SUMMARY AND CONCLUSIONS

6.1 Introduction

The psychologists, educationists and other stake holders of formal education have been in invariably investing their efforts to unearth the dynamics of academic success of the students around the globe. In recent past, metacognition has gained importance in regulating various sorts of human performance including academic success and adjustment. Metacognition refers to a set of processes comprising thinking, knowledge or beliefs about one’s own cognitive processes. It also helps to identify and get familiar with a broad range of learning strategies, regulate thinking and other cognitive processes in ways that help associate with the learning materials, plan for the future learning, allocate time, efforts and cognitive resources, and motivate the learners in a variety of learning situations.

Locus of Control refers to the beliefs of an individual about control over life events and good or bad consequences of the outcomes of life in general or specific area (Rotter, 1954). Academic locus of control manifests itself in the beliefs of the students regarding their control over the academic situations and outcomes. A student with an internal academic locus of control believes that success or failure is not beyond his control whereas a student with an external academic locus of control believes that success or failure is controlled by external forces beyond his control and may believe that grades do not reflect effort and are affected by external factors such as luck, examination system, biased attitude of teacher etc.

Academic adjustment refers to the degree of a student’s success in coping with various educational demands pertaining to the motivation, application, performance and satisfaction with the academic environment (Baker & Siryk, 1999). Academic adjustment gives the students equal access to the educational opportunities of the higher education. Tinto (1975) has discussed two types of academic adjustment: structural and normative. The former is reflected in the student’s academic performance whereas the later focuses on the student's
perception of their intellectual development. The researchers have attempted to explore the status of the academic, social and psychological level of the students to uncover the problems of adjustment and its role in shaping the academic success (Al-nabhan, 2001).

Socioeconomic status (SES) is a term used by sociologists, economists, and other social scientists to describe class standing of an individual or group. The metacognitive processes, locus of control, academic outcome and academic adjustment have close connection with the socioeconomic factors. The socioeconomic realities shape the biopsychological structure of the individuals. The socioeconomic status (SES) is a complex and dynamic construct encompassing income, educational attainment, financial security and subjective perceptions of social status and social class.

6.2 Review of Literature

Metacognitive processes refer to knowledge of one’s own cognitive behaviours that stem from self-monitoring of one’s own cognition which is critical for providing input to self-directed control processes (Metcalfe, 1996; Nelson & Leonesio, 1988) and termination of attempts at retrieval (Nelson, Gerler & Narens, 1984). The interest in studying metacognitive processes spans across different areas of psychology that includes memory (Johnson, Kounios & Reeder, 1994), developmental psychology (Butterfield, Nelson & Peck, 1988), aging (Backman & Lipinska, 1993), neuropsychology (Shimamura, 2000), social psychology (Schwarz, 2004), judgement and decision making (Winman & Juslin, 2005) and forensic psychology (Pansky, Koriat & Goldsmith, 2005).

Metacognition is a multidimensional set of skills that involve thinking about thinking. The metacognition skills have been reported to be positively associated with internal academic locus of control. Landine and Stewart (1998) reported a significant positive correlation between metacognition and academic success of the students. The multitude of researchers have revealed that academic achievement exhibits moderate correlation with
more internal beliefs and, in turn, evinces a positive correlation with metacognition (Arslan, Akin & Citemel, 2013; Satici, Uysal, & Akin, 2013). Kalechstein and Nowicki (1997) have found that an individual’s locus of control predicts significant differences in his academic achievement. In addition, these researchers have found that an internal locus of control is significantly and positively related to academic success. The concept of locus of control has been investigated in many areas including personality, stress, depression, self-esteem, achievement motivation, academic achievement, self-efficacy, job satisfaction, well-being, organizational settings and social psychology, to mention a few.

Locus of control has been reported to considerably influence the extent the students show their engagement in the process of learning as far as cognition and metacognition are concerned which subsequently influence the rate and amount of their academic success (Schraw & Moshman, 1995). Anderson, Hattie and Hamilton (2005) have argued that those students were more likely to be highly motivated if they had an internal locus of control as compared to those with an external locus of control. Arslan and Akin (2014) have argued that metacognition is a good predictor of academic locus of control of undergraduate university students enrolled in various programmes. Macejka (2013) reported a significant relationship between metacognitive regulation and locus of control as well as the possible effects of metacognitive regulation, help-seeking and locus of control. The results further suggested that strategies of self-regulated learning as well as locus of control have significant role in improving the academic success of the students.

Berkant (2009) demonstrated no gender difference between causal thinking abilities that contribute to reading comprehension and academic achievement. Similarly, no significant differences between metacognition of male and female science students have been observed (Rahman et al., 2010). Sperling et al. (2002) studied the impacts of gender difference on the two dimensions of the metacognitive skills, namely knowledge of cognition
and regulation of cognition which evinced no significant gender differences in either versions of the measure. Pintrich (2004) has reported that self-regulated learning activities are mediators between personal and contextual characteristics of the students and their performance and it can be expected that academic achievements of the students may be associated with different self-regulated learning activities that may be related to gender and socioeconomic status (SES) differences.

6.3 Objectives

On the basis of the close scrutiny of review of literature, following major objectives were set forth to be empirically validated through the data of the present study:

1. To inquire into gender differences in metacognitive awareness, academic adjustment and academic outcome of the participants,

2. To study patterns of the scores on metacognitive awareness, academic adjustment and academic outcome measures of the participants having affiliations with low, average and high socioeconomic status,

3. To develop an understanding into the differences in the scores on metacognitive awareness, academic adjustment and academic outcome measures of the participants having internal and external academic locus of control,

4. To understand the nature and extent of correlations among the scores on metacognitive awareness, academic adjustment and academic outcome measures of the male and female participants having internal and external academic locus of control,

5. To estimate the role of metacognitive awareness and its components in predicting the academic adjustment and academic outcome of the male and female participants,

6. To estimate the role of metacognitive awareness and its components in predicting the academic adjustment and academic outcome of the participants having affiliations with low, average and high socioeconomic status,
7. To estimate the role of metacognitive awareness and its components in predicting the academic adjustment and academic outcome measures of the participants having internal and external academic locus of control.

6.4 Research Methodology

6.4.1 Statement of the Problem

A thorough review of the literature on metacognition evinced that it helps enhancement and enrichment of learning experiences of the learners and acts as the precursor to facilitate the use of metacognitive strategies which results into improved self-awareness and self-monitoring to develop them into independent learners and control their own learning (Papaleontiou-Louca, 2008). In essence, the findings exhibited that metacognitive processes have important theoretical and practical implications to uncover and understand human behaviour and performance in a variety of settings. It has been reported that cognitive remediation therapy becomes more effective by improving metacognition as people with schizophrenic symptoms have metacognitive problems of poor self-awareness and difficulties in planning for complex tasks (Cella, Reeder, & Wykes, 2015). The metacognition has also been reported to develop insight (David et al., 2012), self-related cognitive processes (Pickup & Frith, 2001) and functioning levels (Lysaker et al., 2013) relevant for treatment of psychotic disorders.

The researchers have suggested that metacognitive strategies have significant implications in educational setting because these skills can be taught and developed (Hofer & Yu, 2003; Israel, 2007) with systematic planning and efforts (Vos, 2001). It has been argued that metacognitive knowledge and monitoring skills can be instilled in children through systematic training to enhance their intellectual ability, decision making ability, comprehension and learning in formal educational setting (Flavell, 1979). The metacognition plays an important role in a variety of dimensions of learning of oral communication,
persuasion, comprehension, reading comprehension, writing, language acquisition, attention, memory, problem solving, social cognition, and various types of self-control and self-instruction (Flavell, 1979). Metacognition helps the learners to acquire necessary knowledge and confidence which, in turn, enable them to manage their learning and empowers the learners to remain inquisitive and persistent in their learning pursuits (Paris & Winograd, 1990a).

As opposed to Piaget (1977), Vygotsky (1978) highlighted the role of social and cultural factors in cognitive development which has derived support from recent researches (Downing & Chim, 2004). These researchers have argued that cultural and social factors play an important role in cognitive development. In the similar manner, metacognitive development is assumed to progress as a result of environmental challenges comprising significant life events and belonging to a particular socioeconomic status group. The opportunity of education, environmental stimulation, social mobility and parental education, to mention a few, are some of the important factors that determine the opportunity of internalization of new experiences which may be suggested as precursors to both cognitive and metacognitive development (Downing, 2012). Building on the above understanding, the present research aimed to develop an in-depth understanding into the role of metacognitive awareness and its eight components, academic locus of control, socioeconomic status and gender in determining the nature and extent of academic adjustment and academic outcome of the undergraduate and postgraduate students.

6.4.2 Hypotheses

Following hypotheses were formulated to be tested through the findings of the present study:

1. There will be no significant gender differences in the metacognitive awareness, academic adjustment and academic outcome of the participants.
2. The participants with high socioeconomic status will show higher mean scores on metacognitive awareness, academic adjustment and academic outcome as compared to the participants with either average or low socioeconomic status.

3. The participants with internal academic locus of control will achieve higher mean scores on metacognitive awareness, academic adjustment and academic outcome as compared to the participants with external locus of control.

4. The scores of metacognitive awareness will show positive correlations with the scores of academic adjustment and academic outcome of different groups of participants.

5. The metacognitive awareness and its components, academic locus of control and socioeconomic status will account for significant variance in the scores of academic adjustment and academic outcome of the participants.

6.4.3 Methods and Procedure

To materialize these objectives, a correlational research design was devised to collect, analyze and interpret the data of the study.

6.4.3.1 Sample

The convenient sampling method was used to choose the participants for the study. Five hundred twenty two participants comprising 294 males (M = 20.53, SD = 2.06) age ranging from 17 years to 27 years and 228 females (M = 20.47, SD = 2.00) age spanning from 17 to 28 years were included in the study.

6.4.3.2 Tools

Following psychometric tools were planned to be employed to collect the data of the present study:

6.4.3.2.1 Metacognitive Awareness Inventory

To measure metacognitive awareness of the participants, Metacognitive Awareness Inventory standardized by Schraw and Dennison (1994) was employed. It consists of 52
items with five answer possibilities. Higher score indicated higher metacognitive awareness and vice versa. The test-retest reliability of this scale is .90 (Schraw & Dennison, 1994).

6.4.3.2.2 Trice Academic Locus of Control Scale

The internal and external academic loci of control were measured with the help of Academic Locus of Control Scale (Trice, 1985) containing 24 items with true or false options. The test-retest reliability of this scale has been reported to be .90 (Trice, 1985).

6.4.3.2.3 Academic Adjustment Scale

The academic adjustment of the students was measured by employing Academic Adjustment Scale (Anderson et al., 2016). It comprised of 9 items with five answer possibilities covering three domains namely academic lifestyle, academic achievement and academic motivation. The test-retest reliability of the scale is .72. The coefficients of validity of the three sub-scales were .74, .81 and .70, respectively (Anderson et al., 2016).

6.4.3.2.4 Socioeconomic Status Scale

To assess the socioeconomic status of the participants, Socioeconomic Status Scale (Aggarwal et al., 2005) was employed. This scale consisted of 22 items with multiple choice answers. The range of scores on this scale from 44 and below, 45 to 60 and 61 and above represented the low, middle and high SES of the participants in the study, respectively.

6.4.3.2.5 Academic Outcome

The percentage of marks achieved by the students in their last academic session was taken as the parameter of academic outcome.

6.4.3.3 Procedure

After the procurement of the psychometric tools, the participants were approached individually and debriefed about the basic goals of the study. The participants were instructed to read the instructions carefully before giving their responses to the various items of the scales. The data so obtained were arranged according to the demand of the method of
analysis. The mean, standard deviation (SD), t-test, Pearson Product Moment Method of Correlation and regression analysis were carried out on the obtained data.

6.5 Results

The findings of the present study evinced that metacognitive awareness, academic locus of control and socioeconomic status significantly shaped the nature and extent of academic adjustment and academic outcome of the male and female participants. The major findings were as under:

1. The findings showed that the male participants achieved higher mean scores on declarative knowledge, conditional knowledge, planning, monitoring and debugging as compared to their female counterparts whereas the females demonstrated higher mean scores on procedural knowledge, information management, evaluation and overall metacognitive awareness as compared to the males.

2. The male participants exhibited significantly higher mean score of academic achievement as compared to their female counterparts whereas the female participants exhibited higher mean score on academic outcome as compared to their male counterparts.

3. The participants with low SES significantly achieved higher mean scores on conditional knowledge, planning and monitoring as compared to the participants with average SES.

4. The participants with high SES achieved significantly higher mean scores on planning component of metacognitive awareness, academic motivation and academic outcome as compared to the low SES participants.

5. The positive and significant correlations were observed among the scores of declarative knowledge, monitoring, and academic achievement; declarative knowledge and overall academic adjustment; information management, debugging and academic outcome of the participants with low SES.
6. Similarly, the positive and significant correlations were recorded among the scores of declarative knowledge, procedural knowledge, conditional knowledge, planning, information management, monitoring, overall metacognitive awareness and academic lifestyle; the scores of declarative knowledge, procedural knowledge, conditional knowledge, planning, information management, monitoring, overall metacognitive awareness and academic achievement; the scores of declarative knowledge, procedural knowledge, conditional knowledge, planning, information management, monitoring, evaluation, overall metacognitive awareness and academic adjustment, and the scores of conditional knowledge and academic outcome of the participants with average SES.

7. The significant positive correlations were observed among the scores of declarative knowledge, planning, monitoring, evaluation, overall metacognitive awareness and academic lifestyle, and the scores of declarative knowledge, planning, overall metacognitive awareness and academic adjustment of the participants with high SES.

8. Declarative knowledge contributed significantly to the scores of academic achievement and overall academic adjustment of the participants with low SES.

9. Planning contributed to the scores of academic achievement, information management to academic outcome, monitoring to academic achievement and debugging to the scores of academic outcome of the participants with low SES.

10. In case of the participants with average SES, declarative knowledge contributed to the scores of academic lifestyle, academic achievement and overall academic adjustment, procedural knowledge to academic lifestyle, academic achievement and overall academic adjustment, conditional knowledge to academic lifestyle, academic achievement, overall academic adjustment and academic outcome, planning to academic lifestyle, academic achievement and overall academic adjustment, information management to the scores of academic lifestyle, academic achievement and overall academic adjustment, monitoring
to academic lifestyle, academic achievement and overall academic adjustment, evaluation to the scores of academic lifestyle, academic achievement and overall academic adjustment and overall metacognitive awareness to the scores of academic lifestyle, academic achievement and overall academic adjustment of the participants with average SES.

11. Declarative knowledge contributed significantly to the scores of academic lifestyle and overall academic adjustment, planning to the scores of academic lifestyle and overall academic adjustment, monitoring to the scores of academic lifestyle, debugging to the scores of academic outcome, evaluation to the scores of academic lifestyle and overall metacognitive awareness to the scores of academic lifestyle and overall academic adjustment of the participants with high SES.

12. The male, female and all the participants with internal academic locus of control achieved higher mean scores on declarative knowledge, procedural knowledge, conditional knowledge, planning, information management, monitoring, evaluation and overall metacognitive awareness as compared to their external counterparts except debugging.

13. The male, female and all the participants also showed higher mean performance on academic lifestyle, academic achievement and overall academic adjustment as compared to the externals except academic motivation.

14. The significant positive correlations existed among the scores of declarative knowledge and the scores of academic achievement, academic motivation and overall academic adjustment of the male participants with internal academic locus of control.

15. In the case of external male participants, the significant positive correlations existed among the scores of declarative knowledge, conditional knowledge, information management, overall metacognitive awareness and academic lifestyle, the scores of monitoring and the scores of academic outcome.
16. The female participants with internal academic locus of control seemed to be more benefited for which the positive and significant correlations existed among the scores of declarative knowledge and the scores of planning, information management, evaluation, overall metacognitive awareness and academic lifestyle; the scores of declarative knowledge, planning, information management, overall metacognitive awareness and the scores of academic achievement; the scores of declarative knowledge, conditional knowledge, planning, information management, overall metacognitive awareness and the scores of overall academic adjustment as well as procedural knowledge and academic achievement.

17. In the case of females with external locus of control, the positive and significant correlations were observed among the scores of evaluation and the scores of academic lifestyle; the scores of declarative knowledge, planning, information management, overall metacognitive awareness and academic achievement; the scores of declarative knowledge and the scores of academic motivation; the scores of declarative knowledge, conditional knowledge, planning, information management, overall metacognitive awareness and overall academic adjustment.

18. These findings were limited in case of the all the participants with external academic locus of control where positive and significant correlations were observed only among the scores of conditional knowledge and overall metacognitive awareness and the scores of academic lifestyle as well as between the scores of evaluation and the scores of academic achievement.

19. The regression analyses indicated that declarative knowledge contributed significantly to the scores of the academic lifestyle, academic achievement, academic motivation and overall academic adjustment of the male, female and all the participants with internal
locus of control whereas the same measure exhibited its effectiveness for the academic lifestyle of the male participants with external academic locus of control.

20. Likewise, conditional knowledge, information management, monitoring and evaluation contributed significantly to the scores of academic lifestyle of the male participants with external academic locus of control.

21. In addition, procedural knowledge exhibited its contribution only in the scores of academic achievement measure of female participants with external academic locus of control. Similarly, conditional knowledge, evaluation and overall metacognitive awareness contributed significantly to the scores of academic lifestyle of all the participants with external academic locus of control.

22. Conditional knowledge contributed significantly to the scores of overall academic adjustment of the female and all the participants with internal academic locus of control. Planning, information management and overall metacognitive awareness contributed significantly to the scores of academic achievement and overall academic adjustment of all the participants with internal academic locus of control.

23. In the case of female participants with internal academic locus of control, planning, information management and overall metacognitive awareness accounted for significant variance in the scores of academic lifestyle, academic achievement and overall academic adjustment measures.

24. The participants with internal academic locus of control exhibited better performance on the metacognitive awareness, academic adjustment and academic outcome measures as compared to their external counterparts.

6.6 Discussion

The findings regarding gender differences in metacognitive skills are contradictory. The study of Liliana and Lavinia (2011) reported dissimilarity in the metacognitive
knowledge and skills in the learning process of male and female students. The researchers have suggested that gender differences on various performance measures may be due to the dissimilarity in the students’ perceptions of teachers’ expectations about learning, use of prior knowledge in problem-solving, planning, knowledge about their intellectual strengths and weaknesses, the use of various learning strategies and monitoring the learning process. Similarly, Veenman (2014) revealed that the female participants showed decrement in growth and a subsequent resumption of growth one year ahead of the male participants. Contrarily, Yerdelen-Damar and Pesman (2013) did not report gender differences in metacognition and self-efficacy of high school students. Similarity in the performance of metacognitive awareness and academic adjustment of the male and female participants may be argued to be originated in the similarity of the parental expectations, socializations practices and educational opportunities available equally for both males and females in Indian society today as these realities have been reported to shape cognitive as well as metacognitive structuring.

Previous researchers have argued that the development of metacognitive awareness is closely linked with the nature of development of language and social relationships (Vygotsky, 1986). Previous researchers have suggested that social and cultural factors are important in cognitive development (Downing & Chim, 2004; Lourenco & Machado, 1996). The development of metacognition follows similar pattern as cognitive development which is determined to some extent by cultural and social factors. The opportunity of education, environmental stimulation, social mobility and parental education are linked differently with the individuals with dissimilar social status which distinctly provide the opportunity of internalization of new experiences and shape metacognition. These, in turn, act as the precursors to the development of cognition and metacognition (Downing, 2012).
Previous studies have reported that an internal locus of control has many positive outcomes for the individuals of all age groups and gender (Greenfield, 2014; Marsh, 2003). It has an important implication in the academic achievement of the students, adjustment and general well-being. The person with external locus of control has higher likelihood to show negative mental health symptoms such as anxiety, depression, poor relationship, conduct disorders along with decreased self-control and lowered ability to cope up with stressful situations (Arslan, Dilmac, & Halmarta, 2009). The internals believe in hard work, discipline and personal ability which distinguish them in conduct and behaviours with the externals (Andreou, 2000; Haye, 2005). Contrarily, the individuals with external locus of control have been reported to be involved in antisocial activities than those with a stronger internal locus of control (Atik & Guneri, 2013).

Previous researchers have reported that metacognition constitutes important variable affecting the learning outcomes of the students (Blank, 2000; Everson & Tobias, 1998; Georgiades, 2000; White & Frederiksen, 1998). The use of metacognitive strategies ignites one's thinking and can lead to more profound learning and improved performance more importantly for under performers (Swanson, 1990). Metacognition has been linked to a number of other constructs namely metamemory, critical thinking and motivation. Pintrich (2004) has reported that self-regulated learning activities are mediators between personal and contextual characteristics of the students and their performance and it can be expected that academic achievements of the students may be associated with different self-regulated learning activities that may be related to gender and socioeconomic differences. In essence, the findings of the study suggested that metacognitive awareness, academic locus of control, socioeconomic status and gender have significant relevance to unearth the academic adjustment and academic outcome of the students.
6.7 Implications of the Study

The findings of the present study have significant theoretical and practical implications for developing an understanding into the role of metacognition, socioeconomic status and academic locus of control in regulating the dynamics of academic adjustment and academic outcome of the students. The conclusions of the study will help the educationists, researchers, academicians, policy makers and public at large to understand the role of metacognition, socioeconomic status and academic locus of control in shaping the academic success of the students. The accurate and detailed knowledge of these constructs will facilitate the professionals in educational and organizational settings. Greater knowledge of these constructs will also help to identify and redress historical imbalance in educational attainment among different groups of people.

6.8 Limitations and Directions for Future Researchers

The present study is characterized by some limitations similar to all other scientific endeavours. The limited number of variables, small sample size, only quantitative data, translated tools and limited geographical area were some of the limitations of the study. Future researchers are recommended to carry out longitudinal studies employing experimental, qualitative and mixed methods to gain better understand into the nature of metacognitive awareness and academic locus of control in the academic adjustment and academic outcome of the students. Use of larger sample and variables to enhance the generalizability and true nature of the relationship of these variables is also recommended. Future researchers should focus on the cultural mechanisms inherent in metacognitive awareness and academic locus of control and cross check these findings in different socio-cultural milieu to better generalize the findings of the present study. Employment of non-student populations will also be fruitful.