DISCUSSION
OF
RESULTS
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The biomedical community has increasingly recognized the importance of psychological factors in the natural history of disease, prevention of disability and illness, and promotion of recovery. In Health and Behaviour Research, a WHO report indicates that research is teaching us that many common diseases can be prevented, and others can be postponed or well controlled, simply by making positive life style changes. For these reasons, intensifying such research and encouraging all concerned to make health enhancing behaviours a part of their daily lives has taken on more and more importance in our efforts to conquer disease. Likewise to achieve the target Healthy people by 2000 and to realize the twin goals of health promotion and disease prevention, then achievement of this agenda depends heavily on changes in human behaviour. (ADLER & MATTHEWS, 1994).

Billions of dollars all over the world are being spent on health care and disease cure. Prevention of disease by use of behavioural science knowledge and techniques contribute to the understanding of physical health and illness by complementing biomedical knowledge and application (DIEZ ROUX ET AL., 1999). The present study is an attempt in this direction. The variables associated with health and care may be categorized into "Dispositional Variables" and "Social environmental behaviours". The present study has also included specific behaviour in terms of Ways of Coping which also influences health and illness.
The various measures of personality included the Eysenck Personality Questionnaire (EPQ-R); the Personality Stress Questionnaire (PSQ), Type A Behaviour Pattern Measure, State – Trait Anxiety Inventory, questionnaires to measures Health Locus of Control, Self Esteem and Optimism. The various measures of Stress included Life event stress (SLE), Daily Hassles and Uplifts, Stress Symptoms and Strain measure (GHQ). In addition Ways of Coping measure was also included. Three measures of Negative affect were included viz Loneliness, Hopelessness and Depression. The various measures of Anger included a Generalized measure of Anger, Anger Expression Style Measure yielding Anger – in, Anger out and Anger expressed dimensions. In addition measures of Hostility and Irritability were also used. Three dimensions of Social Support viz Social Support (numerical) Social Support (Satisfaction) and Total Social Support were measured and two measures of Psychological Well - Being also formed part of the study.

The sample consisted mainly of three groups; Group – I, comprised the Healthy Controls. Group – II the Essential Hypertensives (EHT), Group – III consisted of the Coronary Heart Disease (CHD) patients and group – IV was formed by combining, Groups – II and III called the Disease group.

For the purpose of delineating the role of above psychosocial variables in Coronary Heart Disease and Essential Hypertension groups raw data obtained from all the three groups was analysed and Means, SDs (Table 1), t-ratios (Table 2) and ANOVA (Table 2-48) were calculated.
Table 1 also shows t ratios calculated between group-I and group-IV on all the variables. This was done to have an overall inference about role of psychosocial factors in health and disease. Figures 1 to 6 represent the graphic presentation of means obtained on all the variables in the four groups.

**PERSONALITY AND CARDIOVASCULAR DISEASES**

With the recent emphasis on psychosocial models of Health and disease and recent growth of the field of behavioural medicine, there is a renewed interest in the role of personality factors in health and disease. Personality refers to regularities and consistencies in the behaviour of individuals and to the structures and processes that underlie these regularities and consistencies. (EYSENCK AND EYSENCK, 1985).

Some of the personality factors considered equal to biological and situational factors in predicting CVD are Eysenckian Personality Dimensions Personality Stress Questionnaire, Type A Behaviour Pattern, State Trait Anxiety Inventory, Health Locus of Control, Optimism and Self esteem. The same have been studied in the present investigation. As regards Eysenckian Personality Dimensions and CVD, it was hypothesized that the three groups are expected to score differently on these dimensions.

A glance at the tables (5-8) reveals that as hypothesized significant differences emerged among the three groups on Extraversion (E), Psychoticism (P), Neuroticism (N) & Lie (social desirability). On Extraversion, Healthy Controls
obtained the highest mean scores followed by Coronary Heart Disease and Essential Hypertension groups. On Psychoticism, Coronary Heart Disease group scored the highest followed by Essential Hypertension group and Healthy Controls. On Neuroticism, Healthy Controls scored the highest followed by Essential Hypertension and Coronary Heart Disease Groups. On Lie (Social desirability) again the Healthy Controls scored the highest followed by Essential Hypertension and Coronary Heart Disease groups. A look at t - table (table 1) also reveals that when groups – I and IV were compared on these Eysenckian dimensions of personality. means favoured Healthy Controls on Extraversion, Neuroticism and Lie (social desirability) and Coronary Heart Disease group on Psychoticism.

Since Galen in 2 A.D., proposed his theory of four temperaments, there has been a considerable body of research emphasizing the role of biological processes as determinants of personality. Eysenck’s theory of the biological basis of personality proposes three dimensions – Extraversion/Introversion, Instability (Neuroticism) / Stability, Psychoticism (Tough Mindedness)/Superego (EYSENCK and EYSENCK, 1975). Extraversion / Introversion is explained within the framework of central nervous system excitation and inhibition (EYSENCK and EYSENCK, 1975). Neuroticism /Stability is deemed to be related to activity in the ascending reticular activating system and the limbic system, ‘which in turn may influence the excitation of the autonomic nervous system’ (EYSENCK, 1985). The biological determinants of Psychoticism are less clear, as this dimension is a more recent Introduction (EYSENCK and
EYSENCK, 1975). A Lie Scale incorporated into Eysenck's measure of personality was initially intended to detect dissimulation, but now purports to reflect a stable personality factor, possibly conformity (EVANS, 1986).

In relation to the experience of stress, it is proposed that as a result of their predisposition to be involved in stimulating, active, novel situations, 'Extraverts', are less likely to avoid stressful situations, and that 'Neurotics' will show a greater reactivity to Stress, thereby suffering higher levels of Anxiety.

Further to explain Eysenckian personality dimensions relationship with CVD, EYSENCK (1967) hypothesized Introverts to have higher levels of activity in the ascending reticular activating system (ARAS – which was linked to cortical arousal by Moruzzi and Magoun in 1949) and thus have chronically higher levels of cortical arousal than Extraverts. Similarly, high – N individuals are postulated to have higher levels of activity in the limbic system than low – N individuals. An assumption drawn from these hypotheses is that both Introverts and high N individuals should show greater levels of autonomic activity than Extraverts and low – N individuals. A similar prediction follows from Gray's (1981) revision of Eysenck's theory, individuals who are high on Gray's Anxiety dimension and who thus fall into the low – E / high – N quadrant, should also show high levels of autonomic activation. Following these assumptions, it can be predicted that both Introverts and high – N individuals should show the cardiac defense response more readily than Extraverts and stable individuals. Also Gray (1964) identified strength of excitation with arousability. He proposed that the weak Nervous System is more easily aroused and experiences higher levels of ARAS activity.
than the strong Nervous System. There are some autonomic data to support this contentions (TAYLOR and COOPER, 1989).

Introverts and high N individuals are postulated to have a weak nervous system and high cardiac / heart rate acceleration in contrast to Extraverts and low N individuals which puts them at greater risk for CVD. Findings to this effect were reported by RICHARDS AND EVES (1991). This explains present results also as to why low E and N individuals were found to be a greater risk for developing CVD. Findings regarding N which are contrary to expectation need explanation. In the present study Healthy Controls obtained the highest mean scores. According to EYSENCK AND EYSENCK (1975) a optimum score on N has a motivating effect and N becomes debilitating if the score on N exceeds the optimum level. A glance at the means (Table 1) confirms that mean scores on N obtained by Healthy Controls were average as per norms which may have served as a motivating factor in health maintenance.

As regards Psychoticism, one knows that subjects scoring higher on Psychoticism also score higher on Aggression, Hostility and Antisocial tendencies – which are an integral part of behaviour of a person scoring high on Psychoticism (P). Also these people have poorer social relations and as a consequence of their hostile behaviour have fewer friends. (EYSENCK AND EYSENCK, 1985). These people (high on P) therefore, during Stress or Anger evoking situations frequently elicit higher endocrinal and autonomic emotional responses. This in turn puts these individuals at a greater risk for developing
CVD (ALEXANDER, 1950, EYSENCK, 1985). The same has been shown in the present results.

It was hypothesized that significant differences would emerge among Group – I, II and III on six typologies of PSQ. A glance at the tables (10-15) reveals that F ratios for Type I and Type \(I\) were insignificant. On Type I Essential Hypertension group scored the highest followed by Healthy Controls and Coronary Heart Disease group. On type \(I\), the same pattern emerged.

However significant F ratios were obtained among the groups on Type II, III, IV and V. On Type II, Coronary Heart Disease group scored the highest followed by Healthy Controls and Essential Hypertension groups. On type III, Coronary Heart Disease Group and Healthy Controls scored almost the same, followed by the Essential Hypertension group. On Type IV, Essential Hypertension group scored the highest followed by Healthy Controls and Coronary Heart Disease groups scoring almost the same. On Type V, Healthy Controls scored the highest followed by Essential Hypertension and Coronary Heart Disease groups respectively. A glance at the t – table (Table 1) also reveals that when group – I and IV are compared, no significant differences emerged on Type I, II and \(I\). However significant differences emerged on Type III (group 1>4), Type IV (group 4>1) and Type V (group 1>4). Table 1 shows another interesting findings that although t ratio between group I & IV is insignificant, t-ratios were significant when group II (EHT) and group III (CHD) were compared and group I (HC) and group III (CHD) were compared. CHD group scored significantly higher than essential hypertension and healthy
controls on Type II dimension. This validates findings of GROSSARTH MATICEK ET AL., (1986) as explained.

Research in the last decades has shown a good deal of evidence that personality is related to various Psychosomatic complaints and diseases as well as Stress and Coping. (EYSENCK AND EYSENCK 1985, GROSSARTH – MATICEK ET AL., 1986). In this context, several prospective studies by EYSENCK AND GROSSARTH – MATICEK (1986) demonstrated that different behaviour types are related to cancer, CHD and endogenous depression. Over a period, 6 behaviour types were isolated and their relationship with health and disease as proposed by GROSSARTH – MATICEK ET AL., (1986) is shown in Table A.

TABLE A: BEHAVIOUR TYPES (GROSSARTH – MATICEK ET AL., 1986)

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Disposition</th>
</tr>
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<tbody>
<tr>
<td>Type I</td>
<td>Conformist dependency on a withdrawing object</td>
<td>Prone to cancer</td>
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<tr>
<td></td>
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<tr>
<td>Type II</td>
<td>Conformist dependency on a disturbing object</td>
<td>Prone to cardiovascular diseases</td>
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<tr>
<td>Type III</td>
<td>Non-conformist dependency on an object which is both withdrawing and disturbing</td>
<td>Prone to chronic anxiety</td>
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<tr>
<td>Type IV</td>
<td>Appropriate autonomy; a permanent self – regulation, which brings independence in the satisfaction of needs</td>
<td>Prone to being healthy</td>
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<td></td>
<td></td>
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<tr>
<td>Type V</td>
<td>Rational anti – emotional tendencies</td>
<td>Prone to endogenous depression</td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type VI</td>
<td>Anti – social tendencies</td>
<td>Prone to criminal behavior, drug addiction</td>
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</table>
Type II is reported to be CVD prone. In the present study also, the CHD group scored the highest. In fact CHD group scored significantly higher than Healthy Controls and Essential Hypertension groups. No difference was obtained between Healthy Controls And Essential Hypertension groups. This lends cross-cultural validity to EYSENCK AND GROSSARTH – MATICEK, (1986) claim that Type II dimension of PSQ is a significant factor in predicting CHD.

On Type III also as expected CHD group scored higher than EHT group. Though F ratio was significant for type IV – disposition to being healthy, results are contrary to expectation and need further probing. Here the EHT group scored the highest followed by CHD group rather than Healthy Controls.

Similar confounding effect was obtained for Type V – a disposition prone to endogenous depression. Here also, Healthy Controls scored the highest instead of CVD groups as hypothesized.

One may conclude therefore that whereas empirical evidence was obtained that Type II is more susceptible to CHD, controversy surrounds over the claims made by GROSSARTH – MATICEK (1986) as regards the other personality types. These could not be replicated cross-culturally in the present study.

It was hypothesized that significant differences would emerge among the three groups on 4 dimensions of TABP viz. Type A, Speed and Impatience (SI), Job Involvement (JI) and Hard Driving and Competitiveness (HDC).
A glance at the tables (16-19) reveals that significant differences emerged on Type A and SI. On Type A, CHD group scored the highest followed by EHT and HC. On SI same pattern emerged. However F ratios for JI and HDC were insignificant for the three groups. On JI, CHD group scored the highest followed by HC and EHT groups. On HDC, CHD group scored the highest followed by EHT and Healthy Controls. A glance at t-table (Table 1) comparing group 1 and group 4 also reveals same trends. Group 4 scored significantly higher than group 1 on type A and SI. No significant differences emerged on JI (group 4 >1) and HDC (group 4>1).

Review of studies also reveals similar trends as regards relationship between Type A and SI dimensions and CVD is concerned.

Most of the research conducted in search of a Coronary – Prone personality – a style of behaving and coping that leads to Coronary Artery Damage – has focused on the Type A behaviour pattern (TABP), a collection of behaviours that seems predictive of clinically apparent CHD (COOPER, ET AL., 1981; DEMBROSKI ET AL., 1978). As described by its discoverers, the TABP refers broadly to the behaviour pattern of any person who is involved in an aggressive and incessant struggle to achieve more and more in less and less time, (FRIEDMAN & ROSENMAN, 1974; ROSENMAN, 1978). The major elements of the behaviour pattern are Competitive Achievement Striving, a Sense of Time Urgency and Impatience, Aggressiveness, and Easily Aroused Hostility.
The Type A Behaviour Pattern (TABP) has been defined as an action emotion complex (ROSENMAN ET AL., 1978) involving (a) behavioural dispositions (e.g. Ambitiousness, Aggressiveness, Competitiveness, and Impatience), (b) specific behaviours (e.g. Muscle Tension, Rapid and Emphatic Speech Style, and Accelerated Pace of Activities) and (c) Emotional Responses (e.g. Irritation, Hostility, and Anger). Although many investigators have related the global TABP to Chronic Heart Disease (CHD) end points (BOOTH – KEWLEY & FRIEDMAN, 1987) in some studies 70-90% of the sample is labeled Type A (DEMBROSKI AND MACDOUGALL 1983). Placing such large percentages of individuals in an at risk category is inconsistent with sound epidemiological practice (MATTHEWS & HAYNES, 1986).

A first step to resolving this confusion has been to recognize that not all components of the TABP may be Coronary Prone. According to TAYLOR AND COOPER (1989), the Type A personality is characterized by extremes of Competitiveness, Striving for Achievement, Aggressiveness, (sometimes strongly repressed), Haste, Impatience, Restlessness, Hyperalertness, Explosiveness of Speech, Tenseness of Facial Musculature and Feelings of being under the Pressure of Time and under the Challenge of Responsibility (JENKINS, 1971). Type A individuals often have a deeply – rooted commitment to their work, to the exclusion of other aspects of their lives. Whilst early research tended to focus on male employees, it has been found that type A working women run a similar risk from CHD. (JENKINS, 1971). Conversely, the Type B individual has been identified as having drive which acts as a steadying confidence – building
influence, is more Relaxed, Unhurried, Satisfied and Easy – Going (ROSENMAN, 1978).

The underlying physiological processes thought to precipitate the risk of CHD result from sustained and/or excessive reactivity in response to Type A behaviour. It has been proposed that the TABP is recognizable early in life and remains a relatively stable construct over time (BERGMAN AND MAGNUSSON, 1987). There is also some recent evidence to suggest that Cardiovascular Responses to behavioural challenges may be a stable individual variable (MATTHEWS ET AL., 1987).

The notion of controls seems to be important in seeking to understand the relationship between Type A behaviour, Stress and Health. Underlying the Type A construct is the consistent way in which Type A individuals perceive demands, threats and challenges, and how they strive for control over situations, time and other individuals. The effort to assert and maintain control over the environment, even in the face of uncontrollability, seems pervasive (GLASS, 1977). In this way Type A’s can actually create their own stressful environment. In situations with uncontrollable outcomes, it has been found that Type A’s are likely to feel a greater degree of personal responsibility and more self directed anger than Type B’s. This could be linked to Type A’s need ‘to prove oneself to oneself’ and sustain a belief that one’s self worth is a function of one’s achievements (GLASS, 1977).

More recently JOHNSTON (1993) proposed mechanisms linking Coronary Prone Behaviour and CHD. Attempts to determine the physiological processes
through which coronary prone behaviour might produce CHD have been rather limited and disappointing. In part, this stems from the difficulty in determining what has to be explained, since the basic findings on Type A and related behaviours have been so contradictory. There are two fundamental questions to consider, the pathological process to be explained and the intervening physiological mechanism (JOHNSTON, 1993).

While it is seldom made explicit, most investigators appear to assume that Coronary Prone Behaviour acts to increase the likelihood of the patient developing CAD through the development of Atheroma. Coronary Prone Behaviour is therefore seen as operating over a long time to increase the patient's risk. Clearly the studies of Coronary Occlusion, in as far as they are positive, support this view but it should be recognised that Coronary Prone Behaviour could equally well relate to the acute processes that lead to a Myocardial Infarction such as plaque rupture and thrombus formation or to the occurrence of fatal Arrhythmias. There is little positive evidence on this but the sudden explosive nature of some of the components of Type A behaviour could plausibly relate to these acute processes where the more long term chronic components, such as potential for hostility, may relate to the presumably, slower processes that lead to the build up of Atheroma.

Investigations of intervening mechanisms are largely confined to investigating whether Type A or Coronary Prone Individuals show increased Cardiovascular Responsiveness to various forms of psychological challenge. This potential mechanism appears to have received much attention, largely
because cardiovascular reactivity was already under extensive scrutiny since some consider it a risk factor in its own right. It is compatible with Coronary Prone Behaviour relating either to CAD or to the acute process preceding Myocardial Infarction or cardiac death. The research findings are complex and some reviewers have concluded that there is no reliable difference between Type A and Type B individuals in their response to a wide range of tasks (MYRTEK & GREENLEE 1984) but a recent statistical analysis of over 70 published studies suggests Type A men show greater increases in blood pressure and heart rate than Type B men (HARBIN, 1989).

It is now generally accepted that it is necessary for research 'to go beyond the Global Type A' and to examine the role of individual components of this construct and their relationship to CHD (DEMBROSKI & McDOUGALL 1985). These components will have different weightings, individual combinations of which will increase or decrease the potentiality for CHD and possibly other illnesses (MATTHEWS 1982). The greater the number of negative components an individual possesses, the more likely he or she is to be at risk. Recent research has, therefore, turned to pursuing more detailed analysis of these negative components.

One may infer, therefore, that TABP components are differentially related to CHD in that its sub-components Type A & SI involving hostile aggressive emotions are more coronary prone than JI & HDC components. Similar results have been obtained in the present study. One may say that instead of Global TABP only some of its sub-components viz Type A & SI seem to be related
reliably to CVD. Research by MATTHEWS (1982) revealed Type A and SI components of TABP to be more toxic than J1 and HDC.

It was hypothesized that significant differences would emerge among the three groups on Externality and Internality dimensions of Health Locus of Control.

A glance at the tables (28-29) reveals that F ratio was significant for Externality only. On this dimension the disease groups (EHT and CHD) scored higher than group-I i.e. Healthy Controls. On Internality, no significant differences emerged. On this dimension, CHD group scored the highest, followed by EHT and HC. A glance at the t table (Table 1) reveals that significant t-ratios emerged on Externality (group 4>1) and Internality (group 4>1). On Externality, Table 1 reveals that whereas t-ratio was insignificant between HC and EHT group, it was significant between HC and CHD group, with CHD group scoring higher on Externality.

Reasons for these results are reviewed. An important aspect emerging from the research into TABP is the notion of control. Locus of Control is a personality variable which has its origins in social learning theory (ROTTER, 1966). It defines a generalized expectancy concerning the extent to which an individual believes that reinforcements, rewards and successes are either internally or externally controlled. An Internal Locus of Control implies a belief in Personal Power, Control and Influence over the outcome of events. An External Locus of Control implies a belief that Personal Power has a minimal effect on the outcome of events, these being influenced by Fate, Chance and Powerful
Others. Extremes in either direction are proposed as maladaptive. (ROTTER, 1966). Rotter's unidimensional I-E scale is the most widely used scale of measurement, although the existence of subclasses within these dimensions is not denied (ROTTER, 1975).

Experimental work has defined the importance of Perceived Control in the experience of Stress (LEFCOURT, 1973). Therefore so it would be reasonable to assume that Locus of Control as it affects the experience of Stress ultimately affects an individual's health. There is, in fact, a large body of research which suggests a significant difference in health–related behaviours of Internals and Externals. After critical evaluation of the findings, it is felt that, in general, 'Internals' assume more responsibility for their health, seek more information about health maintenance, and in the face of illness seek more relevant information. Seemingly, internals engage in more adaptive health responses than 'Externals' both at preventative as well as remedial levels (STRICKLAND, 1978).

A recent comprehensive review of the literature finds some tentative support for the role of internal Locus of Control as a buffer in the Stress Health relationship as measured by the Rotter scale. This finding is explained within the framework of perceptions of control and successful coping (COHEN & EDWARDS, 1988). An alternative explanation for differences in the stress reactions of Internals and Externals proposes that Locus of Control influence is time–dependent. Most individuals react to Stress, but Externals, unlike Internals, would seem to retain a build – up of stress which could eventually impinge upon health (LEFCOURT, 1981). It has also been proposed that Locus
of Control mediates between Stress and Well-being via Coping Strategies. ‘Internals’ are presumed to adopt Positive Coping Strategies when faced with Stressful Events, whereas ‘Externals’ feel that Coping effectively is beyond their control. Appraisal of Stressful Situations, therefore, appears different for Internals and Externals (PARKES, 1984).

An earlier study using Rotter’s I-E scale does, in fact, lends support to the theory that individuals deemed to be at risk from CHD are more likely to be Type A, highly external individuals with high anxiety scores (NOWACK AND SASSENRA TH, 1980). High Externality would, therefore, seem to be maladaptive in the Stress–Health relationship.

Hence, LOC seems to be particularly relevant to understanding Personality, Stress and Health relationships. External individuals, characterized by Helplessness are more at risk for developing CHD. Similar results have been obtained in the present study. Another reason for Externals being more prone to developing CVD lies in the strong relationship between Externality and Depression (BENASSI ET AL., 1988). Externality and Stress (ROTTER, 1966). Research studies investigating the role of Hardiness and Health, also report that hardy individuals are deemed to have a strong Sense of Control which makes them appraise Stress as challenging rather than distressful – and hence has a positive role in health (TAYLOR AND COOPER, 1989).

It was hypothesized that significant differences would emerge among the 3 groups on Optimism and Self-esteem. A glance at the ANOVA Tables (2 and 4) revealed that contrary to expectations, no significant differences
emerged among the three groups on Optimism. However trend of mean scores is in the predicted directions. – HC scored the highest followed by EHT and CHD groups. On Self Esteem also, F ratio among the three groups was insignificant. CHD group scored the highest followed by EHT and HC respectively. A glance at (table 1) also reveals insignificant t-ratios between group – 1 and group – 4 on Optimism (group 1 > 4) and Self esteem (group 4>1).

Several, somewhat, overlapping Personality variables, all focusing on individuals’ abilities to respond to difficulties in Optimistic. Persistent and Flexible Ways, have been studied in relation to Positive Health Outcomes. Viewing them together in this broader theoretical framework may have greater heuristic value in predicting Health Outcomes. One of these constructs – Hardiness (KOBASA, 1982) – is a Complete Commitment, Control and Challenge, each measured empirically by several scales. Studies of the Stress buffering role of Hardiness are there (KOBASA ET AL., 1983). SCHEIER & CARVER (1987) have suggested that aspects of Hardiness serve as a buffer against stress merely because of the undercurrent of Optimism in certain constituents. Alternatively, it may turn out that one or another of the variables presently confounded in the Hardiness construct, such as Internal / External control, may prove to be a critical mediator (FUNK AND HOUSTON, 1987; HULL ET AL., 1987).

In arguing for a more generic construct of Optimism, (SCHEIER and CARVER, 1987) have suggested that differences in well being between optimists and pessimists could derive from the way individuals select and use the general strategies for Coping available to everyone. For example, Optimists appear to
display Coping Patterns that involve continued positive striving and making the best of whatever situations they confront. The second possibility is that Optimism/Pessimism differences directly affect physiological functioning. VAN TREUREN AND HULL (1986) suggested that optimists show less Cardiovascular reactivity to stress.

Optimism and Pessimism have also been studied from an attribution / learned – Helplessness perspective. PETERSON AND SELIGMAN (1987) posit that attributional dimensions influence one or more manifestations of Helplessness. The emphasis on attributions as a determinant of expectancies is one difference between the theory of Optimism / Pessimism discussed above and Seligman’s view of this construct. In other words, in attribution research, explanatory style is measured rather than expectations per se, and Optimistic/Pessimistic expectations are inferred from the explanatory style. PETERSON AND SELIGMAN, (1981) and their colleagues have developed Two Ways of Measuring Explanatory style, a self report questionnaire called the Attributional Style Questionnaire (ASQ; PETERSON AND VILLANOVA, 1988) and a content analysis procedure called the CAVE (PETERSON AND VILLANOVA, 1988). Some studies report inverse correlations between Pessimistic Explanatory Style (the use of causal explanations focusing on internal, stable, and global factors for negative events) and Physical Well Being (PETERSON AND SELIGMAN, 1987).

Another reason for expecting Optimists to be healthier than Pessimists is that they adopt Effective Coping Strategies in face of Adversity. (SCHEIER and
CARVER, 1987). As Optimism is bolstering disposition it was expected that HC would score significantly higher than disease groups. In the present study, though F-ratio emerged insignificant, the trend of means is in the predicted direction. In fact table 1. showing t-ratios reveals that Healthy Controls were significantly higher than CHD group on the dimension of optimism.

Self Esteem (SE) is a psychological construct, that has since the times of William James been associated with mental and physical health (KENDLER ET AL., 1998). Low levels of SE have been associated with Substance Abuse (BRY ET AL., 1982); Anxiety Disorders (INGHAM ET AL., 1986), Major Depression and Poor General Health (HUNTER ET AL., 1981). KENDLER ET AL., (1998) also reported a significant negative correlation between SE and Depression and Passivity and Submissiveness. In the present study however, contrary to expectations. Self Esteem did not emerge as a significant variable in CVD (Table 4 and Table 1).

It was hypothesized that significant differences would emerge among the three groups on State – Trait Anxiety dimensions. A glance at tables (26 and 27) reveals that contrary to expectations no significant differences emerged on these dimensions among the three groups. On STAI – I. CHD group scored the highest followed by Healthy Controls and EHT group. On STAI-II, CHD group scored the highest followed by Healthy Controls and EHT group. A glance at t-ratios (Table 1) between group 1 and 4 also revealed insignificant differences between the mean scores of group 1 and 4 on STAI – I and STAI – II.
Earlier research has however clearly shown the role of Anxiety in CVD. ROSENMAN (1985) has opined that CNS is critically involved in blood pressure regulation and CHD: their maintenance and integrates information from both the organisms and the environment to provide neurohormonal adjustments essential to its regulation. One major hypothesis is that Environmental Factors, including Psychosocial Stress, may stimulate Autonomic Overactivity, increase Cardiovascular Reactivity, and elevate Blood Pressure. This hypothesis is based on a number of well accepted facts concerning neurohormonal circulatory regulations.

Blood pressure can be increased by activation of CNS sites with known neuroanatomic connections to the Sympathetic Nervous System, and many of these sites connect with higher centres involved in perception of the environment. Considerable data indicate that Stressful Environmental Factors are capable of elevating Arterial Pressure neurohormonal mechanisms, and studies in animals support the hypothesis that certain types of stress can induced Hypertension. However, when the stressor is removed, sustained Hypertension is the exception and not the rule. A recent task force concluded that there was little evidence that stress alone can produce sustained Hypertension in otherwise healthy animals, but that Hypertension occurs more consistently in response to such environmental stressors in animals that are predisposed by reason of genetic forces, salt ingestion or decreased renal mass.

ROSENMAN (1985) in this connection suggested that individuals high on Anxiety, Depression and Denial are more predisposed to developing CVD.
Anxiety probably is involved in most CVD (TAYLOR AND COOPER, 1989). RUSSELL AND DAVEY (1993) also reported that measures of both Trait Anxiety and State Anxiety were significantly related to Daily Hassles which in turn is strongly related to CVD. However, contrary to expectations, both the measures of Anxiety – State and Trait Anxiety were found to be unrelated to CVD in the present study.

Overall, one may conclude that present investigation amply reveals the significant role of many Personality dimensions viz. EPQ dimensions, Type II, III, IV, V, Type A, SI, Externality (HLOC) and Optimism as predictors of Health and Disease Status. Implications of these results are that one may easily identify individuals predisposed to become victims of Stress related illnesses. One may create self awareness in such individuals and foster motivation to modify these Pathogenic behaviour patterns and develop bolstering dispositions. One may emphasize to such individuals the need to adapt more Effective Coping and Behaviour patterns of the healthy.
STRESS, STRAIN, DAILY HASSLES, WAYS OF COPING AND CARDIOVASCULAR DISEASES.

Stress is one of the most potent factors involved in health and disease of individuals. It was hypothesized that different groups viz Healthy Controls, Coronary Heart Disease and Essential Hypertension patients would show significant difference on Stressful Life Events (SLE), Stress Symptoms (SS), General Health Questionnaire (GHQ) and Hassles & Uplifts. A glance at the tables (30-33, 48) reveals that F ratios emerged significant on Hassles, Uplifts, General Health Questionnaire and Stress Symptoms. F - ratio was insignificant for Stressful Life Events. On Hassles, Coronary Heart Disease group scored the highest followed by Essential Hypertension and Healthy controls. On Uplifts, Healthy Controls scored the highest followed by Coronary Heart Disease & Essential Hypertension groups. On General Health Questionnaire and Stress Symptoms, Coronary Heart Disease group scored the highest followed by Essential Hypertension group and Healthy controls. On Stressful Life Events, Essential Hypertension group scored the highest followed by Coronary Heart Disease group and healthy controls.

A glance at t ratios (Table 1) reveals significant t ratios between group 1 and 4 on Stressful Life Events (group 4 >1); General Health questionnaire (group 4>1); Stress Symptoms (group 4>1); Hassles (group 4>1) and Uplifts (group 1>4).
It was also hypothesized that the three groups would show significant difference on Ways of Coping viz Self Controlling, Seeking Social Support, Accepting Responsibility, Escape Avoidance, Planful Problem Solving, Positive Reappraisal, Confronting Coping, Distancing. A glance at tables (40-47) reveals that contrary to expectations except for Planful Problem Solving, F ratios emerged insignificant for all the dimensions of WOC. On Planful Problem Solving, Healthy Controls scored the highest, followed by Coronary Heart Disease and Essential Hypertension groups. On Confronting Coping, Essential Hypertension group scored the highest followed by Coronary Heart Disease group and Healthy Controls. On Distancing, Healthy Controls scored the highest followed by almost same scores obtained by Coronary Heart Disease and Essential Hypertension groups. On Self Controlling, Coronary Heart Disease group scored the highest followed by Healthy Controls and Essential Hypertension group. On Seeking Social Support, Healthy Controls scored the highest followed by Coronary Heart Disease and Essential Hypertension groups. On Accepting Responsibility and Escape Avoidance Coronary Heart Disease group scored the highest followed by Essential Hypertension group and healthy controls. On Positive Reappraisal, Healthy Controls scored the highest followed by Coronary Heart Disease and Essential Hypertension groups.

A glance at t ratio (table 1) reveals that except for significant differences on PPS between group 1 and 4 (1>4), none of the other t ratios were found to be significant.
The present results, clearly highlight the role of stress in CVD, are not surprising. The notion of stress is a familiar one and the past 20 years have yielded a vast body of literature devoted to this concept. It is now, generally, realized that the stress concept involves the totality of an individual's transaction with his or her environment.

Cognitive appraisal is the pivot of Lazarus' transactional approach to stress. He proposes that stress occurs where demands are made on an individual which tax or exceed his or her adjustive resources. Reaction is dependent upon how demands are perceived, evaluated, appraised. The same demands can, therefore, mean challenge for one person, yet pose threat to another. The destabilizing effect of threat, through the inability to cope and inadequacy of resources, can result in the negative experience of stress, with its potentially deleterious mental, physical and behavioural manifestations.

Pioneering studies into the stress health relationship have paved the way for more detailed research into possible links between stress and the development of specific conditions such as cardiovascular disease, hypertension, cancer, asthma, backache, rheumatoid arthritis and neuroses.

In this context, a great deal of recent stress research has been devoted to understanding the stress-prone personality. There have been numerous articles and books on type A coronary prone behaviour, locus of control the 'hardy' personality, extraversion, and much more.

Stressors or stressful circumstances refer here to the experience of negative life events and chronic life strains. Negative life events are culturally or
personally undesirable changes in the usual activities of an individual that require
substantial behavioural readjustments (BROWN & HARRIS, 1978; HOLMES &
RAHE, 1967). Examples include such normative life transitions as the empty nest
syndrome, bereavement and involuntary retirement, as well as such non-
normative changes as divorce, job loss, and serious illness. Chronic strains are
persistent conditions that require daily readjustments; these are conditions that
repeatedly interfere with the adequate performance of ordinary role related
activities (COHEN AND HERBERT, 1996). Examples include poverty, marital
conflict, chronic illness, and excessive job responsibilities. In short, stressors or
stressful circumstances refer to undesirable conditions that disrupt usual
activities either acutely or chronically. The entire literature of Behaviour Medicine
is replete with empirical studies showing the powerful association of psychosocial
factors, especially stress perceived and experienced and the deleterious impact
on the somatic structure and functioning of the body. How does stress affect
health? It is now clear that stress states alter the immune system of organisms
and disease susceptibility. Stress influences immunity through (i) direct
innervation of the CNS, or (ii) through hormonal pathways which lead to
increased production of catecholamines by the adrenal medulla and
corticosteroids by the adrenal cortex and (iii) through behaviour changes which
occur as adaptations or coping responses in the face of stress or negative
emotional states (COHEN & HERBERT, 1996). A person experiencing stress
may often engage in poor health practices such as smoking, poor dietary
practices and poor sleeping habits (COHEN & WILLIAMSON, 1989), which may
have immunosuppressive effects and make the individual more vulnerable to disease.

Stressful life events are commonly believed to alter immunity and hence susceptibility to immune system-mediated disease. When demands imposed by events exceed individuals' abilities to cope, a psychological stress response composed of negative cognitive and emotional states is elicited. These responses are thought to influence immune function through their effects on behavioural coping and neuroendocrine response.

Stressful events that last for a longer term e.g. months or even years have similar potential to influence the immune system. One example is the set of studies assessing stress effects on residents of the area surrounding the Three Mile Island (TMI) nuclear power plant. TMI was the site of a serious accident in 1979, and the distress among area residents has remained high (Baum et al., 1985). Recently, almost 10 years after the accident, McKinnon et al., (1989) found more antibody to herpesviruses in TMI residents than in demographically matched control group residents, suggesting lower cellular immune competence in the former. In a series of studies, Glaser et al., (1986) reported that students who reported more stress during examinations showed a decrease in the range of indicators of cellular immune response including decreased NK activity and lymphocyte proliferation.

Stress has also been related to Infectious Diseases and Herpes Virus infections. Early prospective work indicated that both disruptive daily events and chronic family stress were associated with greater risk for upper respiratory
infections (HOLMES & RAHE, 1967). Measures of life stress were collected from members of 94 families before and during a six month period in which diary data on subjects' respiratory symptoms were collected daily. Illness episodes were validated by nose and throat cultures. Although high and low stress groups were almost identical with respect to demographics and health practices, the high stress groups experienced more verified episodes of illness and more days with symptoms of respiratory illness.

In a study of susceptibility of influenza (CLOVER ET AL., 1989), 246 individuals in 58 families completed instruments assessing family relationships and individual stressful life events prior to the start of flu season. Stressed ("rigid and chaotic") families showed greater incidence of disease than non-stressed ("balanced") families. However, illness was not related to individual stressful life events.

Three recent viral challenge trials suggest interesting relations between psychological stress and Upper Respiratory Infections susceptibility. In a study of 394 volunteers (COHEN ET AL., 1995), measures of stressful life events, perceived stress, and negative affect all predicted the probability of developing a cold, with greater stress linearly related to greater probability. The relations that COHEN ET AL., (1995) reported were found consistently across five different Upper Respiratory Infections viruses. Moreover, these results could not be explained by stress – elicited differences in health practices such as smoking and alcohol consumption or in the numbers of various white blood cell populations or total (nonspecific) antibody levels. It is interesting to note that stressful life events
predicted susceptibility independent of (and through a different biological mechanism than) perceived stress and negative affect. In another study, STONE ET AL., (1992) replicated the relation between stressful life events and susceptibility to URI and identified the same biological pathway as in the work of COHEN ET AL., (1995). Finally, in a viral – challenge study examining predictors of disease severity (rather than episode onset), COHEN ET AL., (1995) found that state (but not trait), negative affect measured just prior to viral exposure was associated with more severe colds and influenza as measured by the amount of mucus produced over the course of the illness.

In sum, both stressful life events and psychological stress (perceptions and negative affect) are associated with increased susceptibility to Upper Respiratory Infections (URI). These affects are not generally explicable in terms of stress elicited changes in health behaviors. However, neither is there any direct evidence yet that increased susceptibility is attributable to stress induced immunosuppression.

HERPESVIRUS INFECTIONS: - Herpesviruses are thought to be responsible for cold sores, genital lesions, infectious mononucleosis, and mononucleosis syndrome and deafness in neonates (KIECOLT ET AL , 1987). Herpesviruses differ from most other known viruses in that after exposure, they are present in individuals all the time, although often in latent states. The cellular immune response plays a key role both in protection from initial herpesvirus infection and in keeping latent herpesviruses from becoming active (GLASER & GOTLIEB – STEMATSKY, 1982). As discussed earlier, one explanation for the increase in
herpesvirus antibodies often associated with stressful conditions is that stress suppresses cellular immune function, which allows the latent virus to become active. Many studies attempted to answer the question whether stress is associated with a recurrence of clinical disease (lesions) after a period of herpesvirus latency?

In a series of studies of student nurses conducted in the 1970s, negative moods at the beginning of the school year were generally associated with greater numbers of subsequent episodes of verified oral herpes (FRIEDMANN ET AL., 1990). Similar evidence for stress induced recurrence is provided by both retrospective and prospective studies of genital herpes (GOLDMEIER & JOHNSON 1982, MCLAMON & KALOUPEK, 1988; COHEN & WILLIAMSON, 1991). A recent study of 125 college students provides an elegant test of the role of stress in herpes recurrence through an examination of several specific causal models (HOON ET AL., 1991). This work indicates that stress increases vulnerability to illness in general (nonherpes) and that it is this increase in nonspecific vulnerability that results in herpes recurrence.

Stressful events can alter a wide range of immunological activities. For example, even commonplace aversive events such as academic examinations are associated with transient immunological changes. By comparing immunological data collected from medical students during a 3-day examination block in contrast with a baseline or lower stress blood sample collected a month earlier, significant declines in natural killer (NK) cell activity were found. These cells are thought to have important antiviral and antitumor functions (GLASER
ET AL., 1987; GLASER, ET AL 1987; KIECOLT ET AL 1987) Gamma interferon, a lymphokine that serves as a major regulator of NK cells by stimulating their growth and differentiation, also enhances their ability to destroy target cells. In two separate studies, researchers found dramatic decreases in gamma interferon production by lymphocytes during examinations (GLASER ET AL., 1987).

DELONGIS ET AL., (1988) examined daily stress processes among 75 married couples across 20 assessment during a 6 month period. The somatic and psychological effects of common everyday hassles were investigated. It was found that there was a significant relationship between daily stress and occurrence of both concurrent and subsequent health problems such as flu, sore throat, headaches and backaches. Daily stress was also associated with decline in health and mood.

It has been repeatedly shown in the studies cited above that psychological stress suppresses immune functioning and these immunological changes are related to cardiovascular responses. In a path-breaking study BENSCHOP ET AL., (1995) investigated that effects of psychological stress on immunological changes (NK cell numbers which is the most responsive element of the immune system during stress experienced) and cardiovascular variables viz. Blood pressure (BP) and Heart rate(HR). Earlier studies have also reported stress to induce increase in HR and BP (NESTEL, 1969, MILLS AND DIMSDALE, 1991). NK cells have received much attention because they are the first line of defence and play a role in combating viral infections and metastate spread of tumour cells
(WHITESIDE & HERBERMAN, 1989). BENSCHOP AND ASSOCIATES (1995) thought that information regarding the regulation of NK cell circulation under stress, may, therefore be important in relation to the issue of stress and cardiovascular diseases. Results of their study revealed that stress induced significant increases in the number of NK cells. Systolic Blood Pressure, Diastolic Blood Pressure & Heart Rate. Changes in NK cell numbers were highly correlated to changes in cardiovascular variables. They concluded that results of the study warranted the general conclusion that changes in cardiovascular variables are accompanied by similar changes in the number of NK cells in circulation.

Another line of research to show the association of stress with illness has been to seek answer to the question that if stress is reliably associated with immune changes, can stress – reduction interventions prevent this immunosuppression? In one such study by GLASER ET AL., (1987) medical students were trained in relaxation techniques just prior to first year exams. The intervention did not influence stress induced changes in cellular immune function (KIECOLT – GLASER ET AL., 1987). In a second study of relaxation training in medical students, neither the training nor immune measurement coincided with a common stressful event (MCGRADY ET AL., 1992), but researchers did find increased lymphocyte proliferation in response to PHA and Con A in the relaxation group following the four week intervention. In a study of individuals’ responses to being diagnosed HIV positive (ANTONI ET AL., 1991), those who received stress management prior to notification responded with a better immune
status (greater T-helper and NK cell numbers and greater PHA – stimulated lymphocyte proliferation) than no treatment controls. Both of these studies had small sample sizes and short follow-ups, and neither pre-selected participants for particular vulnerabilities (e.g. depression). Intervention work is of great theoretical and practical importance and further studies using various proven approaches as well as improved methodologies should be the highest priority.

Psychoneuroimmunology interventions studies have used a number of diverse strategies, including hypnosis, relaxation, exercise, classical conditioning, self-disclosure, exposure to a phobic stressor to enhance perceived coping self-efficacy and cognitive – behavioural therapies. Subject or patient populations have included undergraduate and medical students, older adults, cancer patients, men infected with HIV, snake phobics, and normal community volunteers. Outside of the hypnotic work with immediate and delayed hypersensitivity responses, no two studies have used the same methodology or the same immunological measures. Despite this diversity, there are some important common themes suggested by these studies.

One of the significant studies in this area evaluated both the immediate and long term effects of a 6-week structured group intervention that consisted of health education, enhancement of problem solving skills regarding diagnosis, stress management techniques such as relaxation, and psychological support (FAWZY ET AL., 1990). The patients had Stage I or II malignant melanoma, and they had not received any treatment after surgical excision of the cancer. The intervention subjects were seen in groups of 7-10 patients who met for 90 min
every week for 6 weeks. The researchers found reduced psychological distress and significant immunological changes in the intervention group patients (n=35), compared with the control group (n=26). The former showed significant increases in the percentage of large granular lymphocytes (the NK cell phenotype), an increase in NK cytotoxic activity, and a small decrease in the percentage of helper / inducer T-cells. Most of these changes were not found at the 6 week follow-up but had emerged 6 months later. The majority of the intervention group subjects showed these assays, and the magnitude of these changes was frequently greater than 25%. In contrast, only a third of the control group subjects showed these changes.

A landmark study by SPIEGEL, ET AL., (1989) showed that a year of weekly supportive group therapy sessions with self hypnosis for pain extended survival time in women with metastatic breast cancer. The 50 women randomly assigned to the intervention group survived an average of a year and a half longer than the 36 controls, with the divergence in survival beginning 20 months after entry, or 8 months after the intervention had ended; the study included a 10 year follow-up. It is often assumed that these data reflect immunological alterations that influenced the course of the cancer. Although this is one possibility, there are certainly a variety of other interpretations. As SPIEGEL ET AL., (1989) noted, it is quite possible that subjects in the intervention condition were more compliant with treatment, had better health behaviors such as exercise and diet, or differed on a variety of other health related behaviors. Such behavioural differences could certainly contribute significantly to the observed
outcome. Work on relaxation training as a stress-reducing intervention suggests that relaxation training may be sufficient to temporarily alter the relation between usual background levels of stress and immune response, but not sufficient to influence stress-induced perturbations in immunity caused by external stressors.

Overall there is conclusive evidence that stress can alter immune functioning and thereby bring about functional and structural changes of the body (Bowers & Kelley, 1979). In the present study also, daily hassles, uplifts, stress symptoms and psychosomatic symptoms were found to play a vital role in health and CVD. However, stressful life events also though found insignificant statistically, revealed the disease groups to score higher than Healthy Controls taken individually (Table 1).

Many moderating variables have been identified between the stress illness relationship e.g. coping strategies, social support and personality. Therefore, Ways of Coping and their role in promoting health and CVD were also investigated in the present study.

Coping has been described by theorists as attempts to enhance the fit between person and environment (French et al., 1974) or as attempts to meet environmental demands to prevent negative consequences (Lazarus & Folkman, 1984; Mechanic, 1978; Pearlin & Schooler, 1978). Perhaps most useful is the definition offered by Lazarus and Folkman, (1984) who write that coping refers to "constantly changing cognitive and behavioural efforts to manage specific external and / or internal demands that are appraised as
taxing or exceeding the resources of the person." This definition implies that
coping may consist of a number of adjustments made either simultaneously or
sequentially; it is restricted to instances of perceived stress and it excludes
habitual or automatic adjustments to the requirements of daily life.

Coping theorists (LAZARUS AND FOLKMAN, 1984, MECHANIC, 1978),
usually identify two major ways of coping with stressors - problem focused and
emotion focused. Problem focused coping consists of direct actions on the
environment or on the self to remove or alter circumstances appraised as
threatening. Emotion focused coping consists of actions or thoughts to control
the undesirable feelings that result from stressful circumstances. PEARLIN AND
SCHOOLER (1978) recently have added a third broad category of coping
responses, what can be called perception – focused coping, consisting of
cognitive attempts to alter the meaning of situational difficulties so they are
perceived as less threatening.

Problem focused coping and instrumental support are both directed at
changing or managing the stressful situation. Emotion focused coping and
emotional support each attempt to ameliorate the negative feelings that typically
accompany stress exposure. Perception focused coping and informational support
are attempts to alter meaningful aspects of stressful situations.

These coping techniques can be described more generally as stress -
buffering or stress – management processes because they alter the primary
sources of perceived stress; situations and emotional reactions. Deliberate
manipulations of these stressors can make threatening situations nonthreatening.
or undesirable feelings more desirable, thus reducing perceived threats to the self.

In studying how individuals adapt to stressful life circumstances, coping resources are sometimes distinguished from coping responses. Coping resources are personality, attitudinal, and cognitive factors that provide the psychological context for coping responses (MOOS & BILLINGS, 1982). Coping responses occur as the result of appraisal processes that may be influenced by coping resources.

A number of investigators have been concerned with the classification of coping responses. MOOS & BILLINGS (1982) suggest three primary coping domains can be identified in the literature on coping: (a) appraisal focused coping, attempts to define the meaning of a situation; (b) problem focused coping, trying to modify or eliminate the source of the stress; and (c) emotion focused coping, managing emotions aroused by stressors and trying to maintain affective equilibrium. The distinction between problem focused and emotion focused coping has also been suggested by others (e.g. LAZARUS & FOLKMAN, 1984). Recently, coping responses have been classified as avoidant and non-avoidant (or attention) types (SULS & FLETCHER, 1985). STONE ET AL., (1979) argue that current schemes for classifying coping responses are oversimplifications of the way people actually cope with stress. They suggest grouping coping strategies in terms of several general themes: seeking social support, seeking information, religiosity, situation redefinition, behavioural and
cognitive avoidance, tension reduction, and problem solving. These themes are similar to those derived empirically by FOLKMAN ET AL., (1986).

Are certain coping responses consistently more efficacious than others? SULS & FLETCHER (1985) conducted a meta-analysis of 43 studies of coping efficacy in various domains. Overall, coping strategies involving avoidance were just as effective as those involving active attention, and both types of coping yielded better adjustment than no-coping control conditions. But, when the time course of the stressor was considered, avoidant coping responses seemed to be more effective in the short term, unless attentional coping strategies focused on sensory rather than emotional interpretational sets. In terms of longer term outcome, attention was associated with better adjustment.

Effective coping may play an important role in health promotion, disease prevention, and more rapid recovery from illness. How individuals cope with stress is an important mediator of the stress-illness relationship (COHEN & LAZARUS 1979). They reviewed several mechanisms by which successful coping can affect the etiology and course of a disease. Coping can influence hormone levels, cause direct tissue changes, or affect the immune system (KIELCOLT-GLASER ET AL., 1987). Interpersonal coping styles may influence the type of care received (e.g., demanding, task-oriented patients may have their complaints acted upon more quickly). In fact, cancer patients who cope by complaining and expressing high levels of negative affect survive longest (JENSEN, 1987). Conversely, positive coping, including strong feelings of a "will to live" and high morale, may also have positive physiological consequences.
Effective coping has been linked to quicker recovery from illness, and active participant coping strategies may be especially effective in this regard (COHEN AND LAZARUS, 1979).

Efficacious coping reduces stressor effects, but it also has costs (COHEN ET AL., 1986). Coping processes require effort, and prolonged coping depletes the individual’s supply of energy. Successful coping also can result in the overgeneralized use of an effective strategy in inappropriate situations. For example, the Type A behaviour pattern might be thought of as an overgeneralization to nearly all life domains of a coping strategy that was effective for coping with competing demands in one domain. Finally, coping may produce pathogenic effects (CONTRADA ET AL., 1984).

The above mentioned studies highlight that effective coping may help health promotion and unsuccessful coping may be detrimental to health. A study by FLORIAN ET AL., (1995) reported that use of problem solving strategies was helpful in maintaining mental health of Israeli recruits engaged in strenous four month combat training. Problem solving approached gave the recruits a sense of control. In the present study also, the only significant role was played by Planful Problem Solving techniques of coping with stress among the three groups. Healthy Controls scored the maximum on this dimension followed by the disease groups. People who remain healthy use this coping technique probably because they are convinced that situations are amenable to positive change, are optimistic and try and deal with problems / stressors actively (THOITS, 1986). All other ways of coping were found unrelated to health or disease status in the
present investigation. Perhaps problem solving style of coping is a style in which individuals identify or discover effective strategies for dealing with problems encountered in daily living.

A study by NEZU ET AL., (1989) also reported problem solving style of coping to be an important variable in the mediation of stress, health & illness generally. BILLINGS AND MOOS (1981) had also reported that illness demanded more active behavioural and problem focused coping in comparison to other stressful life events. They also reported that problem focused coping was associated with greater positive mental and physical health and report of fewer physical and depression symptoms – a finding replicated in the present study.
ANGER, EXPRESSION OF ANGER, HOSTILITY, IRRITABILITY AND CARDIOVASCULAR DISEASES

It was hypothesized that significant differences would emerge on Anger, Irritability, Hostility and Anger Expression styles. A glance at tables (3, 22-25, 34) reveals that contrary to expectations, no significant differences emerged on Irritability, Hostility Anger (generalized) and Anger-in among the three groups. On Irritability and Hostility, Coronary Heart Disease group scored the highest followed by Essential Hypertension and Healthy Controls. On anger (generalized), Essential Hypertension group scored the highest followed by almost identical mean scores obtained by Coronary Heart Disease group and Healthy Controls. On Anger-In, Healthy Controls scored the highest followed by Coronary Heart Disease and Essential Hypertension groups.

However as expected, significant differences emerged on Anger-out and Anger (expressed). (tables 24, 34). On Anger Out, Essential Hypertension group scored the highest followed by Coronary Heart Disease group and Healthy Controls. On Anger (expressed), Healthy Control scored the highest followed by Coronary Heart Disease and Essential Hypertension groups.

A glance at t-ratios (table-1) also revealed that significant differences emerged between group 1 group 4 only on Anger Out (group 4> group 1) and Anger Expressed (group 1>4). t-ratios for all other variables were insignificant between groups 1 & 4.

One may understand the results in light of the following: An enduring hypothesis in psychosomatic medicine suggests that anger may be related to
certain forms of cardiovascular illness. These observations came from clinical
(BAREFOOT et al. 1983; SHEKELLE et al 1983; DEMBROSKI et al.
1985) and epidemiological studies (HARBURG et al. 1973; DIMSDALE et
al 1986; SCHNEIDER et al. 1986), research on coronary prone behaviour
(WILLIAMS, 1987), and research on blood pressure responses to stressors
(DEMBROSKI et al 1985; SUAREZ and WILLIAMS, 1990; WEIDNER
correlate of this relationship. Although findings in this literature are far from
unanimous (CHESNEY and ROSENMAN, 1985; SALLIS et al, 1987;
SMITH and HOUSTON, 1987; HELMER et al 1991), data now suggests
that part of the inconsistency may be due to how anger has been conceptualized
across studies. Recent studies sugest that it is withheld or suppressed anger
and not anger per se that is associated with cardiovascular illness (DIMSDALE,
1989), but again opinon is not unanimous on this issue.

BOOTH KEWLEY and FRIEDMAN (1987) in a detailed review of
psychological predictors of heart disease had also reported that anger (Hostility)
and aggression relate reliably to Coronary Heart Disease and atherosclerosis.
In fact hostility seemed to have the strongest relation with the disease.
TAYLOR and COOPER (1989) had also opined that TABP was associated
with Cardiovascular Diseases because of its negative subcomponents of anger,
hostility and aggression. Type A individuals are high on hostile aggression.
They reported that data from the collaborative group study also lent support to
the notion that Hostility and Irritability component of Type A construct is the
most coronary prone. Hostile behaviour precipitates increased Sympathetic
Nervous System activity which in turn would set in motion increased
catecholamine activity, lipid mobilization and ultimately Coronary Heart Disease (WEIDNER et al., 1987).

Exaggerated Cardiovascular responses during behavioral challenge have been proposed as a mechanism linking hostility and style of anger expression with risk of hypertension and coronary heart disease (DIAMOND, 1982; KRANTZ and MANUCK, 1984). Studies on the associations between various anger, hostility, or anger expression measures and the magnitude of the increase in blood pressure and heart rate during laboratory challenges, relative to resting values, do show, on balance, significant relations (HOUSTON, 1988).

According to TAYLOR and COOPER (1989) anger is also a multidimensional concept. Two categories anger-in and anger-out have been proposed but their roles as potential coronary risk factors are by no means straight forward. In a comprehensive study of TABP and Cardiovascular Diseases, it was found that controlled anger and denial consciously controlled anger-in, and anger-out combined with time urgency and chronic activation were the strongest risk factors for Cardiovascular diseases (NIEMCZYK et al. 1987). However, the direction of the association between anger expression and reactivity varies across studies. Some studies indicate that the outward expression of anger is associated with greater blood pressure and heart rate reactivity (DEMBROSKI, MACDOUGALL, SHIELDS, PETITTO & LUSHENE, 1985, DIAMOND et al; 1984), whereas others show that holding anger in is associated with greater reactivity (FUNKENSTEIN, KING & DROLETTE, 1954 & HOLROYD and GORKIN, 1983).
In another study, BURNS et al (1992) investigated the relationships among hostility, anxiety, dimensions of anger-expression (i.e. anger-out and anger-in), and cardiac reactivity to a mental arithmetic task. They employed this type of task because mental arithmetic stress tasks have typically produced significant and stable individual differences in cardiovascular responses. The findings that the interactions of anger-in with anger-out and with hostility were related significantly to indices of cardiac reactivity do not allow straightforward interpretations. The analyses of simple effects for the anger-in to anger-out interaction suggested that, among the four groups, the high AI/high AO group tended to show the most PEP and IBI reactivity. In terms of the conflicting claims regarding the importance of suppressed versus expresses anger hostility for the prediction of CVR, it is not clear how best to characterize an individual who both suppresses and expressed anger. One could speculate that such an individual who endorsed many scale items reflecting anger arousal may experience much anger. Interpreted in this may, the present results are consistent with those of KATZ and TOBEN (1986) who found scores on the Novaco Anger scale, which assesses anger proneness, to be related significantly to cardiovascular reactivity.

ENGEBRETSON et al (1989) reported that to the extent that exaggerated cardiovascular responses to behavioral stress are a risk factor for hypertension, coronary heart disease, or both, results of their study had implications for understanding the associations between anger expression and cardiovascular diseases. They said that like the direction of the association between anger expression and cardiovascular reactivity, the direction of effects in the anger expression-cardiovascular disease literature has not been consistent. On the
one hand, overt expressions of anger have been positively associated with coronary heart disease (HECKER, et al 1988; WILLIAMS 1987) and to a lesser extent hypertension (HARBURG et al, 1973). On the other hand, studies have also shown that holding anger in is associated with coronary heart disease (HAYNES et al 1980; MAC DOUGALL et al, 1985) and hypertension (HARBURG et al; 1973; SCHALLING 1985). The findings of their study suggested that the direction of effects between anger expression and cardiovascular diseases varies according to whether the study population can consistently express their anger and are reinforced for doing so in a preferred or nonpreferred mode.

In conclusion, ENGEBRETSON et al (1989) pointed out that their findings implied that individuals who by virtue of their environment or behaviour are often in anger-provoking situations should have heightened blood pressure, even after they are no longer directly confronted by the situation and, accordingly, should be at elevated risk for cardiovascular diseases. Perhaps one of the reasons that individuals who experience societal discrimination or who are socially isolated may be at elevated risk for cardiovascular diseases is that they are consistently exposed to anger-provoking situations.

According to SIEGEL (1986), anger is a frequently experienced emotion. Anger is also a strong emotion. It is an emotion with interpersonal consequences in that target of anger are human beings in 90% of incidents (SIEGEL, 1986). It is an emotion that is aroused most frequently by frustrations and violation of expectations and wishes and it is an emotion for which the subjective after effects are overwhelmingly negative (AVERILL, 1982). The costs of anger are only beginning to be known. It plays a serious role in physical health
problems such as Cardiovascular disease. SIEGEL'S (1986) hypothesis in addition to many studies reviewed here explain the findings of the present investigation—that of a negative role of Anger Out in CVD groups.

JOHNSTON (1993) had also reported that expressive anger was related to coronary artery occlusion. KOPEZYNISKI et al (1991) reported that higher risk of hypertension in males was connected with expressed anger but suppressed anger was not predictive of hypertension—a finding replicated in the present study.

SPIELBERGER and LONDON (1990) defined concept of experience and expression of anger and reported how this emotion threatens health. Among their latest findings—they reported that

- Unjust treatment, rather than a generally hot temper, sets off those who have hypertension;
- The same person may be prone to both let anger and hold it in, rather than do only one or the other; and
- Suppressing anger, may result in elevated blood pressure even in healthy high schoolers.

Many different opinions are their regarding whether to seethe in anger or vent your anger. Anger can also cause trouble, most people believe, if it is suppressed. That's the origin of "Let it all hang out". Psychoanalysts call this concept catharsis, and scientific efforts to verify its benefits began more than 50 years ago. In a 1954 study psychiatrist Daniel Funkenstein provoked anger in Harvard undergraduates and then interviewed them to determine whether they were inclined to keep anger to themselves or reveal it to others.
Funkenstein found that 80% of the students reported anger as their major reaction to the experimental provocation (the other 20% felt anxiety). Of those who had angry feelings, about half aimed their anger at the experimenter; the other half said they held in their irritation or annoyance or blamed themselves. Interestingly, the pulse rate of those who kept their anger in rose three times more than in the group that vented their anger.

In the 1970s psychologist Ernest Harburg and his associates at the University of Michigan investigated the relationship between blood pressure and emotional reactions to anger-provoking situations, such as being verbally abused by a police officer. People who said they’d either not get angry or would "get annoyed or mad but keep it in" were classified as "anger in". Those who said they’d "get mad and show it" were defined as "anger out". Higher blood pressure was associated with anger in. the researchers found and men who "suppressed hostility" had a greater incidence of hypertension than those who expressed their anger.

Funkenstein, Harburg and other investigators assumed that everyone consistently falls at either end of a single continuum. At one end are those who suppress their anger completely at the other those who let it all out. SPIELBERGER & LONDON (1990) found otherwise. Its true that some people vent anger when provoked, and others never reveal it. But their research showed that the same person may get openly mad while continuing to harbor angry feelings. Or the same person may react either way, letting all the anger out in one situation. "(When angry at my mother, I... lose my temper and say nasty things") but keeping a tight lid on it in another ("when angry at my boss, I... boil inside but don't show it").
DOES BURIED ANGER PRECEDES HYPERTENSION

Even in those likely to do both, suppression has a negative side. In a study, psychologist Ernest Johnson measured how 1,114 high-school students directed their anger. Those with high anger-in scores reported frequent suppression. Students who had high anger-out scores said angry feelings often made them act aggressively. Johnson also took resting blood pressures for each student, none of whom had been diagnosed with hypertension. He found that those who tended to keep anger to themselves (boys and girls) had higher blood pressure, especially systolic blood pressure (that's the top number, between 115 and 120 is considered normal for this age group). Johnson then divided the students into five subgroups, based on their anger in scores. Both boys and girls who earned the highest anger in scores also had the highest blood pressure. On the other hand, those who had high anger-out scores registered slightly lower blood pressure readings. But students who had high scores in both anger in and anger out had elevated blood pressure. That finding, could mean that expressing angry feelings doesn't help if one continues to boil inside.

These results provide strong evidence of a connection between suppressed anger and elevated blood pressure prior to a diagnosis of hypertension. The findings suggest that reacting inappropriately with intense anger may eventually contribute to the development of hypertension.
All of these findings suggest that poorly handled anger feelings—especially when suppressed—can be destructive. But the emotion of anger is basic to human nature and inevitable. Sources of frustration are part of everyday life, but one’s response to anger provoking situations should be in proportion to the circumstances. Expressing anger is generally better for one’s blood pressure, but it’s important to consider the time and place before venting angry feelings (SPIELBERGER & LONDON, 1990).

In another review, VOLKER et al. (1992) reported that research on cardiovascular reactivity under stressful stimulation has been directed by two major questions: firstly, is there any type of situation which is specifically linked to a pattern of cardiovascular responses. Secondly, are specific emotions or personality traits associated with heightened cardiovascular activity (STEPTOE, 1984)? Both research approaches the issue of type of situation as well as specificity of emotion have been regarded as relevant for the etiology of essential hypertension (DIAMOND, 1982; LIGHT, 1987).

The other tradition, based on the issue of emotion, claims that anger, especially the suppression of anger, is a determinant of elevated blood pressure (DIAMOND, 1982).

VOLKER HODAPP et al., (1992) conducted a study to seek answers to this question. The purpose of their study was to further examine the influence of affective responses and emotion related traits on cardiovascular activation in an active/passive coping situation.
VOLKER HODAPP et al. (1992), reported that interesting results emerged when anger expression variables were analyzed. Under control, low Anger out subjects showed greater HR changes than high Anger out subjects did. High Anger Control subjects showed more sustained reactions in SBP and PTT, regardless of the condition they belonged to. For the Anger in subscale the results were seen to be the appropriate direction, although no significant effects could be demonstrated. Taken together, these results indicate greater cardiovascular reactivity for subjects not expressing but controlling their anger. This gives support to findings of SPIELBERGER and LONDON (1990).

Although Anger- in is said to lead to EHT, it was not replicated in the present study. No significant differences emerged on Anger- In, Hostility and Irritability, and Generalized anger proneness in the present study. Results are contrary to findings of MILLS and DIMSDALE (1993) who reported anger suppression to be positively related to greater systolic blood pressure. Mixed findings of present investigation are in line with inconclusive studies reported in the review of literature on anger expression style and cardiovascular responses.

JOHNSON and BROMAN (1981) found in a national sample of black adults that anger expression was associated in a complex fashion with increased health problems. Blacks who were unemployed, single and possessed less than a high school education were particularly at risk if anger was expressed outwardly and at higher levels during
periods of emotional distress. In another study, Harburg et al., (1979) also found that blacks who reported a tendency to express anger outwardly to an angry boss had higher diastolic blood pressure than individuals who reported expressing anger inwardly or using a more reflective coping style. The authors report that this anger-out effect was true primarily for younger adults aged 25-39 years and not for those aged 40-60 years.

Mills et al., (1989) also reported that Anger-out subscale of Spielberger's anger expression scale has been found to correlate more highly with measures of antagonism and expressive hostility than anger-in dimension. Siegman et al., (1990) also reported that anger-out dimension was the toxic factor in CVD and not mere experience of anger. Similar findings have been reported by Koczyzuski et al., (1991), Suarez and Williams (1990) and Engerbretson et al., (1989).

These results suggest that the previous association of suppressed hostility/anger with increased CVD may be oversimplified. More recent evidence suggests that both habitual anger-in and anger-out coping styles (i.e. reflexive rather than reflective anger) can result in increased CVD depending on the race, age and gender of the subject, and on the source of the anger provocation.
NEGATIVE AFFECT AND CARDIOVASCULAR DISEASES

It was hypothesized that significant differences among the three groups i.e. Healthy Controls, Coronary Heart Disease and Essential Hypertension Patients are expected on Hopelessness, Loneliness and Depression.

Contrary to expectations, no significant differences emerged (Tables 9.20.21) on Hopelessness and Loneliness. On Hopelessness, Essential Hypertension Group scored the highest followed by Coronary Heart Disease group and Healthy Controls.

On Loneliness also Essential Hypertension Group scored the highest followed by Coronary Heart Disease Group and Healthy Controls obtaining almost identical scores.

As expected (Table 20), significant differences emerged on Depression. On this, Essential Hypertension Group scored the highest followed by Coronary Heart Disease Group and Healthy Controls.

Table 1 of t-ratios also revealed insignificant differences between groups 1 & 4 on Hopelessness and Loneliness. t-ratio was significant on Depression with group 4 scoring higher than group 1.

It was expected that Healthy Controls would score lower than disease groups on Negative-affect measures like loneliness, depression and Hopelessness. Blood pressure is said to rise with fear or anger or
sadness; the belief that these pulse stirring passions could damage the heart or vasculature remains as compelling today as it was in ancient times. Also respondents high on depression are known to have higher perceived stress, hopelessness and low optimism. (Scheier and Carver, 1985).

Negative affectivity or Neuroticism refers to a broad stable dimensions of personality consisting of chronic negative emotions like sadness, anxiety, guilt and anger as well as associated cognitive behavioural characteristics such as low Self-esteem, preoccupation and insecurity. That is why negative affect may be related with actual illness (Costa and McCrae, 1985).

Research on the role of negative affect in immune response has also focussed on clinical depression. Investigation of the immunologic correlates of clinical depression have received considerable attention. (Cohen and Herbert, 1996). A recent meta analysis of 40 studies showed that when compared to healthy controls, depressed individuals had lowered proliferative response to PHA, ConA and lowered NK activity.

As earlier, relations between depression and immunity may sometimes be attributable to behavioural factors. Depressed persons sleep less, exercise less, have poorer diets, smoke more and use alcohol and other drugs more often than do nondepressed persons. (Gregory & Smeltzer, 1983; Grunberg and Baum, 1985).

That is why perhaps depression has also been found to be associated with Cancer (Cohen and Herbert, 1996). Also Vitaliano et al (1987) found in
a sample of medical students that Beck Depression Inventory scores were correlated with lower level of problem focused coping and support seeking and higher levels of avoidance and wishful thinking and found stressors more emotionally upsetting. This puts respondents high on depression, more prone to emotional and turbulent effects of stress, maladaptive coping and development of Cardiovascular Diseases. In the present study also depression emerged as a significant determiner of Cardiovascular Disease. Also disease status was found to be negatively related to Planful Problem Solving as a means of coping.

People high on depression and negative affect may also lack Health Protective Life Style which may again be related to disease end points like Coronary Heart Disease and Cancer. People high on depression are also high on distress and negative emotions, have negative automatic thoughts, feelings of worthlessness (Beck, 1967) which again makes them more vulnerable to develop stress related disorders like Coronary Heart Disease and Essential Hypertension. Depressed individuals experience hostility and anger more intensely which again may be a reason for their being more susceptible to Cardiovascular Disease (Kay and Godwin, 1987). Depressed, hopeless individuals lack a sense of humour too. Sense of humour serves as a moderator buffer of the deleterious effects of negative stressful life events. Personality theorists such as Freud, Allport and May have characterized humour as a healthful and adaptive coping strategy (Nezu and Nezu, 1988).

Depressive respondents are also known to have poor or no confiding relationships and report more stressful life events. Absence of confiding relationships (lack of close relationships) may act as a vulnerability factor for
developing physical ailments. Hypertension and other Cardiovascular Diseases are found to be commonly associated with depressive symptoms. Persons even with low levels of depressive symptoms have a reduced ability to sustain concentration and effort, decreased enjoyment of pleasurable activities and increased saliency of adverse events. (Simonsick et al, 1995). Depression has also been found to be concurrent with increased risk of Cardiovascular Disease events especially Myocardial Infarction (Booth Kewley and Friedman, 1987) and Hypertension (Brody, 1980) Kellner (1986) also reported Cardiovascular Diseases to be associated with depression- a finding confirmed in the present study also.
SOCIAL SUPPORT AND CARDIO VASCULAR DISEASES

It was hypothesized that there are expected to be significant differences among the 3 groups i.e. Healthy Controls, Coronary Heart disease and Essential Hypertension Patients on the three measures of Social Support viz Social Support (Numerical), Social Support (Satisfaction) and Social Support (Total).

As expected significant differences emerged on (Table 1) Social Support Satisfaction and Social Support total. On Satisfaction dimension of Social Support, Healthy Controls scored the highest followed by Essential Hypertension and Coronary Heart Disease groups. On total Social Support Dimension, Healthy controls scored the highest followed by Coronary Heart Disease (Table 1) and Essential Hypertension Groups. However, no significant differences emerged on Social Support numerical. Here also Healthy Controls scored the highest followed by Coronary Heart Disease and Essential Hypertension Groups.

A glance at Table 1 also revealed insignificant t-ratio between group 1 and 4 on numerical dimension of Social Support. t-ratios were significant on satisfaction dimension of Social Support (group 1 > 4) and total Social Support (group 1>4).

The notion that social support protects people from the harmful effects of stress and that the provision of Support can be an effective means of promoting human welfare are achieving the status of truism. Across a diversity of problems and populations, programs of preventive and therapeutic
interventions seem incomplete without some plan for improving and strengthening social support.

Social support has been defined as information that leads individuals to believe that they are cared for and loved, are esteemed and valued (Cobb, 1976). Several hypotheses have been advanced to explain the buffering effects of social support. Perception of availability of support and feelings of being supported might be based on past supportive transactions. (Coyne and Delongis, 1986) Past supportive transactions promote psychological well being and affect through their effects on perception of support as much as their resolution of problems (Cohen and Hoberman, 1983).

It has also been accepted that 'cognitization' of social support may be described best as personal experience than a set of objective circumstances or even a set of interactional processes. (Coyne and Delongis, 1986). That is why perhaps mere numerical aspect of Social Support is not as effective in buffering stress effects as perceived satisfaction with Social Support.

Perhaps that is why in the present study also overwhelming support was received for buffering role of satisfaction with social support and perceived total Social Support playing a role in Health and Cardiovascular diseases but not for numerical Social Support. Some researchers have suggested that beneficial effects of Social Support may be due to their influence on coping strategies in dealing with stress. Thoits (1986) opined that Social Support reduces or buffers the adverse psychological impact of exposure to Stressful
Life Events and ongoing life strains. Relationships with others, especially with intimates significantly lowers risk of disease in response to stress exposure.

With respect to Social Support, there is fairly consistent evidence that its perceived availability moderates the effects of stress on subsequent physical (Wallston, Alagna, De Villis, and De villis, 1984) and psychological distress (Hessier and Mc Leod, 1985). Although a number of dimensions of Social Support have been examined, the perception of having available emotional support from close others appears to account for much of the effect of Social Support on Stress (Coyne and Delongis, 1986). One of the ways that Social Support may protect people from the potentially damaging effects of exposure to stress is through its effects on mediating appraisal and coping processes (Lazarus and De longis, 1983, Lazarus and Folkman, 1984). For people with support, fewer situations should tax or exceed their resources and, consequently, less stress should be experienced. Even when people do experience stress, having 'Close Others' to rely upon should make it less likely that they will cope ineffectively and thus have a negative psychological or health outcome.

How does Social Support help? Social Support may help in managing or changing the stressful situation; ameliorate negative feelings typically accompanying stressful experience and give informational support, (Sarafino, 1994). Persons from whom Social Support is sought, a helper may help by intervening directly by giving
tangible support (like loan, money, job), or by helping to re-interpret situations so that they seem less threatening, by telling distracting jokes and diverting attention away from distress producing situations. Significant Others can also suggest techniques of Stress Management thereby facilitating and strengthening a person’s own coping attempts. All these ways restore a person’s damaged self-esteem, mastery and identity (Thoits. 1986).

Social Support also helps by promoting health protective behaviour (proper diet, exercise and safety practices). Rodin & Salovey. (1989), Shisana and Celentano (1987) also found that when Social Support was low, the relation between stress, illness and physically poor health outcomes was rather high. Browner (1988) reported that employees reporting work based Supportive Social networks reported significantly better health than those without such networks. Substantial evidence implicates interpersonal relationships in the maintenance of health (Cohen 1988 and House et al 1988). A series of prospective studies show that belonging to a strong Social network is associated with longevity (House et al 1988) and perceptions of available support protect persons from the pathogenic effects of stressful events.

Perceived availability of Social Support has also been associated with immune function. A study of 256 elderly adults (Thomas et al, 1985) found the blood samples from persons reporting they had confiding relationships proliferated more in response to PHA than samples from those without confiding relationships.
Hollis (1992) investigated the role of social networks as predictors of Ischemic Heart Disease (IHD), Cancer, Stroke and Hypertension. Social Support networks were powerful predictors of 15 years of mortality in case of Ischemic Heart Disease.

Gomer et al (1993) reported that smoking and lack of Social Support were the two leading risk factors for Coronary Heart Disease in middle aged Swedish men. Tangible Social Support from spouse and satisfaction with and more emotional support from the spouse were associated with long and short term recovery outcomes in men with Coronary Heart Disease (Yates, 1995).

All these studies reviewed clearly explain the results obtained in the present study also as to how and why Social Support is related to health outcomes and Cardiovascular diseases.
It was hypothesized that there are expected to be significant differences among the three groups i.e. Health Controls, Coronary Heart Disease and Essential Hypertension Patients on the two measures of Psychological Well Being.

As expected significant differences emerged on both the measures of Psychological Well Being (Table 35.36). On PGI Well Being Scale, Healthy Controls scored the highest followed by Coronary Heart Disease and Essential Hypertension Groups. On the other measure of Well Being also similar trend was observed. Healthy Controls scored the highest followed by Coronary Heart Disease and Essential Hypertension Groups.

t-ratios revealed (Table1) significant differences on both measures of Psychological Well Being, with group 1 scoring higher than group 4.

For more than 20 years, the study of psychological well-being has been guided by two primary conceptions of positive functioning. One formulation, traceable to Bradburn's (1969) seminal work, distinguished between positive and negative affect and defined happiness as the balance between the two.

The second primary conception which has gained prominence among sociologists, emphasizes life satisfaction as the key indicator of Well-Being. Viewed as a cognitive component, life satisfaction was seen to complement


Psychological well being has also been shown to have significant positive correlation with Happiness, Life satisfaction, increased positive affect, optimism and is negatively related with depression and negative affect. Psychological health, Psychological Well Being and Happiness reduces risk for hypertension and other Cardiovascular diseases (Simonsick et al 1995).
Negative affect and depression are associated negatively with Psychological Well Being and have been found related to poorer health and physical decline as well as poorer recovery from Myocardial Infarction (Booth Kewley and Friedman, 1987). Psychological Well Being has been found to show a strong relationship with dispositional optimism (Ryff, 1989). Dispositional optimism-pessimism in turn has been found to be an important predictor of Planful Problem Solving coping, mental health, depression, paranoid hostility, Physical Health, Cardiovascular Disease disorders and recovery from Coronary Artery Bypass Surgery (Scheier et al 1989). Dispositional optimism and positive affect which are very strongly associated with Psychological Well Being may explain some of the links between Psychological Well Being and good mental and physical health. The other distinct components of Psychological Well Being viz. Self Acceptance, positive relations with others, environmental mastery and feeling of leading a purposeful life may be some of the factors explaining role of Psychological Well Being in health and Cardiovascular Disease as has been found in the present results.