CHAPTER V
DISCUSSION

5.1. Comparison of the groups

The findings of this study show that there are significant differences between the three groups in the number and nature of stressful life events experienced, in the amount of perceived stress, in degree of vulnerability to experience stress, in coping resources, and in the kinds of coping strategies employed, and also in the degree of depression experienced.

Life events: A number of studies have suggested a positive relationship between stressful life events and subsequent illness (Pestonjee, 1992, Schnall et al, 1998, Srivastava and Sinha, 1989). A similar, though less, consistent relationship between the onset of psychiatric illness and life events has been reported (Kessler, 1997). Earlier studies have pointed out that depressed people are more likely than non-depressed individuals to have experienced major stressful life events preceding the onset of depression (Kendler, 1999). In general, research suggests that stressful life events are a contributory factor in depressive symptoms (Kessler, 1997).

The findings of the present study confirm the existence of a relationship between stressful life events and psychiatric illness, since depressive and CHD patients have reported significantly higher stressful events than healthy group (Tables 12). Both depressed and coronary heart patients experienced greater level of stressful life events compared to healthy persons. Depressed group have a higher score on stressful life events than CHD and the healthy group has the lowest score.

Regarding the nature of stressful life events, Kendler et al. (1999) have grouped different events into two categories viz., personal, or “events that occurred
primarily to the informant”, and network, or “events occurring primarily to, or in interaction with, an individual in the respondent’s social network.”

The findings of the present study (Table 13) show that the life events which depressed persons have experienced more than other groups are of network type i.e., (a) family or marital life events such as, extramarital relations of spouse, family conflict, and (b) events which are associated indirectly with family life like excessive alcohol or drug use by family member, marriage of daughter/dement sister, self or family member unemployed, broken engagement /love affair, beginning or end of schooling, major family illness/injury. The personal events that depressed people have faced more are major personal illness/injury, sexual problems, change of eating habits, change in sleeping habits, and prophecy of astrologer or palmist. In addition depressed group in this study have also experienced more financially related stressful events, which are also of personal nature such as property / crops damaged.

CHD group have experienced more of personal type of life events such as financial loss or problem, large loan, change in eating and sleeping problems and less of network type of life events as compared to depression patients.

Patients groups significantly differ from healthy group in the following life events which include both network and personal type. They are: marital separation/divorce, extramarital relation of spouse, excessive alcohol or drug use by family member, family conflict, financial loss or problems marriage of daughter/dement sister, large loan, self or family member unemployed, failure in examination, property/crops damage, broken engagement /love affair, major personal illness/injury, sexual problems, change in sleeping habits, beginning or end of schooling, change of social activities, change of eating habits and prophecy of astrologer or palmist etc.(table 13).
It must be emphasized that the highest significant difference between patient
groups and healthy group is in sexual problems. Healthy subjects have one person,
whereas among the depressed and CHD group 26 and 9 persons have experienced
sexual problems. This may be more a consequence of the illness state rather than a
causal or contributory life event in precipitating the disease. The same reasoning can
be applied even regarding the changes in sleep, social and eating habits (Kikhavani &
Kumar, 2005).

Life events have been studied in detail for their contribution to the onset of
depression or other illness. The study of Brown et al. (1994), sometimes considered a
classic, is one of the early investigations of causal links between life events and
depression, and factors influencing vulnerability to life events. The researchers found
that life event rates did not explain different illness rates as such. They created a
vulnerability model that included the absence of a confiding relationship with the
spouse, unemployment and loss events. According to Brown et al. (1994), the
presence of a vulnerability factor aggravated the association between life events and
illness. Though a log-linear analysis by Tennant and Bebbington (1981) of the same
data failed to support the conclusions reached by Brown and Harris (1994), the model
suggests that to be comprehensive, the concept of stress must include the factors
which moderate or mediate the life events and results in experience of stress.
Therefore, an understanding of the mechanisms through which experiences of stress
are given meaning is just as important as an understanding of the stressors themselves.

**Perceived stress:** In this study in addition to the life events scale, a perceived
stress scale was also used. The findings indicated that the score of perceived stress is
higher among depressed and coronary heart patients compared to healthy persons
(Table12 and Figure 4). It means that not only patient groups have experienced
greater number of life events generally considered as stressful, but they also perceive them as such. This brings us to the question what differentiates healthy subjects from the patients, in experience of stress.

A moderator that influences experience of a stressor is immediate personal reaction to it. The personal reaction can be separated into ‘appraisal of the stressor’ and ‘method of coping’ with it. The method of coping is partially dependent on the manner in which a stressor is appraised. During stress appraisal (perceived stress) individuals make an assessment of the meaning the situation actually has in their lives. When faced with this environmental challenge the individual undergoes the activation of a cognitive network of associations and perceived implications which locate the stressor in a more easily digestible framework. Transactional definition of stress (Lazarus and Folkman, 1984) focuses on the appraisal of the stress by the individual. In light of this understanding, it would be the case that stress is not experienced if a stressor is never appraised as being stressful.

Further, with respect to the measurement of stress, studies which used a life events scale to measure stress are considered inferior to the ones which used perceived stress scale, because the former only measures the objective occurrence of events and not the subjective interpretation of whether the individual perceives these events to be stressful (Cohen et al., 1983).

Variables that influence the experience of stress include vulnerability to experience stress, personality factors and coping strategies. It is, for the most part, these factors that determine why, faced with an identical stimulus, two people might have different responses or subjective experience of stress.

**Vulnerability:** Individual differences in vulnerability to develop a disease in the face of a stressful situation are already discussed in the context of diathesis-stress
model in Chapter 2. However, researchers have indicated that even in experiencing stress there are individual differences, leading to vulnerability (Miller and Smith, 1999). The findings of the present study indicated that score of vulnerability to experience stress is higher among depressed and coronary heart patients than in healthy persons (Table 12 and Figure 5). The two patient groups did not differ on vulnerability and CHD patients as a group seem to have high vulnerability, since the SD is very low, as compared to the other two groups. The vulnerability to experience stress shows how individuals take care of themselves and what personal, financial, social, and spiritual resources they can or cannot draw upon for help in coping with stress. The individual with lower vulnerability score are more resistant to the sources of stress. A low score indicates may be” stress tough” and they have more resources and such persons are able to make themselves strong and absorb the stress without developing symptoms (Miller and Smith, 1993).

**Coping strategy:** The life events, vulnerability to experience them as stressful and perceived stress constitute one aspect of the stress-illness relationship. The other aspect is what one does and how one deals with the situation. This is technically known as coping. A person engages in coping in order to manage the impact that a stressor will have on his or her life whether one is responding to the immediate challenge of a stressful event or is attempting to successfully deal with a chronic stressor.

The difference between depressives, CHD and healthy persons in coping strategies was examined (table 3 and 4, figure 2). Depressed and CHD patients reported greater use of dysfunctional coping strategies compared with healthy subjects. Dysfunctional coping strategies include focus on and venting of emotions, denial, behavioral disengagement, mental disengagement, and alcohol/drug use
(Carver, et al, 1989) (see Chapter 3, section on tools for a description of different strategies). The multiple comparisons test (Scheffe) also show that in problem focused coping, depressives and CHD patients have lower score and did not differ significantly from each other as compared to healthy group. A similar trend is evident in emotion-focused coping.

The function, or the intended purpose of a specific strategy, is distinguished from the coping outcome which is the actual effect of the coping. While Lazarus and Folkman (1984) conceived of two broad categories or focuses for dealing with stress viz., problem focused and emotion focused, Carver et al., (1989) made a finer distinction between emotion focused and dysfunctional coping. According to Lazarus and Folkman (1984) in emotion-focused coping the strategies are intended to lessen the emotional distress caused by a stressor. This can be achieved in three ways: through a cognitive reappraisal of the stressor (e.g. minimization, positive comparisons, and finding positive value or lessons in negative events), or by directly focusing on the feelings of distress through methods of feeling management or distraction (e.g. drinking alcohol or exercising to make oneself feel better or forget about the problem), or through selective attention to specific aspects of a stressful event.

Carver et al (1989) consider those strategies, which are aimed at managing feelings of distress or distraction as dysfunctional coping, there by implying that they are ineffective as strategies and the coping outcome is negative. On the other hand, they regard those which lessen emotional distress through cognitive reappraisal of the stressor as emotion-focused coping. The reconceptualization of coping strategies by Carver et al (1989) is important, not only because it offers a more specific tool in understanding how a person copes, but because it underscores the need to
continuously adapt existing measures and concepts in order to remain relevant to the populations being served.

The finer distinction made between emotion-focused and dysfunctional strategies, is useful because the findings of this study reveals that the strategies used by patient groups are dysfunctional rather than emotion-focused. Hence, the outcome is negative. Several studies have concluded that depressives have a negative – orientation and poor focus on problem – solving skills compared with healthy subjects population (Lakey, 1988, Nezu & Perri, 1989, Hagga et al., 1995). Depressives are also found to use more emotional – focused coping such as denial and avoidance (Lazarus and Folkmans’ classification), than problem – focused coping as compared to normal persons (Kolence, et al., 1990, Kuyken & Brewin, 1994, Tremblay & King, 1994, Turner et al., 1992, Satiga et al., 1998). In the present study also we find that depressives and CHD groups report less of problem-focused coping and emotion focused coping, which are positive strategies from Carver and his associates view point.

The functions of problem-focused strategies are to use problem-solving techniques to handle the stressful situation. A person engaged in problem-focused coping works to define the problem, generate solution alternatives, weigh costs and benefits of alternatives, choose an alternative, and act on that choice. Lazarus distinguishes this approach from traditional conceptualizations of general problem-solving techniques. While problem solving involves objective analysis and action to the external world, problem-focused coping includes both outward and subjective, inward-focused strategies.

A further conceptualization of the coping process is that multiple coping strategies can be employed for the same stressor (Tennen, Affleck, Armeli, 2000).
The impact of stressful life events might be either buffered or exacerbated by one’s habitual coping strategies. Individual who possesses a effective repertoire of coping responses would be able to endure severe stress with minimal consequences for their mental health, whereas individuals who rely on inadequate coping strategies would develop psychological symptom in consequence of even less stressful events.

**Coping resources:** Many things affect how a person will choose a specific strategy, such as an appraisal of the stressor (perceived stress), resources available to him or her to handle it (personality and environmental factors), and the desired outcome of the coping. While vulnerability to experience stress can be considered as a liability factor in one’s personality there are strengths in a person that can moderate the influence of stressful events, as already discussed in hardy personality model in Chapter 2 and bring a positive coping outcome. Researchers have considered such personality factors that buffer against stress as coping resources (Costa & McCrae’s 1992). In the present study it was assumed that five-factor model of personality provides a useful context for assessing individual differences in the use of coping strategy. These have been considered as determinants of situational coping responses. (Costa & McCrae. 1985; Goldberg, 1990). In this model of determinants of coping, personality variables are conceptualized as coping resources that people may draw on when faced with stressful situations.

The findings of this study showed that depression and CHD patients are different from healthy group and have significantly higher scores in neuroticism (N) and low score in extraversion (E), openness (O), agreeableness (A) and conscientiousness (C) (table1, 2 and figure 1). The findings lead to the acceptance of the hypothesis that personality factors (coping resources) differ among depression and CHD groups compared to healthy group. This finding agrees with previous studies.
Many psychologists would argue that the concept of specific personality traits determining our behavior is outdated in our field (Lazarus and Folkman, 1984; Hobfoll, 1998). These researchers argue instead for understanding a person’s behavior in terms of the multiple dynamic contexts which give behaviors meaning. However, to the extent that one can identify specific trends of behavior in a group of people consistent across multiple situations, it is useful to employ the construct of personality. This is useful in the present study because, when referenced against some stress models, we can develop an understanding of patterns of stress and coping in relation to personality.

Although clinicians distinguish among many different kinds of emotional distress from social bias to agitated depression to borderline hostility, studies have shown that individuals prone to any one of these emotional states are also likely to experience negative affects such as fear, sadness, embarrassment, anger, guilt, and disgust which are the core of the N domain. However, N includes more than susceptibility to psychological distress. Perhaps because disruptive emotions interfere with adaptation, individuals high in N are also prone to have irrational ideas and are less able to control their impulses leading poor coping than others with stress. On the other hand, individuals who score low on N are emotionally stable. They are usually calm, even-tempered, and relaxed, and they are able to face stressful situations without becoming upset and rattled (Friedman, 1990, Denollet, 1998, Costa & McCrae, 1996).

Another important dimension is E. Extravert people, are more sociable and performing large groups and gathering. Extraverts are also assertive, active and talkative. They like excitement and stimulation and tend to be cheerful in disposition. They are upbeat, energetic and optimistic (Costa, McCrae & Holland, 1984).
Robert et al., (1986) have reported that while N is associated with increased use of hostile reaction, escapist fantasy, self-blame, sedation, withdrawal, wishful thinking, and passivity, E is correlated with rational action, positive thinking, substitution, and restraint. Open individuals are more likely to use humor in leading with stress. Closed individuals are more likely to use faith. Relation of coping resources to different coping strategies is obvious here. N is related to dysfunctional strategies and E and O are related to problem-solving and emotion-focused coping both of which lead to positive outcomes according to (Carver, et al, 1989).

One explanation for the relation between personality traits as coping resources and their influence in developing illness is that individuals with personality deviations such as high in N and low E have inadequate coping behaviors i.e., they tend to use dysfunctional coping strategies, that exacerbate the effects of negative life events leading to higher perceived stress and combined with other physiological and psychological factors may contribute to the development of depression and/or CHD.

Cognitive diathesis-stress theories of depression propose that a negative cognitive diathesis, in combination with a stressor, will predict increases in depressive symptoms. For example, the reformulated helplessness theory of depression (Abramson, Seligman, & Teasdale, 1978; Seligman, Abramson, Semmel, & von Baeyer, 1979) indicates that a tendency to make internal, stable, global attributions for negative outcomes, and external, unstable, specific attributions for positive outcomes, is a cognitive vulnerability factor (or diathesis) that interacts with life stress to predict increases in depressive symptoms. The hopelessness theory of depression (Abramson, Metalsky, & Alloy, 1989), which evolved out of the reformulated helplessness theory, proposes the same diathesis-stress interaction predicting depression, but focuses specifically on the depressogenic tendency to attribute negative outcomes to stable
and global causes. There is an extensive psychiatric literature on the relationship between personality and depression.

In order to understand the role of personality traits as coping resources, two type of analysis was resorted to. One was the correlational analysis between coping resources and other variables. Another was multiple regression analysis. The findings are discussed below under two different headings.

5.2. Relation of coping resources with life events, perceived stress, vulnerability to stress and Zung Depression Score

Table 14 displays the correlations between the coping resources and the other variables such as life events, perceived stress, vulnerability to stress and Zung Depression Score for the three groups separately. Neuroticism is a broad, general personality trait, the core of which is a temperamental sensitivity to negative stimuli. High N patients tend to experience a variety of negative affective states (Clerk, Watson and Mineka, 1994). Neuroticism had significant positive correlation with perceived stress and Zung Depression Score among the three groups. The result also indicated that N had significant positive correlation with vulnerability to stress among the three groups. In contrast extraversion and openness had significant negative correlation with them. That means individuals low in neuroticism and high in extraversion and openness perceived less stress.

The correlation between agreeableness and perceived stress was negatively significant for healthy groups, but this correlation was not significant for other two groups. Agreeableness had correlated negatively with vulnerability in CHD and healthy groups.
Conscientiousness had positive significant association with vulnerability in depressed group. But there is no other significant correlation with any other variables. This finding agrees with previous studies.

According to cognitive model of depression people who suffer from depression have more perfectionist thoughts, their tendency and desire to have standard level of activities are high and feeling of responsibility is also more, though these are accompanied with one perception error called “Dichotomous Reasoning” (Sherry, Hewitt, Flett, & Harvey, 2003, Hewitt et al, 2003). According to this cognition error the person who suffers from depression may be unable to accept any responsibility for incomplete activity which may be due to the result of being inactive. On the other hand the perfectionism traits may be making people more vulnerable to stress-related illness because of poor adaptive coping styles.

The results demonstrate relationship between vulnerability, perceived stress, depression score and can be attributed to share variance with for example high neuroticism and low extraversion, although the direction of causality between personality, depression by moderating of others factors can be determined from this data.

5.3. Relationship between coping resources and coping strategies

A main focus of the present research was an attempt to explore the possible existence of the relationship between coping resources and coping strategies. In order to test the hypotheses, Pearson correlation coefficients were calculated between all variables, separately for depressed and CHD patients as compared to healthy subjects. These Pearson correlation coefficients show a number of significant relationships amongst the variables with different patterns of relationships between the three groups (Tables, 15, 16, 17 and 18)
The results indicated that neuroticism had positive correlation with dysfunctional coping for patient groups. Relationship between emotion-focused coping and neuroticism for CHD group was negatively significant. Neuroticism factor correlated significantly and negatively with problem focused coping for healthy group. The relationship between N and problem focused coping for depressed group was not significant. (Table.15)

Carver et al., (1989) have found that low level of neuroticism can be regarded as a coping resource. In stressful situations, individuals high in neuroticism tend to focus on the associated level of emotional distress rather than on engaging in goal-directed behavior. In support of this assertion, there is evidence that persons with high N rely more on emotion-focused strategies and less on problem-focused strategies than individuals who have low levels of neuroticism (Bolger, 1990; Carver et al., 1989).

A study by Costa and McCrae (1992) shows that men and women high in N are prone to have irrational ideas, to be less able to control their impulses, and to cope more poorly than others with stress. Neuroticism was also found to be associated inversely with the use of problem-focused strategies (Endler & Parker, 1990; Hooker et al., 1994; Rim, 1986). In prospective studies, neuroticism is related positively to wishful thinking and self-blame (Bolger, 1990), and seeking emotional support (Terry, 1994), and inversely to direct coping, and has been associated with coping strategies such as denial, behavioral disengagement, lost temper, which are known as maladaptive ways of coping (Parker, 1986). People with high N scores rely more on passive or emotion focused strategies as a result of their tendency to interpret problems as threats rather than as challenges (Watson, David & Suls, 1999).
A person’s social network is another dimension that must be considered when examining the experience of stress. Because we are fundamentally social beings, we acquire values, knowledge, support resources through relationships with other people. An examination of our social networks and the support we receive from them reveals them to be another important influence on experience of stress. Taylor, McLean (1993) proposed dividing social support into emotional, informational, and instrumental dimensions. Conceptualized according to these dimensions, social support plays a significant role in how we are able to cope with a stressor and in coping responses like seeking emotional and instrumental social support coping strategies.

Findings of the present study (Table 15) show that there were significant positive relationship between extraversion and both problem and emotion focused coping among the three groups. Those who score higher on extraversion rely more on active, problem-focused coping strategies because of their tendency to see problems as challenges. Also, their gregarious nature prompts them to rely on social networks when problems arise (Watson, David & Suls, 1999). These findings confirm some results of previous studies (Hooker et al., 1994; McCrae & Costa, 1986; Parker, 1986). The findings of the present study also shows that extraversion has negative correlation with dysfunctional coping for all the three groups. Individuals with higher neuroticism and lower extraversion probably reflect the tendency to use dysfunctional coping rather than problem focused coping and emotion focused coping.

Similarity, openness had positive significant correlation with problem focused coping and emotion focused coping for depressive and CHD groups. Openness also had negative significant correlation with dysfunctional coping for all three groups but this correlation was not significant for depressive group (Table, 15). People who are
open to get new experiences are flexible and broad-minded. They are creative, imaginative and intellectual. They like to try new options, seek out variety, and find emotional rewards in learning and developing new ideas. People high in O tend to be untraditional, and they appreciate aesthetic experiences. They avoid situations that are highly structured, rigid, or controlled (McCrae’s & Costa, 1991).

In CHD and healthy groups agreeableness had showed negative relationship with dysfunctional coping. Agreeableness refers to how individuals relate with others and how considerate they are of their feelings and opinions. Agreeable people see others as mostly honest and trustworthy; they are straightforward and frank; willing to help out; yielding rather than aggressive in conflict; modest and unpretentious; and caring, nurturing, and supportive (Costa & McCrae’s 1992). In healthy individuals agreeableness factor correlated significantly and positively with problem focused coping but this correlation was not significant for other group. The relationship between agreeableness and emotion focused coping was positive among three groups. That means persons with high score of A tend to employ less of dysfunctional coping.

The last dimension of personality is conscientiousness that refers to those people who are goal-oriented and get things done; they are dependable, on time, well organized, deliberate, methodical, focused, and efficient. Since they are rule-oriented, they avoid disorder and impulsive behavior (Costa & McCrae’s 1992).

In this study a positive correlation was found between problem-focused coping and emotion-focused coping with conscientiousness among three groups. Interestingly, for CHD group correlation between C and dysfunctional coping was positive. Conscientiousness trait consists of competence, order, self disciplining, dutifulness, achievement striving and deliberation. These components indicate the
type A personality of an individual and are known as major risk factors for cardiovascular disorders (Espense & Opdahl, 1999).

The next hypothesis examined was the correlation between coping resources and 15 subscales of coping strategies for three groups separately (tables 16, 17 and 18). In this study among depressives and normal subjects neuroticism is negatively associated with active coping that means the persons who are higher on N use less active coping. Active coping refers to taking action or exerting efforts to remove or circumvent the stressor.

In depressive group N was negatively correlated with two more problem focused coping strategies - restraint and suppression of competing activities. Restraint refers to coping passively by holding back one’s coping attempts until they can be of use and ‘suppression of competing activities’ refers to suppressing one’s attention to other activities in which one might engage in order to concentrate more completely on dealing with the stress. Further, positive correlation is found between N and two dysfunctional strategies-mental disengagement and behavioral disengagement. Mental disengagement refers to psychological disengagement from the goal with which the stressor is interfering, through daydreaming, sleep, or self-distraction and behavioral disengagement refers to giving up or withdrawing effort from the attempt to attain the goal with which the stressor is interfering.

Among healthy subjects correlation between mental disengagement and N is significantly positive, that means high score of N is a risk for employing dysfunctional strategies. The results of present study show that almost all subscales of the dysfunctional coping styles are related to N in the three groups.

Next dimension of personality that has been shown to be related to more positive coping styles, such as acceptance, positive reinterpretation and growth,
humor, seeking social support; all recognized as active ways of coping (Ferguson, 2001) was E. In this study, among the three groups E was associated with all subscales of problem focused coping. In depressive group positive correlation was found between E and all dimensions of emotion focused coping. That means they are getting sympathy or emotional support from someone. For example, it is to be noted that the use of social support for emotional reasons, a type of emotion-focused coping is functional in nature and hence a positive approach. This kind of personality trait (E) is considered as an adaptive coping resource. Persons scoring higher in E are more likely to take action (McCrae & Costa, 1989), engage in positive thinking, and seek social support and employ more problem focused coping (Hooker et al, 1994).

Table 16 indicated that among CHD patients O had correlated positively with active coping, planning and restraint coping, and negatively associated with suppression of competing activities, which are the subscales under problem focused coping category. Among depressed patients openness had revealed significant positive relationship with suppression of competing activities and restraint. Openness factor includes several variables related to openness to aesthetics, values, and feelings. Restraint coping refers to dealing with a situation passively by holding back one’s coping attempts until they can be of use and thus its significant positive correlation with openness is quite meaningful. Openness to experience is positively correlated with tolerance of ambiguity and its positive correlation with Restraint can be understood with reference to this (McCrae & Costa, 1989). Surprisingly, among healthy subjects there were no significant correlations between O and any other coping strategies.

Other personality dimension is agreeableness. Agreeableness refers to how individuals relate with others and how considerate they are of their feelings and
opinions. Agreeable people see others as mostly honest and trustworthy; they are straightforward and frank; willing to help out; yielding rather than aggressive in conflict; modest and unpretentious; and caring, nurturing, and supportive (McCrae’s & Costa, 1996). In this study among CHD group it was found that A has significant negative correlation with focus on and venting of emotions, behavioral disengagement and substance use which are subscales under dysfunctional coping category. The same pattern was shown by healthy group. In depressed group only substance use was negatively correlated with A. Among CHD and healthy group agreeableness revealed significant positive correlation with positive reinterpretation and growth (making the best of the situation by growing from it or viewing it in a more favorable light), religion and humor, which is a type of emotion focused coping while among depressed patients only religion coping had correlated positively with A.

Among depressed patients religion, humor and seeking emotional social support positively related with conscientiousness (C). Also reinterpretation and growth, religion, and humor, which represent emotion focused coping, indicated significant positive correlation with C for CHD patients. Among healthy group the correlation between C and all subscales of problem focused and emotion focused coping were significantly positive. That means individuals with high C employ more problem coping strategies.

In summary, the findings of this study lend support to some of the previous findings particularly regarding the association of N, E and C with coping strategies. Almost all problems focused coping strategies are related with extraversion, conscientiousness, openness and agreeableness respectively. These findings confirm some results of previous studies (Hooker et al., 1994; McCrae & Costa, 1986; Parker, 1986).
However, the relationship of O and A to coping strategies is still not very clear. Since O and A include many positive traits which are emphasized by Humanistic Psychologists, and more recently by Positive Psychologists (Seligman & Csikszentmihalyi, 2000) it is suggested that they can be treated as positive coping resources that facilitate the deployment of more useful and functional coping strategies than dysfunctional ones (Kikhavani and Kumar, 2005).

5.4. What predicts perception of stress most?

The next hypothesis was to examine the role of coping resources (Five-Factor of Personality), coping strategies, stressful life events and vulnerability to stress in predicting perceived stress. The results are shown in table 19 for depressed patients. Two variables included - high neuroticism and greater use of mental disengagement (a dysfunctional coping strategy) - have significantly contributed for the prediction of perceived stress. Table 20 reveals that for CHD patients high score in neuroticism and low in extraversion have significantly emerged as predictors of the perceived stress. Table 21 shows that five variables were included into the equation as predictors of perceived stress for healthy subjects. They are: greater vulnerability to experience stress, greater use of focus on and venting of emotion, mental disengagement, high use of emotional social support, and less use of planning.

For patient groups the N emerged as the first factor of predictor of perceived stress. One explanation is that individuals with high level of neuroticism can be regarded as having maladjusted coping resource. In stressful situations, individuals high in neuroticism tend to focus on the associated level of emotional distress rather than engaging in goal-directed behavior. In support of this assertion, there is evidence that such people rely more on emotion-focused strategies and less on problem-focused
strategies than individuals who have low levels of neuroticism (Bolger, 1990; Carver et al., 1989).

5.5. What predicts depression score most?

The next aspect of present study examined the role of coping resources (five-factors of personality), coping strategies, stressful life events and vulnerability to stress will differ significantly in predicting depression score among depressives, CHD patients and healthy group, using Stepwise Multiple Regression Analysis.

For depressive group the regression equation indicated that low openness, Life Events, and high neuroticism, are significant predictors of depression score (table 22). The results showed that among CHD subjects, for the depression score as the dependent variable, three independent variables included as significant predictors are extraversion, perceived stress and vulnerability (table 23). In healthy group, two coping strategies, positive reinterpretation and growth and focus on and venting of emotions contributed as predictors of depression score (table 24).

Emergence of different variables as predictors of depression score in the three groups, without any common factor, suggests that either coping resources or coping strategies, or vulnerability or perceived stress or life events can lead to depression and also of different types. Hence, the role of life events as a primary predictor is not certain. The findings also calls for a comprehensive assessment of persons having high depression score because, the condition may have been primarily determined by one or more factors.

Role of Neuroticism: The findings of this study with regard to the role of neuroticism in illness in terms of the differences between the groups, in its relation with other variables and as a predictor of perceived stress and depression score, are consistent with findings from several previous lines of research (Bolger & Schilling,
Neuroticism, defined as a general vulnerability to neurotic breakdown under stress, is a heritable personality trait (Tambs et al, 1991) and has been positively associated with depression (Duggan et al, 1995; Roberts & Kendler, 1999). Krueger et al (1996) found a strong association between high pre-morbid neuroticism and the subsequent development of a depressive illness. Murray, and Brian, (1997) in their study found that who showed greater N in a pre-morbid testing later developed depression than those who did not (vulnerability model).

A number of studies on neuroticism and depression have noted a remarkably powerful relationship between neuroticism and the prognosis of depression (Duggan, Lee & Murray, 1990; Duggan, Lee & Murray, 1991; Eccleston & Scott, 1991; Scott, Eccleston & Boys, 1992; Taylor & McLean, 1993; Scott, Williams, Brittlebank & Ferrier, 1995). Taylor and McLean (1993) have found that depressed patients who were assigned to four different treatments (psychotherapy, relaxation, behavior therapy or amitriptyline) high neuroticism predicted worse outcome regardless of treatment modality. Several studies have examined the relationship between N and depression, and collectively, these studies provide evidence for support of the hypothesized relationships between personality (Neuroticism) and depression.

Neuroticism has also been equated with negative affect and is increasingly being seen as a stable personality characteristic contributing to vulnerability and the persistence of depressive symptoms (Clark, Watson & Minika, 1994). Studies have documented that although neuroticism score are, to some extent, mood–dependent,
decreasing as the depressive symptoms abate, depressive continue to have high score even after remission (Santor, Bagby & Joffe, 1997)

Clark and Watson (1991) have integrated the data on neuroticism, extraversion, and depression in a tripartite model of the relationship between temperament or personality and the “distress disorders”. This model groups anxiety and depressive symptoms into 3 subtypes: nonspecific symptoms of general distress (related to neuroticism); depression-specific symptoms of anhedonia, low energy, and low positive affect (related to low extraversion); and relatively anxiety-specific symptoms of somatic or autonomic arousal. This empirically supported model has proven to be valuable in organizing research on the relationships among neuroticism, extraversion, depression and the co morbidity of depression.

In particular, as predicted by this model, high neuroticism and low extraversion appears to influence risk for depressive illness in two distinct ways. First, at every level of stress exposure, it directly increases risk of illness. Second, neuroticism moderates the pathogenic effects of stress exposure. Individuals with low levels of neuroticism are much less sensitive to the depressogenic effects of adversity than are those with high levels of neuroticism. Ormel and Wohlfarth (1991) have verified these in their additive model, where they detected highly significant positive interactions between neuroticism, extraversion and stressful life events in the prediction of risk of depressive onset (Farmer, Redman, Harris, 2001).

However, the relationship between neuroticism and depression is complicated. Genes that predispose to mood disorders overlap with those implicated in neuroticism. (Kendler et al, 1993). Individuals with high levels of neuroticism are more likely to experience depression after stressful life events than those with low levels (Farmer et al, 2002). For individuals with high levels of neuroticism, a vicious circle is
hypothesized in which they are more likely to place themselves in high-risk situations and because of a high genetic loading for depression, are less able to withstand the adverse effects of stressful life events when they occur.

**Summary:** The most significant findings of the present study link personality, coping, perceived stress and depression leading to intriguing questions of cause and effect. It might be argued that course of perceived stress and coping strategies, and of depression and CHD are the result of stressful life events, vulnerability, and the coping resources. Most of the association of personality with coping mechanisms seen in study of personality and coping by Robert et al., (1986) had shown that measurement of personality preceded, and thus could not have been influenced by specific stress or coping efforts subsequently assessed. In addition the 12 years longitudinal stability of personality measures (McCrae & Costa, 1984) is considerably higher than the seven month stability of coping mechanisms (Felton & Reverson, 1984). All these considerations support the premise that personality is causally prior to the stressors, coping efforts, vulnerability, perceived stress and depression score assessed in this study. If personality is causally responsible for at least some of the associations between coping, other variables and depression it may operate in one of the ways.

Based on the findings of the present study a heuristic theoretical model is proposed to understand the relation between coping resources, coping strategies and stressful life events and their interaction leading to illness, which serves as conclusion of this effort.
5.6. A heuristic model of stress - illness relationship

One interpretation could be that coping resources provide the causal mechanism by which the effects of coping efforts on perceived stress and depression are explained. For instance, individuals high in neuroticism and low extraversion perceived stress more and they cope poorly. Those who are low in neuroticism and high in extraversion perceived stress less and are less vulnerable to stress because they are vigorous and effective in coping (problem-focused coping). Well-adjusted individuals use certain styles of coping which are functional and at the same time are temperamentally adapted and satisfied with lives. Maladjusted individuals use other ways of coping such as dysfunctional coping and are generally vulnerable and perceive more stress when they are faced with stressful life events.

In the proposed heuristic theoretical model pathways of the causal relationship between coping resources as moderators of coping strategies, vulnerability to experience stress, perceived stress, and stressful life events are presented. One way a stressor can affect a person is by being filtered through one of these factors. This is known as mediation and implies that a stressful life event would have no effect on the person unless it is transmitted through the mediating variable. Stressors can also have a direct effect on the individual while one of these factors can serve to alter their effect by coping resources (personality factors high in N and low score of E, O, A and C), which serve as moderation factors (see below path diagram).
**Path diagram**: Model of interaction between coping resources and stress, coping strategies, perceived stress and vulnerability to experience stress variables and illness (depression and CHD)

Personality factors (N, E, O, A and C) as Coping Resources

- **Coping Strategies**:
  - Problem Focused Coping
  - Emotion Focused Coping
  - Dysfunctional coping

**Vulnerability to Stress**
- Perceived Stress

**Experience stress**

**Life event**

**Event characteristics**: Severity, Duration, Frequency

Events are disturbing

SNS arousal, Increased Endocrine function, Production Catecholamines (epinephrine and Nor epinephrine), Release of glucocorticoids (plasma cortical), Activated immune function, increased production of endogenous

**Illness**: Psychological (Depression) or Physical (CHD)
In this case personality factors serve as moderators at each step, influencing coping strategy, vulnerability and perceived stress either increasing or decreasing their role in causing illness, as indicated with vertical lines and arrows. The horizontal lines with arrows starting from life events to illness indicate the progression of the course of the process which may result in illness. The intersection of the vertical and the horizontal lines is indicative of moderation. The physiological variations that occur like SNS arousal, endocrine function, activated immune function, etc., represented in the oval below in the diagram, is the biological route through which the course of events from stress to illness passes through. These biological reactions are dependent on event characteristics like severity, duration and frequency. The current study did not examine the direction of the associations between factors to be determined. Hence, this model is speculative at the present time.

5.7. Implications

The understanding gained is expected to be useful in planning more effective treatment programs especially for treatment of risk factors such as life events that are associated with depression. Getting more information about history of individuals and life events can provide a useful profile of life events stressor, which will be helpful to create appropriate prevention and treatment or any intervention program to improve mental health, especially for those individuals who are more prone.

It is also intended that the finding of this study would facilitate the identification of risk factors associated with the development and prediction of depressive and coronary heart diseases by drawing on personality profile. Further, the findings help in the development of appropriate therapeutic strategies to manage depressed patients and patients suffering from stress related disorders differentially.
In addition, the correlations of coping factors with personality and psychological distress variables provide apparent predictive validity for the coping factors.

5.8. Limitations and suggestions for future research

The cross-sectional design, sample selection methods used and self-response questionnaire format used during this study may be identified as limiting factors. The present study examined the differences in life events, coping resources, perceived stress, vulnerability to experience stress and coping experiences and also their interrelationship. This is enough to generate a complex picture of the process and to generate suggestions for intervention. The control group and a number of the CHD patients were recruited into the study on the basis of their response to a request for volunteers, which may have resulted in selection bias on the basis of previous health awareness. In an attempt to reduce such bias, patients and volunteers were recruited from similar clinics, the same hospital referral area and physical location.

In the case of a specific stress and coping experience, multiple momentary assessments can be employed to examine the progression of the stress and coping experience from the inception of a problem to its final resolution. This picture would allow us a clearer understanding of the mechanisms at work in the process and when they are active in relation to each other and helps to gain insight into how the patients will affect their experience of stress and coping. This could not be implemented, since it was difficult to elicit cooperation from the participants. Even to get them involved in one time assessment was a very difficult task.

Although we have controlled selected cardiovascular risk factors and psychological factors, we cannot exclude the possible influence of other risk factors like life styles and psychosocial factors.
However, human experience is fundamentally located in time. Psychological experiences have only limited meaning when understood at only one moment in time. How does the experience of stress and coping develop over time? Will coping strategies change as the patients develop experience with life and be less vulnerable to experience stress? Will stressors have a less pronounced impact over time? Will coping become more successful? In order to answer the above questions a longitudinal design could be employed.