agreeableness.

Compton, (2000) in a sample of 347 university students and community residents, gave measures of meaningfulness, self-esteem, internal locus of control,
positive social relationships and optimism to predict subjective well-being, i.e., measures of happiness, life satisfaction, and affect balance. Correlations, canonical correlation's, and structural equation modeling supported the hypothesis and meaningfulness is a significant mediator between personality variables and subjective well-being.

Landau, (2001) Investigated a sample of European-born persons aged seventy-five and over, drawn randomly from the population registry in the greater Tel Aviv area. Ss were administered a structured questionnaire in personal interviews (N=194). The findings confirm that the relationship between background variables, physical capacity and well-being is differentially mediated by the psychosocial resources, with different variable combinations predicting each of the respective facts of well-being. Moreover, the relative strength of the relationships between locus of control and social network supportiveness and well-being indicate that among the old-old, personality factors may be more consequential than social resources for one’s well-being.

Culture is also one of the factor which may influence personality. Schimmack, Radhakrishnan, Oishi, Dzokoto, Ahadi (2002) examined the interplay of personality and cultural factors in the prediction of the affective (hedonic balance) and the cognitive (life satisfaction) components of subjective well-being (SWB). They predicted that the influence of personality on life satisfaction is
mediated by hedonic balance and that the relation between hedonic balance and life satisfaction is moderated by culture. As a consequence, they predicted that the influence of personality on life satisfaction is also moderated by culture. Participants from 2 individualistic cultures (United States, Germany) and 3 collectivistic cultures (Japan, Mexico, Ghana) completed measures of Extraversion, Neuroticism, hedonic balance, and life satisfaction. As predicted, Extraversion and Neuroticism influenced hedonic balance to the same degree in all cultures, and hedonic balance was a stronger predictor of life satisfaction, was largely mediated by hedonic balance. The results suggest that the influence of personality on the emotional component of SWB is pancultural, whereas the influence of personality on the cognitive component of SWB is moderated by culture.

Diener, Oishi & Lucas (2002) observed subjective well being (SWB), people's emotional and cognitive evaluations of their lives, includes what lay people call happiness, peace, fulfillment, and life satisfaction. Personality dispositions such as extraversion, neuroticism, and self-esteem can markedly influence levels of SWB. Although personality can explain a significant amount of the variability in SWB, life circumstances also influence long-term levels. Cultural variables explain differences in mean levels of SWB and appear to be due to objective factors such as wealth, to norms dictating approach versus avoidance
tendencies of societies. Culture can also moderate which variables most influence SWB. From these findings it can be concluded that personality is one of the major variable which may affect SWB levels significantly.

All these studies indicate that SWB is influenced by gender, personality and culture. With this background we may now pass on to formulation of problem and hypotheses in the next chapter.