Chapter Two

REVIEW OF LITERATURE

This chapter attempts to present a brief resume of research findings related to academic stress, hardiness, achievement motivation, and problem solving behavior. In the present context, the interest of the researcher is to review the findings of past researches. The previous researches help the researchers to conceptualize and hypothesize phenomenon, and do critical appraisal which may contribute with regard to design appropriate methodology. Keeping in mind these objectives, the researcher reviewed literature in order to obtain information and the status of work being done in this area. Therefore, literature from various sources was extensively reviewed in the light of the present investigation.

In the words of Turney, “The researcher who undertakes a research project without systematically reviewing other studies and writings related to the problem is not only a derelict in his responsibility as a researcher but also endangers the successful completions and evaluation of his research.”

2.1. Academic Stress

Attending college is the positive experience for many, yet many students also experience college as chronically stressful due to academic requirements i.e., tests, papers, presentations (Murphy & Archer, 1996). Childhood stress is increasing in both its frequency and severity. Some factors that may contribute to this stress include: the pressure on children to mature emotionally and psychologically at increasing earlier ages, a decrease in the number of caring parents and subsequent reduction in parent’s love and support. As a child grows and reaches puberty a psychological metamorphosis takes
place and this is adolescence stage. It is developmental period during which a growing person makes a transition from childhood to adulthood. Irvine (2002) also identifies a range of stressors in children from parental divorce and separation, to academic and social failure. Throughout the adolescent years, stressful experiences are also considered to be increasing in intensity, as prominent stressors involving family dysfunction, peer demands and academic concerns are faced by adolescents (Frydenberg, 1991b). Adolescence period can be considered as confusing time. In this period the individuals are not longer viewed as children but, nonetheless, are considered to be too immature to be treated as adults. The reversal from childhood to adolescence and from adolescence to childhood have both been considered developmental transition’s individual tends to become more vulnerable during periods of biological, social and psychological transitions.

Transitions are defined as the movement from “one state of certainty to another with a period of uncertainty in between.” The transitions from elementary to secondary school represent for many students a stressful move. School size is significantly larger, academic standards are more rigorous, school circles and peer pressures change more profoundly than at any other time in life. Adolescence is popularly described as a time of heightened egocentrism, volatility and experimentation with risky behaviors. Close emotional ties to parents are challenged as adolescents begin to exercise their independence and individuality. In the Indian context, the decision of the courses is done at the senior secondary level. The future of the student takes its shape according to these courses. The academic pressure among the adolescents starts at this level because it is directly related to their job options.
Traditionally, males were more likely to select science and engineering tracts and females were more likely to enroll in humanities or liberal arts tracts. More recently, efforts have been made in many countries to increase the representation of females in science and engineering. Both the genders experienced the same amount of stress. Boys were more likely to complain of stressful situations such as poor academic performance, getting sick, moving to a new town and other events unconnected to interpersonal problems. Girls experienced most of their stress from relationship including fights with their siblings, peer or friends.

Academic problems have been reported to be the most common source of stress for students (Aldwin & Greenberger, 1987). Schafer (1996) observed that the most irritating daily hassles were usually school-related stressors such as constant pressure of studying, too little time, writing term papers, taking tests, future plans, and boring instructors. Stress associated with academic activities has been linked to various negative outcomes, such as poor health (Greenberg, 1981; Lesko & Summerfield, 1989), depression (Aldwin & Greenberger, 1987), and poor academic performance (Clark & Rieker, 1986; Linn & Zeppa, 1984). Lesko and Summerfield (1989) found a significant positive correlation between the incidence of illness and the number of exams and assignments. Similarly, Aldwin and Greenberger (1987) observed that perceived academic stress was related to anxiety and depression in college students.

A number of studies have explored a relationship between stress and poor academic performance (Clark & Rieker, 1986; Linn & Zeppa, 1984; Struthers, Perry & Menec, 2000). Felsten and Wilcox (1992) found a significant negative correlation between the stress levels of college students and their academic performance. Similarly, in a study,
Blumberg and Flaherty (1985) found an inverse relationship between self-reported stress level and academic performance. Struthers et al. (2000) also reported that a high level of academic stress was associated with lower course grades. Students experience a high level of academic stress due to exams, assignments, time pressure, grade pressure, and uncertainty. In summary, this stress has a detrimental effect on their academic performance.

Stressed children show signs of emotional disabilities, aggressive behavior, shyness, social phobia and often lack interest in otherwise enjoyable activities. In a study Dawood (1995) revealed that students’ stress affects their academic performance. He further showed that the most frequently mentioned stressor by students was school and fear related stressors. Many teenagers tend to become non-conformist and fall prey to teenage depression in response to a variety of growing up anxieties. However, stress induced fears and anxiety in children adversely affects children’s performance at various levels.

Generally reaction to stressful situation is based on individual appraisals and interpretations but some situations are inherently more stressful than others. When students interpret stressful situations which are dangerous or threatening they experience feelings of tension, apprehension and worry. They also undergo a range of physiological and behavioral changes resulting from the activation of autonomic nervous system. The intensity of the reaction is proportional to the magnitude of the perceived danger or threat (Panchanath & Shanmugaganiesan, 1992). The behavioral changes due to stress depend up on a large number of variables such as nature and intensity of the stress stimulus,
previous experiences of the individual, and the existence and degree of social support in the individual’s environment.

Individuals who are subjected to experimentally induced stress tend to seek the company of others who share the same stress, but are less likely to seek the company of individuals who are not being subjected to stress (Yets, 1936). Students who were subjected to chronic stress and deprivation can develop a state of withdrawal and social indifference, which can be difficult to modify when the stress is terminated. Academic stress has also been implicated as a causal factor in schizophrenia, depression, suicide, and a wide range of maladaptive behavior as delinquency and crime (Dixon, Wayne, Heppner, Paul, Anderson, & Wayne 1991; Rahe & Lind, 1971).

Dixon, Wayne, Heppner, Paul, Anderson and Wayne (1993) undertaken a research on 154 students and results showed significant interaction between stress and hopelessness. Hopelessness was strongly related to depression scores under high level of stress.

Sarmany (1994) studied the load and stress among students. Results showed that students with low Grade Point Average (GPA) used less effective stress coping strategies and assumed test situation as being significantly more stressful girls showed higher level of stress than boys. A significant negative correlation between GPA and actual duration of sleep was observed.

A study was carried out by Ross, Neibling, and Heckert, (1999) in which the Student Stress Survey (SSS) was used to determine the major sources of stress among college students. The scale consisted of 40 potentially stressful situations. The scale addressed interpersonal, intrapersonal, academic and environmental sources of stress.
This item in the scale was also classified as either daily hassles or major life events. Participants were 100 students at a midsized, Midwestern University and varied in year in school, age, gender and major life events, with intrapersonal sources of stress being the most frequently reported sources. The top 5 sources of stress were: change in sleeping habits, change in eating habits, vocation, increased workload, and new responsibilities.

College students have a unique cluster of stressful experiences or stressors (Garrett, 2001). According to Ross, Neibling and Heckert (1999), there are several explanations for increased stress levels in college students. First, students have to make significant adjustments to college life. Second, because of the pressure of studies, there is strain placed on interpersonal relationships. Third, housing arrangements and changes in lifestyle contribute to stress experienced by college students. In addition, students in college experience stress related to academic requirements. Studies have investigated the relationship between coping resources and various outcomes among general samples of youth; no research has focused on adolescents who reported high personal standards in comparison to their peers. Research in this area is important considering that such youth often report high stress when attempting to meet their personal standards, particularly as these standards pertain to their academic environment.

Halamandaris and Power (1999) studied the relationship between personality variables (extraversion; eroticism, and achievement motivation), perceived, social support and overall psychosocial adjustment to university life (measured by absence of loneliness and overall subjective satisfaction). The authors also investigated the relationship between coping with exam stress, psychosocial adjustment and academic performance and predicted psychosocial adjustment to university life from demographic
personality, coping and social support and psychosocial adjustment to university life. Emotion focused coping correlated positively with neuroticism and problem focused coping correlated with achievement motivation. Several correlations were reported between personality and the different ways of coping with exam stress. Personality stress was the only variable that significantly correlated with academic performance.

Misra, McKeen, West, and Russo (2000) examined perceptions of academic stress among male and female college students, and compared faculty and student perceptions of students' academic stress. The sample consisted of 249 students and 67 faculty members from a midwestern University. Mean age of the students and faculty members were 21 years and 42 years respectively. Results indicated a considerable mismatch between faculty and students in their perceptions of students' stressors and reactions to stressors. The faculty members perceived the students to experience a higher level of stress and to display reactions to stressors more frequently than the students actually perceived. This could result simply from the faculty observing the students only during their moments of stress in the classroom. Results also supported the hypotheses that stress varied across year in school and by gender.

Michle, Glahan, and Bray (2001) evaluated factors that influencing the academic self concept, self esteem and academic stress for direct and re-entry students in higher education. Establishment of Higher Education (HE) is generally recruiting a more diverse student population. This research has specifically examined differences in the undergraduate student experience of direct and re-entry student. 112 undergraduate direct and re-entry student took part in the study. A six part questionnaire was used to investigate the impact of age, gender, past experiences of school and motivations for
participating in HE on correct global self esteem, academic self concept and academic stress. Re-entry students reported the most negative experiences of also evidence to suggest that females experienced more than males. If the reason to participate in HE was for career goals, academic stress levels were the highest. When the reason to participate was for cognitive interest, academic self concept was positive and those individuals reported the most satisfaction with HE over all. Multiple regression analysis revealed a complex interrelationship of variables relating to academic self concept, self esteem and academic stress. These findings suggested in HE cannot be simply explained by age stratification.

Eric, Stewart, and Enedima (2002) investigated two factors associated with academic achievement: acculturation and social support. The sample consisted of 60 ninth-grade students of Mexican decent in a southwestern school district. Results indicated that students identified as highly integrated and strongly Anglo-oriented bicultural tended to have higher academic achievement. Social support was perceived as a whole from all four sources. Although no generational effects were identified, females tended to have higher Grade Point Average (GPAs), and perceived more social support, while the males, interestingly, were slightly more acculturated.

People high in resourcefulness are purported to be better than others at controlling their negative emotions and managing stressful tasks. Akgun and Ciarrochi (2003) hypothesized that highly resourceful students would be more effective than others at protecting themselves from the adverse effects of academic stress, and not allowing that stress to impact their grades. A sample of 141 first-year undergraduate students completed measures of academic stress and learned resourcefulness. Their first-year
GPAs were obtained from university records. Analysis revealed that academic stress was negatively associated with academic performance. High academic stress adversely impacted the grades of low resourceful students but had no effect on high resourceful students.

Eremsoy, Celimi and Gencoz (2005) carried out a study to find out the associated variables of depression and anxiety symptoms for young adults confronted with an academic stress. Ninety-two graduate students, who were actively involved in preparing their thesis, participated in this study. Two regression analyses were conducted to see different variables associated with depression and anxiety symptoms separately. Consistent with the expectations, depression and anxiety had overlapping predictors, such as negative automatic thoughts and hopelessness. However, adequacy of problem-solving abilities seemed to be associated with anxiety symptoms.

Govaerts and Gregoire (2005) explored the key role of the cognitive appraisal processes on the way stress is experienced by adolescents. In this research adolescents’ cognitive appraisal processes and their relationships with academic stress was examined. A sample of adolescents (N=100, Mean age = 16.9 years) reported 145 academic stressful situation, while boys perceived themselves as having more resources for coping with it. Students’ age was negatively correlated with the perception that the stressful situation will be resolved on its own. Five appraisal patterns were identified using cluster analysis. Subsequent analysis showed that the five groups differ in their perceived degree of stress. One group was labeled at-risk appraisal group, demonstrating a high level of perceived stress, and two groups showed a favorable pattern associated with low level of perceived stress.
Huan, Yeo, Ang, and Chong (2005) investigated the role of optimism together with gender, on students’ perception of academic stress. Four hundred and thirty secondary school students from Singapore participated in this study and data were collected using two self-report measures: the Life Orientation Test and the Academic Expectations Stress Inventory. Results revealed a significant negative relationship between optimism and academic stress in students. Gender was not a significant predictor of academic stress and no two-way interactions were found between optimism and gender of the participants.

Xia and Sha. (2005) examined the relationship among different stress sources, coping strategies and female university students’ negative feeling by applying the structural equation modeling analysis. The results indicated that (1) the predictive effects of the stress and coping strategies on negative feeling were significant. (2) The process model about stress, coping strategies and negative feelings were different across sources in several aspects. Academic stress not only has the direct effects on negative feelings, but also has the indirect effects through negative problem-solving strategies. Economic stress has only the indirect effects on negative feelings through negative problem-solving and support-seeking strategies. In addition to the direct effects on negative feelings, interpersonal stress also has the indirect effects on negative feelings through negative problem-solving and support-seeking strategies. (3) Whatever the stress is from the academic, economic or interpersonal situation, negative problem-solving and support-seeking strategies always have the significant effects on negative feelings.

Murff (2006) explored the impact of stress on academic success in college students. He provides a discussion on stress and how it can prevent students from being
successful in fulfillment of their educational goals. The literature is supportive of the fact that stress places demands on an individual, and in response to the stress, the body attempts to adapt to the stressful experience to maintain a sense of normalcy (Selye, 1974). Another common theme in the literature is that college students faced with a unique set of stressors that may be overwhelming, thus altering the ability to cope with a situation. Strategies to reduce stress have been associated with academic success in college students (Dziegielewski et al., 2004). College students have a unique cluster of stressful experiences or stressors (Garrett, 2001).

Academic stress is a serious problem faced by international students. Pane (2007) studied 132 undergraduate and graduate students at various educational institutions in United State of America. They were surveyed on the stress when they experienced and confronted by 10 common academic situations and their confidence in coping with that stress. Reported stress was found to be related to certain characteristics of the students (age, level of degree sought, and previous Grade Point Average) and their perceptions of their English language ability, and academic and problem-solving skills.

College students are very vulnerable group to experience stress, the latter of which is related to variety of outcomes, such as health and academic performance. Negga, Applewhitr, & Livingston (2007) assessed the stress of African American college students. It was revealed that the top five reported sources of stress were: Death of a family member (Interpersonal stress) 82%; low grades (academic stress) 69%; time management (academic stress) 61%; boyfriend/girlfriend problems (Interpersonal stress) 57%; and missed classes (academic stress) 55%. Furthermore, significant correlation between self-esteem, social support and stress for all students was found. The study
pointed out the need for college and universities to develop stress intervention programs that address stress specifically based on race and school racial compositions.

Leung (2007) examined the moderating and mediating mechanisms through which parental support and children’s resourcefulness might modify stress outcomes were investigated. Domain analysis was proved to be more sensitive to gender difference when compared with the global academic hassles measure. Girls were more disturbed by “academic inefficacy and fear of failure” and boys were more affected by “expectations and demands from significant others” and academic demands and overload”.

Putwain (2007) studied the academic stress and anxiety in students. That is, academic stress in school children and how it may affect emotional well-being, health and performance on school assessments. In many cases stress is being used to refer to the properties of a stimulus (e.g. an examination) and in other cases to the subjective experience of distress.

Solberg, Carlstrom, Howard, and Jones (2007) classified at-risk high school youth, “the influence of exposure to community violence and protective factors on academic and health outcomes” by using cluster analysis. 789 predominantly Latino and African American high school youths were classified into varying academic at-risk profiles using self reported levels of academic confidence, motivation to attend school, perceived family support, connections with teachers and peers, and exposure to violence. Six clusters emerged, 5 of which were identified as “at-risk”. The clusters were examined in relation to academic stress, health status, grades, and school retention.

Tan, Ang, Klassen, Yeo, Wong, Huan, and Chong (2008) determined the correlates of academic procrastination and student’s grade goals in a sample of 226 undergraduate
from Singapore. Findings indicated that self-efficacy for self-regulated learning was significantly and negatively related to procrastination. High self-efficacy for self-regulated learning also predicted students’ expectations of doing well and low self-efficacy for self-regulated learning predicted students’ expectation of not doing well academically. Additionally, help-seeking students’ expectations of doing well academically while academic stress predicted students’ expectation of not doing well academically.

Shannon and Elizabath (2008) investigated the relationships among stress, coping, and mental health in 139 students participating in an International Baccalaureate (IB) high school diploma program. Results showed that students in an IB program perceived significantly more stress than a sample of 168 of their general education peers.

Huan, See Ang and Har (2008) explored the impact of adolescent concerns on their academic stress. The objective of this study was to examine the contributing role of the different aspects of adolescents concerns on the academic stress of youths in Singapore. The study examined the four different aspects of adolescents concerns namely: family, personal, peer and school concerns. Gender differences were also explored in terms of these predictions as well as the academic stress experienced by adolescents. Results showed that only the score on Personal; concerns subscale were positively associated with the academic stress arising from self and other expectations, in both adolescents boys and girls. For the girls, school-related concerns were also predictive of academic stress arising from other expectations. They also obtained significantly higher scores on the academic expectations stress inventory than boys did.
Bjorkman (2008) conducted a study on the academic stress, social support, and internalizing and externalizing behaviors in samples of sixth, seventh, and eight grade students (n=268) from suburban Illinois. It was revealed that academic stress is the relevant construct to consider when examining the potential sources of stress that junior high students’ experience, and girls and boys report similar level of academic stress. It appears to be related to internalizing problems similarly for girls and boys, though internalizing and externalizing behaviors are related to different sources of academic stress. Social support from parents and classmates was related to lower level of stress, and support from parents, teachers, and classmates was related to fewer internalizing problems in the current sample. The results of this study suggested that academic stress is a relevant construct to consider when investigating potential correlates of emotional and behavioral problems. Academic stress was also related to social support, though social support did not act as a buffer in the present study. Early identifications, along with specific instruction of stress reducing skills, may be useful in preventing and remedying students’ response to stress.

Husain, Kumar and Husain (2008) explored the level of academic stress and overall adjustment among Public and Government high school students and also to see relationship between the two variables academic stress and adjustment). Results indicated that magnitude of academic stress was significantly higher among the Public school students where as Government school students were significantly better in terms of their levels of adjustment. However, inverse but significant relationships between academic stress and adjustment were found for both the group of students and for each type of school.
Singh and Upadhyay (2008) investigated academic stress in the context of age and sex differences among college students. The sample of the study was first year and third year male and female students (N= 400). Findings revealed that first year students experienced higher degree of academic stress in comparison of third year students. At the same time female students perceived more academic stress in comparison of their male counterpart.

Attending university is a pleasurable experience for many students. Yet for others it represents a highly stressful time of extensive studying and pressure to meet the requirements of academia. Academic stress is associated with a variety of negative outcomes such as physical illness and deteriorating mental health.

Hystad, Eid, Laberg, and Johnson (2009) explored capacity of personality hardness to buffer the relationship between academic stress and health. Results showed that hardness was negatively associated with both academic stress and number of health complaints, and showed that hardness moderated the association between academic stress and health.

Leung, Yeung and Wong (2009) examined the role of paternal support in the relation between academic stress and the mental health of primary school children in Hong Kong. The participants of this cross-sectional study were 1,171 fifth and sixth graders. The results indicated that academic stress was a risk factor that heightened student anxiety levels and that parental emotional support was a protective factor that contributed to better mental health among children. However, parental informational support delivered to children during times of high academic stress appeared to heighten student anxiety levels.
2.2. Hardiness

The construct of hardiness was first introduced as a resiliency resource protecting business executives against the ill effects of stress on health (Kobasa, 1979). As typically defined, hardiness describes a generalized style of functioning characterized by a strong sense of commitment, control, and challenge (Bartone, 2000). Commitment refers to an ability to see the world as interesting and meaningful, and to seek involvement rather than withdrawal. Control is the belief in one’s own ability to control or influence the course of events. Challenge involves seeing change and new experiences as exciting opportunities for learning and personal growth.

The critical assumption of hardiness theory for stress resiliency is that the hardy personality type is not as easily threatened or disrupted by ordinarily stressful aspects of the human condition. From a theoretical point of view, the hardy undergraduate is expected to react to the new setting with a sense of genuine interest and purpose, appraise the academic requirements as challenging obstacles that can be overcome with dedication and committed endeavor, and apply the necessary amount of effort to succeed and adjust to the academic environment. As an end result, academic stress is rendered less harmful and, instead, transformed into opportunities for growth and development. The hardy student may thus even prosper and thrive under the pressure faced within this demanding environment.

Dicinto and Gee (1999) effectively assisted motivationally disadvantaged students. Six at–risk (i.e., unmotivated) students (aged 12-16yrs) in all alternative educational program completed motivational surveys after engaging in various learning activities. Overall the subjects completed 54 surveys. Using multiple regressions, involvement,
boredom, competence and desire to be doing something else were regressed on perceived challenge and perceived control. The results indicated that control and challenge were significant predictors of the motivational variables. The findings are discussed in term of awakening to the influence of instructional tasks on student motivation and desire to engage in learning activities.

Mathis and Lecci (1999) explored that whether hardiness can be used by students affair professionals to identify students having difficulties with academic, social, emotional, and attachment adjustment. It was suggested that hardiness was a better predictor of mental than physical health over the 10-WK duration of the study.

Pengilly, and Dowd (2000) investigated the moderating effects of social support, hardiness and components of hardiness scale of commitment, challenge, and control on the relationship between stress and depression. One hundred and five undergraduate students, mean age 20-21, participated in the study. Hardiness, its components and support were significantly correlated with scores on the Beck Depression Inventory (BDI). Hardiness and two components (commitment & control) were significantly correlated with stress. Stress was found to be a significant predictor of depression. Hardiness was shown to moderate the relationship between stress and depression. High hardiness individuals had similar scores on the BDI regardless of their scores. Support was shown to moderate the relationship between stress and depression.

The three components of hardiness, life events, coping strategies, and psychological distress, were assessed in a sample of 245 Chinese secondary students in Hong Kong. While commitment, control and challenge were not clearly differentiable as distinct constructs, three dimensions interpreted as resigned acceptance, cynical
concession, and pragmatic orientations emerged. In the stress-distress relationship, hardiness did not interact with stress to moderate its influence on distress; however, both hardiness and stress had independent main effects on distress. Although high hardy students, compared with low hardy students, did not appraise positive events as having greater impact, they perceived that negative events had significant lesser impact. In addition, low hardy students reported using passive and avoidant coping strategies significantly more frequently than high hardy students (Chen, 2000).

Gordon (2001) compared the motivational patterns of academically resilient and non-resilient high school students. Thirty-six tenth grade students reporting stressful, economically deprived backgrounds were classified as resilient based on achieving a Grade Point Average (GPA of 2.75+). Subjects completed questionnaires concerning goals, performance on cognitive tasks at school, beliefs about responsiveness of the environments in accomplishing goals, beliefs concerning personal control over accomplishment, extracurricular activities, and social relationships. Results showed that resilient subjects had several goals. They reported higher cognitive-ability, social ability, and environment support beliefs than did non-resilient subjects. As well resilient subjects participated in more extracurricular activities.

Ashcrfat (2002) found that there is a negative relationship between individual’s hardiness scores and mathematics anxiety. The inspection of hardiness in two genders also is not significant, but the scores of mathematics anxiety indicated that girls have experienced more levels of mathematics anxiety than boys (Garry, 2005).

Maddi, Khoshaba, Persico, Lu, Hrvey and Bleecker (2002) suggested that personality hardiness is a composite of interrelated attitudes of commitment, control, and
challenge that facilitates the management of stressful circumstances by turning them into
growth-inducing rather than debilitating experiences. They reported two studies and the
first study determines the correlational pattern between hardiness and the various scales
of the Millon Clinical Multiaxial Inventory III and the Minnesota Multiphasic Personality
Inventory 2. The second study concerns the correlational pattern between hardiness and
the five-factor model, as measured by the NEO Five Factor Inventory. The results of both
studies suggested that both total hardiness and its components of commitment, control,
and challenge expressed vigorous mental health.

Hardiness is a characteristic of personality, conceived as a relevant factor of
examined the role of hardiness in choice of strategies of coping. Measures administered
were the COPE Inventory, the SPNS Inventory, and the Hardiness Inventory. Strategies
of coping were observed as certain concrete routines of behavior in stressful situations.
These routines represented three main categories avoidance, emotion-oriented and
problem-oriented coping. Subjects were 198 Slovakian Secondary School students (mean
age 17.7 years). The results revealed that hardy people have the tendency to prefer active
solutions of events and at the same time they reject routines representing avoidance.

Beaskey, Ted and John (2003) tested direct effects and buffering model in relation
to cognitive hardiness and coping for general health and psychological functioning.
Results showed that direct effect model of the relationship between life stress and
psychological health. Cognitive hardiness, aspect of coping style and negative life events
directly impacted on measures of psychological and somatic distress. In several cases
there was also support for a buffering model in which cognitive hardiness moderated the
effect of emotional coping or adverse life events on psychological distress.

Sheard and Golby (2007) undertaken a study on an association between hardiness
and academic achievement. They collected hardiness data at the beginning of students’
second academic year and subsequently monitored their academic performance. Upon
degree completion the results showed that students high on hardiness achieved a higher
mean dissertation mark than students low on hardiness, and that students scoring high on
the commitment facet in addition had a higher second-year grade point average (GPA).

Dubat, Punia and Goyal (2007) selected two schools (one CBSE and one State
Board Education) at random each from Hyderabad and Hissar. In all 80 students of 12th
standard 20 each from both the affiliated schools of selected cities were taken at random.
Results highlight that most of the adolescent respondents experienced moderate stress
followed by high level of stress in the categories of family stress, ego threat,
bereavement, personal set back and health of others. Most of the adolescents adopted
moderate to low level of negative coping styles and moderate to high levels of positive
coping styles.

Karimi and Venkatesn (2009) focused mathematic anxiety, mathematics
performance and academic hardiness in high school students. The sample comprised 284
(144 males and 140 females) 10th grade high school students from Karnataka state. The
results revealed that mathematics anxiety has significant negative correlation with
mathematics performance but no significant correlation is detected with academic
hardiness. It was also observed that the gender differences in mathematics anxiety are
significant, whereas no significant differences are detected between boys and girls in
mathematics performance and academic hardiness. This study has established the fact that the performance of students in mathematics can be perceived by mathematics anxiety and females scored slightly higher on this variable but this relation has not observed with academic hardiness.

Kamarudin, Aris and Ibrahim (2009) investigated to find out if there is any significant difference in the level of perceived stress among the students at the beginning, middle and end of the semester. They also find out whether there is a correlation between the students’ level of perceived stress at the three different periods (beginning, middle, end of semester) on their academic performance. The results showed that students did experience stress but at a moderate level. There was a significant difference between the level of perceived stress at the beginning and middle of semester but no significant different between the levels of perceived stress at the middle and end of the semester. Further, that there was no correlation between the level of perceived stress at the beginning and middle semester with the students’ academic performance but there was a significant correlation between the level of perceived stress at the end of semester and students’ academic performance.

2.3. Achievement Motivation

Motivation can be defined as the driving force behind all the actions of an individual. The influence of an individual’s needs and desires both have a strong impact on the direction of their behavior. Motivation is based on our emotions and achievement-related goals. There are different forms of motivation including extrinsic, intrinsic, physiological, and achievement motivation. There are also more negative forms of
motivation. Achievement motivation can be defined as the need for success or the attainment of excellence.

Achievement motives include the need for achievement and the fear of failure. These are the more predominant motives that direct our behavior toward positive and negative outcomes. Achievement goals are viewed as more solid cognitive representations pointing individuals toward a specific end. There are three types of these achievement goals: a performance-approach goal, a performance-avoidance goal, and a mastery goal. A performance-approach goal is focused on attaining competence relative to others, a performance-avoidance goal is focused on avoiding incompetence relative to others, and a mastery goal is focused on the development of competence itself and of task mastery. Achievement motives can be seen as direct predictors of achievement-relevant circumstances. Thus, achievement motives are said to have an indirect or distal influence, and achievement goals are said to have a direct or proximal influence on achievement-relevant outcomes (Elliot & McGregor, 1999).

Robert and William (1975) carried out a study entitled “Achievement motivation: A rational approach to psychological education.” They investigated the achievement motivation training component of psychological education, using 54 late-adolescent pupils as subjects. Subjects were stratified and randomly placed into control and experimental groups. In addition to a reduction of test anxiety, the experimental training program had as its objectives to increase in academic achievement motivation, internal feelings of control, and school performance. Results revealed that significant differences existed between experimental and control groups on achievement motivation and internal feelings of control.
Joseph (1994) explored the influence of motivation and gender on secondary school student’s academic performance: the relationship between academic achievement motivation and English language proficiency was studied in a group of 160 Nigerian secondary students. Results showed that there were no significant gender differences between male and female students with regard to either academic motivation or language proficiency. However, mastery of English was found to be positively linked to student motivation levels. This was true for male and female students.

Peklasj and Vodopivce (1998) examined the relationship between meta-cognitive and affective processes and achievement in mathematics. A 39-item questionnaire was constructed to measure the pupil’s meta-cognitive and affective processes in mathematics. Factor analysis of the items revealed 4 different factors: 2 meta-cognitive (1) strategies of learning and (2) solving mathematical problems, attention in solving mathematical problems and 2 affective (1) experiencing fear of mathematics and (2) feeling of success and interest in mathematics. Further analysis showed negative correlations between mathematics achievement and the factors of strategies of learning and solving mathematical problems, and experiencing fear in mathematics. Positive correlations with achievement were found with the following factors: attention in solving mathematical problems, and feeling of success and interest in mathematics.

White (1998) designed several approaches to motivate students to become more responsible to their own learning have been implemented in required graduate level accounting courses for business majors at a state university. The approaches described include team based learning, assignments emphasizing oral and written communicable skills, and the case method. These approaches represent a departure from traditional ways
in which accounting is taught, based on lectures, drills, and memorization. Students’ performance measured by exam, term projects, and class participation, was notably improved, as compared with the performance of students taught in traditional ways.

DeBacker and Nelson (2000) investigated the motivational difference of gender, science class type (biological Vs physical) and ability level of 242 high school students. High achiever and physical science students had higher scores than did lower achievers and biological science students on academic goals, valuing science, and perceived ability. Boys had higher scores than did girls on perceived ability and stereotyped views of science. For only a subset of variable, these main effects were moderated by class type using achievement-level interaction.

Eccles, Wigfield, and Byrnes (2000) studied two major aspects of adolescent’s development: cognitive development and both achievement and achievement motivation. They summarized current patterns of school completion and deferential performance on standardized test of achievement. Then they summarized the positive and negative age related changes in school motivation and discussed how experience in school might explain these developmental patterns. It was concluded that both gender and ethnic group differences in achievement motivation and link these differences to gender and ethnic group differences in academic achievement and long-term career aspirations.

Identification of factors that influence post secondary student achievement and motivation in the classroom continues to be an important educational objective. Hancock (2001) investigated the interactive effects of learner characteristic, test anxiety, and the classroom variable, threat of evaluation, on the achievement and motivation of 61 postsecondary students (mean age 13.2yrs) assigned randomly of high-or-low-evaluative
threat conditions. Statistically significant interactions revealed that all the students, particularly the test-anxious students, performed poorly and were less motivated when exposed to highly evaluative classroom.

Pintrich (2004) presented a conceptual framework of assigning students motivation and self regulating learning in the college classroom. The framework was based on a self regulatory learning (SRL) perspective on student motivation and learning in contrast to a student approaches to learning (SAL) perspective. The differences between SRL and SAL approaches, and the implication of the SRL conceptual framework for developing instruments to assess college student’s motivation and learning are discussed.

Broussard and Garrison (2004) established the relationship between motivation and academic success with older and adult children. The findings from the current study were consistent with the previous research in that higher level of mastery motivation and judgment motivation were found to be related to higher math and regarding grades.

Recent research into gender differences in achievement has mainly been concentrated on the underperformance of boys in comparison with girls. Van Houtte (2004) tested quantitatively the explanatory value of academic culture with respect to the stated gender differences in achievement. Three thousand seven hundred sixty pupils in the third and fourth year of secondary education in a sample of 34 schools in Flanders (Belgium) were studied. A distinction was made between general preparing students for higher education and schools offering technical and vocational education. It was demonstrated that boys’ culture was less study oriented than girls’ culture and this difference can be held responsible for the gender differences in achievement at least in general school.
Edna, Umana-Taylor and Bamaca (2006) have examined the events to which mothers, fathers, and teachers and teenage, friends influenced Latino adolescents’ academic motivation (154 boys and 156 girls). Findings indicated that mothers and teachers academic support were positively related to adolescent girls academic motivation, and fathers and teachers academic support were positively related to adolescent boys.

Henderson-King and Smith (2006) designed two studies to determine the meanings that undergraduate students ascribed to their education and how these meaning related to relevant psychological construct: academic motivation and values. Ten meaning emerged: career preparation, independence, finding directions for the future, learning, and self-development, taking the next step, making social connections, changing the world, stress, and escape. The values of intellectualism and academic achievement positively predicted learning, self-development, and changing the world. However, contrary to expectations, valuing physical developments also emerged as significant predictors of several meanings of education.

Smt. K.W. (2008) investigated the effects of gender, economic background and caste differences on achievement motivation possessed by college students on the basis of societal transformation. An exploratory method of research was employed by adopting 2x3x4 factorial designs. One hundred ninety two (192) under graduate students of various colleges from Sangli city of Maharashtra was selected by random sampling procedure. The results showed that there is a significant difference between scheduled caste and Nomadic tribes, scheduled caste and other backward caste students and between male and female students. Forward caste and scheduled caste group students having a high
achievement motivation while other backward and nomadic tribes group students having an average level achievement motivation. As well as male students having a high achievement motivation while female students having a below average level of achievement motivation.

Edna, Adriana, Melinda, Gonzales-Backen and Katharine (2008) stated that whether academic motivation mediated the relation between Latino adolescents' (N = 221) experiences with discrimination and their academic success. The potential moderating role of gender was also examined. Using multiple group analysis in structural equation modeling, findings indicated that perceived discrimination at Wave 2 significantly predicted academic motivation at Waves 2 and 3 for boys but not girls. Additionally, for boys, academic motivation significantly mediated the relation between perceived discrimination and academic success. Findings underscore the importance of considering the long-term implications of discrimination for Latino boys' academic success. Furthermore, findings encouraged moving beyond the examination of gender differences in specific academic outcomes (e.g., academic success) and focusing on how the processes leading to academic success vary by gender.

Byrne and Flood (2009) studied the relationship among background variables and academic performance of the first year accounting students at an Irish university. They examined the associations among prior academic achievement, prior knowledge of accounting, gender, motives, expectations and preparedness for higher education and academic performance in the first year of an accounting program at an Irish university. Data regarding the background variables were gathered using a questionnaire and examination marks were used to as measures of academic performance. Results indicated
a significant association among prior academic achievement, prior knowledge of accounting, and students’ academic performance. Additionally, students’ confidence in their skills and abilities, perceptions regarding the role of university in career development, positive prior experiences of learning accounting, and a desire to experience intellectual growth are all significant variables in explaining variation in first year academic performance. Interestingly, the opportunity provided by university to broaden one’s horizons (motive) and a willingness to ask for help from lecturers (preparedness) were found to be negatively associated with performance.

Meera, Steven, and Karau (2009) explored the role of the big five personality traits in predicting college students’ academic motivation and achievement. College students (308 undergraduates) completed the Five Factor Inventory and the Academic Motivations Scale, and reported their college grade point average (GPA). A correlation analysis revealed an interesting pattern of significant relationships. Further, regression analysis indicated that conscientiousness and openness explained 17% of the variance in intrinsic motivation; conscientiousness and extraversion explained 13% of the variance in extrinsic motivation; and conscientiousness and agreeableness explained 11% of the variance in a motivation. Further, four personality traits (conscientiousness, openness, neuroticism, and agreeableness) explained 14% of the variance in GPA; and intrinsic motivation to accomplish things explained 5% of the variance in GPA. Finally, conscientiousness emerged as a partial mediator of the relationship between intrinsic motivation to accomplish and GPA. These results are interpreted within the context of what educators could do to encourage and nurture student motivation and achievement.
Liu and Zhu (2009) conducted an investigation to 278 grade 2 senior high school students on their achievement motivation. The research results show that there is no significant difference between the achievement motivations of students from common senior high school and those from key senior high school. The achievement motivations of senior high school students do have significant difference in genders and male students have higher achievement motivations than female students; the achievement motivations of students studying science and arts have difference closely to significant difference; motivation to pursue success has negative correlation with motivation to avoid failure. Schools, gender and science type do not have cross functions on achievement motivations.

Lawrence and Crocker (2009) focused on academic contingencies of self-worth impair positively- and negatively- stereotype students’ performance-goal settings. They found achievement motivation and stereotype threat theories both predicted that students who base their self-worth on academics tend to underperform on ability tests. However, the former theory maintains that students in general risk underperformance, whereas the latter maintains that negatively-stereotyped students—but not positively-stereotyped students—risk underperformance. The current research supports the achievement motivation approach. In Study 1, positively-stereotyped students increased in basing self-worth on academics the worse their test performance in a performance-goal setting. No relationship existed between basing self-worth on academics and performance in a learning-goal setting. Study 2 replicated this among positively- and negatively-stereotyped students.
Timothy and Chen (2009) investigated grade level, achievement group, and math-course-type differences in student self-regulation and motivation. The pattern of achievement group differences varied across math course type, as self-regulation and motivation processes more consistently differentiated achievement groups in advanced classes than regular math courses. Finally, task interest was shown to be the primary motivational predictor of students' use of regulatory strategies during math learning.

Kou and Andrew (2009) provided an analytic framework for studying the joint influence of personal achievement goals and classroom goal structures on achievement-relevant outcomes. This framework encompasses 3 models (the direct effect model, indirect effect model, and interaction effect model), each of which addresses a different aspect of the joint influence of the 2 goal levels. These 3 models were examined together with a sample of 1,578 Japanese junior high and high school students from 47 classrooms. Results provided support for each of the 3 models: Classroom goal structures were not only direct, but also indirect predictors of intrinsic motivation and academic self-concept, and some cross-level interactions between personal achievement goals and classroom goal structures were observed (indicating both goal match and goal mismatch effects).

Judith and Susan (2009) explored academic self-concepts in adolescence, relation with achievement and ability grouping in school. Subject-specific facets of academic self concept were related to students' position in the grouping hierarchy, with students in high-ability groups having significantly higher self-concepts in English, mathematics and Science than students in low-ability groups. Students' intentions to learn in future were more strongly affected by self-concept than by achievement.
Schantz and Conroy (2009) explored achievement motivation and intraindividual affective variability during competence pursuits: Around of golf as a multilevel data structure. Illustrated results showed that individual differences in achievement motivation are a part of an integrated system of affect, cognition, and behavior during competence pursuits.

Shonali (2010) undertaken academic self-efficacy of two hundred (116 women and 84 men, mean age = 19.72 and 19.84 years respectively) college students in Shimla. An increasing emphasis on student's academic achievement puts pressure on students to excel. Results showed that self-efficacy enhanced student's problem solving ability. It also moderated effects of stress. Performance was measured in three different ways, (a) problem solving ability, (b) academic achievement, and (c) classroom tests. Results point out that although stress was a precursor of poor performance in all three testing situations, self-efficacy as a coping mechanism had the strongest influence on improving problem solving ability in comparison to academic achievement or classroom tests. Males predominantly outperformed females on anagram solution, showed greater self-efficacy and comparatively less stress. This study points out that the youth today wants to excel and get a professional degree at any cost and therefore become self-sustaining at a very early age.

2.4. Problem Solving

Facing problem is a day-to-day affair. Problem solving needs creative and scientific approaches. Elias and David (1983) opine that problem solving is “creating change to bring actual conditions closer to conditions that are desired”. Weisberg and
Alba (1981b) claimed that a truly novel solution can evolve as the problem solver tries to mark old knowledge fit the new situation.

Various elements are put in place to hinder situational awareness, communication, command and control. Students are highly motivated to solve the problems since they believe that the sooner they solve the problems the sooner they will be released. Instructors’ anecdotal reports suggest a point at which group problem solving completely disintegrates.

Gold and Berger (1978) examined the problem-solving performance of young boys and girls was examined in three conditions in which good performance was indicated as being appropriate for boys, for girls, or for both boys and girls. The relations between task scores and five sex-role measures were also examined. As predicted, the boys performed significantly more poorly when the task was indicated as one that girls did better. The girls' performance was not affected by the conditions of the study. The girls' problem-solving scores did not differ significantly from the boys' scores. There was some relationship between the task scores and the sex-role measures for boys, but not for girls.

Edward (1984) explored sex differences in problem solving. Using a 20-item set of problems (similar to those used by E. Sweeney [1953]) in 9 experiments with 558 male and 578 female undergraduates to determine which sex was superior in problem solving, the role of previous experience, whether sex differences extended throughout the domain of problem-solving tasks, whether they extended to other word problems, the role of spatial ability and verbal ability, the role of mathematics aptitude, and the relative importance of aptitude and social learning variables. Results showed that the male advantage, averaging 35% across experiments, persisted at the same level as in
experiments conducted in the 1950’s. Sex differences extended to other word problems. The male advantage was related to similar advantages in spatial and mathematical ability. Aptitude variables dominated attitude and mathematics experience variables in accounting for the sex difference.

Fraser and Tucker (1997) investigated the relationship among individualizations (a developmental variable), stress level, and problem-solving ability of college students. Two hundred and sixty five students completed 4 scales from the Personal Authority in the Family System Questionnaire-Version C, the stress subscale of Psychological Distress Inventory, and the problem-solving Inventory. Significant relationship was found between individualization level and problem-solving ability and between stress level and problem-solving ability.

Bernardo (1999) studied the interactive effect of learner and instructional variables on understanding and solving words problem among 283 Filipino-English bilingual grade school students in the Philippines. Results showed better understanding and solution performance (1) when problems were written in the student’s 1st language, (2) when the problems were re-worded to state more explicitly the relationship among the known and un-known qualities, (3) for students in higher levels of schooling and (4) for students with higher level of academic achievement.

Carson and Runco (1999) revealed the relationship among creative problem solving (PS) and problem generation (PG) ability, stress and daily hassles, and coping skills in sample of 74 college undergraduates (aged 19-37 yrs). Analyses indicated that separate sets of both PS and PG task scores were predictive of scores on certain coping scales even after the variance accounted for by indices of stress and hassles was removed.
Specifically, PG and PS abilities were negatively related to such coping processes as confrontation, distancing, escape-avoidance tendencies, and excessive acceptance of responsibility, and positively associated with more general adaptive qualities. The findings strongly suggested that PS and PG abilities are important components of an individual’s overall capacity to cope with both major and minor stresses of life.

MaCabe, Blank, and Mills (1999) determined the relationship between interpersonal sensitivity and social problems solving as predictors of 3 outcomes in 207 college students, and academic performance. Ss completed questionnaires to measure interpersonal sensitivity. Social problem-solving, academic and social self-esteem, and depression. Ss final grades were used to indicate academic performance. Consistence with predictions, interpersonal sensitivity was related to problem-solving in particular, negative problem orientation. Both interpersonal sensitivity and social problem solving were significant predictors of self-esteem and depressive symptoms, each accounting for unique variance. Interpersonal sensitivity was significant predictors of academic performance, for both males and females. However, in females, social problem solving was not related to academic performance. In males, negative problem orientation and dysfunctional problem solving styles were important aspects of problem solving related to academic performance.

Bang and Rasmussen (2000) argued that the students differ in their problem-solving capacities, that is, they reduce the complexity of the situation in different ways. Also the students do not exhibit the same form of competence; they make sense of the complex situation in different ways. A more comprehensive theory proposed that encompasses the notion that the person is able to consider and anticipate problem-solving
operations, and in doing so, is in control of the problem solving process and display competence. More precisely, the person is in control by means of 4 control of the problem solving process itself; achievement, the degree to which he/she experience the approach of the goal, ruggedness, the degree of difficulty he or she has to overcome in order to solve the problem; and finally, availability, the degree to which the person feels he/she has access to vital resources. Using this frame of reference, the authors interpreted the student’s problem-solving process.

Ansbrug (2000) conducted a study to identify the general problem solving skills that underline the production of insight. One hundred and eighteen (118) college students completed insight problems, analogies, series completion problems, and the Remote Associates Test Scores on all measures were related to performance on the insight problems. These findings were consistent with the notion that the ability, abilities to apprehend relations and fluency of thought are involved in insightful problem solving.

Adolescence involves a number of developmental tasks and challenges. To deal with the demands that confront them, adolescents draw on their coping resources. Andrews, Ainley and Frydenberg (2004) investigated how adolescents respond to problems. One hundred and sixty-six secondary school students completed a problem solving task using an interactive computer program. The program (a) measured each student’s general coping style by presenting students with a coping inventory, and (b) recorded student choices, self-efficacy and emotions as they engaged with the problem solving task. The findings support a model linking a productive coping style with enhanced self-efficacy and positive emotions during problem solving.
Athanasios and Shiakali (2004) studied the translation ability of university students as far as the concept of function was concerned. The research focuses on the relationship between success in solving direct translations tasks and success in solving problems by articulating different representations for the concept of function. Furthermore, it examines the relationship between student performance and the nature of the representation included in the translation tasks. The ability to pass from one representation to another was associated with success in problem solving. Results indicated that translation ability should be considered as an important factor in problem solving.

Dow and Mayer (2004) focused whether insight problem solving depends on domain-specific or domain-general problem solving skills, that is, whether people think in term of conceptually different types of insight problems. In study 1, participant sorted insight problems into categories. A cluster analysis revealed 4 main categories of insight problems: verbal, mathematical, spatial, and a combination of verbal and spatial. In studies 2 and 3, participants received, training in how to solve verbal, spatial, or mathematical problems, or all 3 types. They were taught that solution to verbal insight problem lie in defining and analyzing the terms in the problem, solutions to mathematical insight problems lie in a novel approach to numbers, or solution to spatial insight problems lie in removing a self imposed constraint. In both studies the spatial trained group performed better than the verbal trained group on spatial problems but not on other types of problems. These findings were consistent with idea that people mentally separate insight problems into distinct types.
Cassidy (2004) examined the relationship between student’s levels of self categorization or identification with their university, their problem solving style, perceived social support, psychological distress and self reported illness was investigated in sample of 269 undergraduate students (181 females and 88 males) structural educational modeling showed that problem solving style, perceived social support, and strength of identity, are the best predictors of both distress and illness, while sex, sex-type, age and year of study also account for small, but significance percentage of variance.

Inoue (2005) opined that school-aged children have a stronger tendency to solve mathematical word problems by mechanically calculating numbers even if their calculated answers seem unrealistic. In the present study he observed that undergraduate students also demonstrated this tendency but many of them could justify their “unrealistic” responses with sensible rationales. It was suggested that cognitive functioning in problem solving is highly dependent on an individual’s contextual interpretation of the activity.

A large body of literature reports that there are gender differences in mathematical problem solving favoring males. Strategy use, as a reflection of different patterns in mathematical problem solving between genders, is found to be related to cognitive abilities, together with psychological characteristics and mediated by experience and education. Many complex variables including biological, psychological and environmental variables are revealed to contribute to gender differences in mathematical problem solving in some specific areas. This article suggested that the combined
influence of all affective variables may account for the gender differences in mathematical problem solving patterns (Zhu, 2007).

Weiqiao and LI-Fanf (2009) examined the relationships between thinking styles and achievement motivation among Chinese university students. The Thinking Styles Inventory — Revised (TSI-R) and the Achievement Motives Scale (AMS) were administered to 238 Chinese university students from Shanghai, the People's Republic of China. Results largely supported the hypothesis that the more creativity-generating and complex thinking styles (Type I styles) were positively correlated with achievement motivation to approach success (MS), and negatively correlated with achievement motivation to avoid failure (MF). Results partially supported the hypothesis that the more norm-favoring and simplistic thinking styles (Type II styles) had negative correlation with MS, and positive correlation with MF. The study also found that the situation-/task-dependent thinking styles (Type III styles) were positively correlated with MS, and negatively correlated with MF.

Pakaslahti, Karjalainen and Keltikangas-Järvinen (2010) explored the relationship between adolescents’ pro-social problem-solving strategies and pro-social behavior, and their associations with social acceptance among their peers. Age- and gender-related variance was also examined. The subjects were 777 14-year-old adolescents (381 girls and 396 boys) and 877 17-year-olds (464 girls and 413 boys). The classification of adolescents into popular, rejected, neglected, controversial, and average status groups, on the basis of peer nominations. The results showed that pro-social problem-solving strategies and pro-social behavior were only minimally related, but both predicted social acceptance among peers. The rejected adolescents had low levels and the controversial
adolescents’ high levels of both pro-social strategies and behavior, while the popular and neglected adolescents did not differ from the average ones in terms of strategies, but they did in their behavior. The popular adolescents had a high level and the neglected adolescents a low level of pro-social behavior. Analysis of gender and age differences revealed that the girls and the 14-year-olds achieved higher scores on both pro-social strategies and behavior than the boys or the 17-year-olds. The results extend our knowledge of adolescent social functioning.

Despite the broad range of survey of literature on previous research works, the present investigator did not find a signal study that has examined the relationship between academic stress and hardiness as independent variables. Other important areas are problem solving ability of adolescents and achievement motivation. Many factors, including stress affect the quality and efficiency of group problem solving. The present research departs from earlier researches in terms of gaining the impact of academic stress and hardiness on achievement motivation and problem solving behavior of adolescents.