Self-regulated Learning among University Students: Role of Self-determination related Needs and Academic Locus of Control

By

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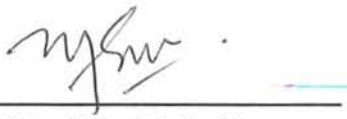

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ABSTRACT

As per self-determination theory, the satisfaction of self-determination related needs (autonomy, competence and relatedness) are necessary for engaging in self-regulated learning among university in which role of academic locus of control needs to be studied. This study was carried out to explore the role of academic locus of control learning as an explanatory mechanism between the relationship of self-determination based needs and self-regulated learning. A survey was conducted using Basic Psychological Needs Scale (Deci & Ryan, 2000) to measure self-determination based needs, Academic Locus of Control Scale (Trice, 1985), subscale of Self-regulated Learning of Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia & Mckeachie, 1991) and last semester GPA as an indicator of academic achievement. The sample comprised 356 (male = 203, female = 153) students of Quaid-i-Azam University from different departments. The reliability of the questionnaires was satisfactory. Various statistical analyses were run through to test the hypotheses. Nine hypotheses were made on based upon the past literature, and all hypotheses were confirmed on the basis of findings. Self-determination related needs (autonomy, competence, relatedness) were positively related with self-regulated learning and internal locus of control. The strongest predictors were autonomy and academic locus of control in predicting self-regulated learning. Academic locus of control played a mediating role between self-determination based needs and self-regulated learning. Academic locus of control was non-significant mediator for autonomy and relatedness in predicting GPA, but it played mediating role for competence in predicting GPA. Age and gender played a moderating role in relationship of self-determination related needs and self-regulated learning. Male students were more satisfied with all needs (autonomy, competence & relatedness) and internal locus of control was high in male students. Self-regulated learning was also high in male students as compare to female students. The findings can lead to better understanding of role of satisfaction of self-determination related needs and academic locus of control in self-regulated learning among adolescents.

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Zubana Afzal

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INTRODUCTION

Chapter 1

INTRODUCTION

Need is the most common and known word, people are all familiar with it, for example, everyone needs vitamins and nutrients for growth, and in early development children need responsive caregivers. When this usage of the term is applying in psychological context, there are three self-determination related needs (autonomy, competence & relatedness) that are required for mental health related functioning across individuals and cultures (Veronneau, Koestner, & Abela, 2005).

The findings of growing body of studies among adolescents revealed that there is positive relationship between satisfaction of basic self-determination related needs and general subjective well-being (Eryilmaz, 2012). Tian, Chen, and Huebner (2014) found that in adolescence self-determination related needs, may provide healthy self based processes for youth and feelings of autonomy, competence and relatedness play a important, in fact major role in "healthy psychological functioning" for youth (Roeser, Vander, & Strobel, 2001, p. 133). Furthermore, some researchers have claimed that at the onset of adolescence, the dissatisfaction of basic psychological needs decrease the motivation level among students (e.g., Eccles, & Roeser, 2011; Paulick *et* al., 2013).

Some research studies have supported the importance of self-determination based basic needs and their fundamental role in education domain, including Sarver (2000), who found that there is significant relationship between satisfaction of basic psychological needs and the grade point averages (GPA) among university students. When self-determination theory (Deci, Vallerand, Pelletier, & Ryan, 1991) is applied in educational domain, the satisfaction of basic psychological needs (autonomy, competence and relatedness) predominantly promote the student's interest toward valuing of education, developing a confidence in their abilities, attributes and motivation toward learning. The findings of research by Hui et al. (2011) revealed that these three psychological needs satisfaction are significantly positively correlated with academic motivation globally.

Many educational theorists and psychologists have explored a number of factors that effecting the student's learning performance, these factors have both academic and non academic related components. A growing body of studies including the external and internal locus of control that influence the student's learning and educational outcomes for instance, those with internal locus of control believe that the outcome of their learning is based on their own efforts even as those with external locus of control believe that the outcomes of their learning is based on other's power and luck (Dollinger, 2000).

Some psychological studies found correlation between internal locus of control and learning skills that is intellectually mature, independent, hard-working, responsible, problem solving skills, etc. (Eachus, & Cassidy, 1997; Keith, Pottebaum & Eberhrdt, 1986). So, as literature has shown that internal and external academic locus of control in student's learning and self-determination based basic psychological needs (autonomy, competence, relatedness) are essential organizing concepts for all students. Therefore, there is need to explore these variables among students in Pakistani context.

Noticeably, less attention has been paid to exploring the relationships between satisfaction of basic psychological needs and psychosocial outcomes in area of education. So, the aim of this study to explore the relationship between self-determination based variables (autonomy, competence, & relatedness), academic locus of control, and self-regulated leaning among students. In this study self determination is measured by the satisfaction of three basic psychological needs, autonomy, competence and relatedness as defined by self-determination theory. It will provide a great insight in the self-regulated learning among Pakistani students.

Self-determination

Self-determination is an emerging psychological construct, defined as volitional actions taken by people based on their own desires, and their self-determined related behavior depend on conscious awareness, planning and willingness to make decision (Nota, Soresi, Ferrari, & Wehmeyer, 2011). The self-determination theory focuses at the important role of self-determined autonomy and motivation on student's learning and education (Chirkov, 2009). Self-determination is

psychological variable that refers to "the ability to choose and to have those volitions that be the determinants of one's action" (Deci & Ryan, 2000).

Self-determination theory evaluates the internal motivation and discover three main internal psychological needs that engage in self-determination: (a) need for autonomy, (b) need for competence, and (c) need for relatedness (Deci, Ryan, & Grolnick, 1995). *Competence* refers to the knowledge of a sense of efficacy and abilities to interacting in one's environment (Bao & Lam, 2008). The need for competence is like self efficacy, which is defined as the inner belief in one's own abilities to complete a task (Meece, Glienke, & Burg, 2006). *Relatedness* satisfaction is defined as the experience of care, love and belongingness by significant people in one's life (Bao & Lam, 2008). Relatedness is a psychosocial variable refers to social belongingness, not a formal relationship and membership of group but, being valued and respected by others (Deci & Ryan, 2000). Finally *autonomy*, the most important component of self-determination theory defined as the experience of self-enrollment and personal choices in one's activity (Bao & Lam, 2008). The need for autonomy refers to one's behavior is based on his/her own willingness and desire to do (Deci & Ryan, 2000).

These three basic psychological needs are the core principles of the self-determination theory in all domains. Deci and Ryan (2000) describe these self-determination based needs as an organismic–dialectic framework. The innate development and growth tendency of human beings is called organismic and dialectic refers to the environmental interaction with the tendencies to enhance and effect the natural growth. Through the development of student's basic needs of autonomy, competence and relatedness, the physical educational plan enhance the self-determination among students (Athanasios, 2007).

The vital elements which promote autonomy are having active participation, self-awareness of one's goals, emotions, and external demands; having the abilities for self-direction and self-control on emotions and decision making. At home and in a school environment, the satisfaction of autonomy need enhances the internalization and motivation (Deci & Ryan, 2000). However, for the maintaining of internal motivation both needs for competence and autonomy are essential and vital (Niemiec & Ryan, 2009). The need for relatedness is to attain a sense of closeness, belongingness, and connectedness with other people. The process of self-regulation;

internalization of values, practices, social norms; performance in tasks require will be promote by feelings of connectedness with significant others like teachers, friends and parents (Deci & Ryan, 2000).

A study in Pakistan by Tariq, Batool, and Khan (2013) suggest that satisfaction of need for autonomy is positively correlated with academic outcomes and self-regulated learning and found non-significant results for gender differences have been found regarding to self-regulated learning.

The research findings of study by Nota et al. (2011) revealed that in academic context male students scored high on self-determination related variables as compared to female students. In additional, some other studies found that male students scored high on self-determination than female students (Field, 2005; Jaakkola, 2002). Males adolescence were slightly high scored on autonomy as compare to females adolescence (Enright, Lapsley, Drivas, & Fehr, 1980). In educational domain, a research has found that women are generally more autonomous than men (e.g. Walls & Little, 2005).

Self-determination theory (SDT). SDT is based on six mini-theories, each theory was developed to enlighten the factors of human motivationally functioning that reflects the human innate and active actions, and their wellbeing. Current study is following two mini theories from these six that are causality orientations theory and basic psychological needs theory to explore the relationship of self-determination based psychological needs with academic locus of control in predicting self-regulated learning.

Causality orientations theory. It concerns amotivated orientation, control orientation, and autonomy orientation that are three types of causality orientations (SDT.2008, "Causal Orientations Theory"). Satisfaction and frustration of basic psychological needs play a key role in causality orientations. Satisfaction of these needs, (need for competence, need of autonomy and need for relatedness) is related with internal locus of causality and frustration of these needs is associated with external locus of causality. The self-regulated learning, autonomy, self-acceptance, academic success, task related performance and goal achievement in educational domain is positively correlated with internal locus of causality.

Basic psychological needs theory. Describes the role of three nature psychological needs that are need of autonomy, need of competence and relatedness in human growth and development of personality. BPNT focuses on how the satisfaction of these needs effect on human functioning and growth and which factors contributing in satisfaction and frustration of these psychological needs. Theory demonstrates that psychological functioning and wellbeing effected by frustration of these needs. All needs are essential for development and maintenance of positive personality. One's relationship with others and tendency to develop relationship or connectedness and maintenance of relationship for example belonging to group, make best friends and close relationship with partners. Furthermore researches revealed that the need for relatedness is not only involve in development of good relationship but satisfaction of others two basic needs is also play a significant role in development and maintenance of relationship that are autonomy and competence. Differently management of basic need satisfactions that relating with wellbeing at various level.

Theoretical framework based upon two models aforementioned guided in selecting variables of the current study that is role of self-determination based needs (autonomy, competence, and relatedness) predict self-regulated learning with academic locus of control as mediator which is displayed in Figure 1.

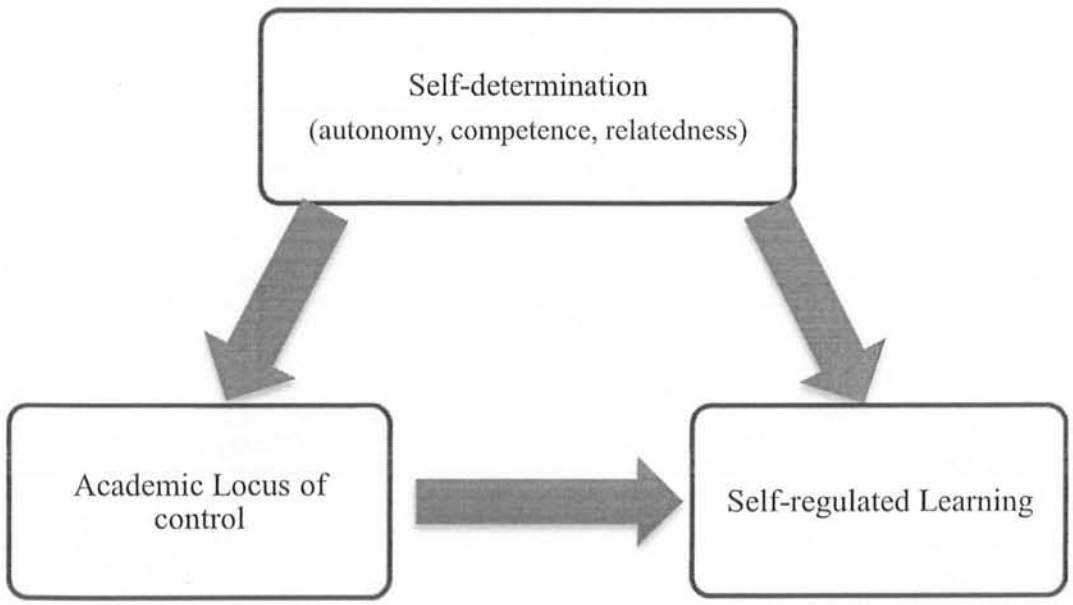

Figure 1. Proposed model based on self-determination theory.

Self-regulated Learning

Self-regulated learning is a new, important and emerging variable in educational domain. Zimmerman and Schunk (1989) defined self-regulated learning as a self-directed opinion, actions, and feelings which are analytically oriented toward accomplishment of student's own goals. It is just like students' becoming "masters of their own learning" (p. 4).

According to Winne (1995), self-regulated learning is a positive independent and autonomous process. Self-regulation is a cognitive and behavioral progression of one's skills by changing thinking pattern and learning behaviours. Another study revealed that self-regulation is significant in educational domain because the purpose of education is to enhance lifelong learning skills (Zimmerman, 2002). Self-monitoring or self-regulation is self-checking involving adjusting procedures for improving performance (Zimmerman, 2000). For academic learning, self-regulation is an important element (Jarvela & Jarvenoja, 2011; Zimmerman, & Schunk, 2008). Self-regulated learning enhance the student's abilities toward learning skill, academic performance and examination of academic improvement (Wolters, & Taylor, 2011).

In early onset of childhood, the functional definition of self-regulation is related with behavioral self-regulation, which based on control of behaviour in particular stituation (Wanless, & Murray, 2007). The behvioural regulation related task are children's capability to retain information commands, monitoring and modification of the behaviour by inhibit and performing a specific action (Rueda, Posner, & Rothbart, 2005). Decision-making functions, cognitive development and behavioral improvement are positively related with cognitive and behavioral regulation (Zelazo, Muller, & Frye, 2003).

In another study by Bidjerano (2005) female students have more self-regulated strategies, for example, organizing study material, explanatory skills and hard-working, higher order functioning, time managing skills, organization than male students, while statistically non-significant gender differences were found in analytical thinking skills, studying with peers and seeking help.

A study revealed the findings on gender difference in nursery school through intermediate educational level that female students are more tend to make relationship with friends and teachers, more likely to engage in activities and get high grades

(Duckworth& Seligman, 2006). Study by Yukselturk and Bulut (2009), found non-significant results regarding means difference for female students and male students in self-regulated learning. Therefore, in current study gender differences will also explored.

Cognitive approach regulation is, defined as "the regulation of concentration, awareness and careful selecting strategies use in the completing cognitive tasks" (Blair, 2002, p. 112). Social communication skills, such as controlling the negative expression of feeling for example, aggression and positive connectedness with friends and teachers are task-related behaviors of behavioural self-regulation (McClelland et al., 2007). Cognitive and behavioral self-regulation are positively correlated with successful classroom functioning, high level of academic achievement, and effective use of learning (Fredricks, Blumenfeld, & Paris, 2004).

Motivation has a fundamental impact on students' academic performance and self-regulated learning (Zimmerman, & Schunk, 2008). It is much more hard to achieve without motivation. Some researches explained the qualities of students who have self-regulated learning. Students with self-regulated learning mostly sit on the front seats in the class (Labuhn, Zimmerman, & Hasselhorn, 2010), more interested in class questioning (Elstad & Turmo, 2010), and help from additional knowledge to understand the course work (Clarebout, Horz, Schnotz, & Elen, 2010).

Furthermore autonomous behaviours are positively correlated with wellbeing (e.g., Chirkov, Ryan, Kim, & Kaplan, 2003), enhanced academic performance, better determination (e.g., Sebire, Standage, & Vansteenkiste, 2009), and improved and modification of health-related behavior (e.g., Pelletier, Dion, Slovinec- D'Angelo, & Reid, 2004).

Self-regulated learners logically operate their learning environment and sources to face the challenges (Kolovelonis, Goudas, & Dermitzaki, 2011). A study found that mostly self-regulated learners seek additional suggestions and information as compare to external regulation and follow positive and effective learning strategies (Clarebout, *et* al., 2010). A general structure for self-regulated learning developed by Pintrich (2000), have four components namely forethought, monitoring, control and reflection are explained in his model.

Pintrich's (2000) study in three areas of discipline analyzed students inspiration, self-learning procedures and information. The findings revealed that the students who are high achievers, have self-regulated learning , more likely to engage in activities and are more motivated to do task as compare to low achievers.

Types of self-regulation. Motivations of students play a fundamental role in self-regulated learning. The development and enhancement of student's motivation is most important goal in academic settings, for example internal motivation leads to self-regulated leaning that enhance the student's engagement in learning, their academic achievement and their logical thinking (Lepper, Corpus & Iyengar, 2005). Current study covers these type of regulation but, not as specific types of regulation. Less scores on self-regulated learning indicate external regulation and high score indicate internal level of regulation

External regulation. It is related with external motivation, high level external locus of control and least degree of self-determination and less level of autonomy. The cognitive and behaviour regulation is based on other's responding toward one's action. For instance, students who receive positive feedback from authority figures may improve their grades or educational achievement than those students who receive negative feedback or criticism from others.

Interjected regulation. It is actually related with one's self -confidence. Students who have interjected regulation in learning only engage in an activity when they feel it is important for them. So, they are more prone to avoid activities that have behaviours against the social norms, then students feel shame, guilt and worthless.

Identified regulation. This type is goal oriented focuses on the deep motivation for the behavior that has particular goal-directive outcome. Students who use identified regulation are more motivated to achieve their goal and the main focus on goal outcome. For instance, if one's goal is to achieve high grades in exam, then he/she will more likely to engage in learning task and use learning strategies to obtain high marks. Even though the learning activity is not attractive, enjoyable for them but, they want to continue for the sake of attain their goal.

The degree of motivation and self-determination varies in these three types of self-regulation, but the forth type of self-regulation is strongly related with high level

of motivation and self-determination that is known as intrinsic regulation or self regulated learning.

Intrinsic regulation. It is strongest structure of self-determination and self-regulated learning. Students' who have intrinsic regulation are more motivated toward task and more likely to engage in learning activities. They feel more competent and self-determined. Students with intrinsic regulation have high academic achievements and have mastership in learning skills because they are truly concerned to learning (e.g., Lepper *et* al., 2005). A study revealed that intrinsic regulation increases at the onset of adulthood, but it not seem to be stable, gradually decreases with age (Corpus, McClintic-Gilbert, & Hayenga, 2009).

Self-determination and self-regulated learning. The one of general principles of self-determination theory is that learning based outcomes and performance in task are predicted by motivational and autonomous regulation (Niemiec & Ryan, 2009). Recent findings of some studies have recommended that autonomy play a significant role in well-being, performance outcomes and self-regulated learning (Chirkov *et* al., 2003; Tariq, 2011). Auotomous self-regulation is influenced by autonomy supportive environment (Standage, Duda, & Ntoumanis, 2006).

According to self-determination perspective, self-regulation defined as an autonomy continuum from less to more (Ryan, & Connell, 1988). Self-determination theory postulates that self-regulated learning enhanced by competence (e.g, task-related performance, ability to face challenges) and relatedness (e.g., valued by parents and friends). Parents enhance their children's self-regulation and motivation by fulfilled their needs for autonomy. However, the role of environment support and one's personal belief about their behaviors (cognition) in self-determination based needs provide a theoretical model for self-regulated learning.

Shahar, Henrich, Blatt, Ryan, and Little (2003), found that when the behavior is admitted and directed by the self (i.e., when regulation based on internal motivation), autonomous regulation is promoted. Whereas when the behavior is not admitted and directed by the self (i.e., regulation based on external factors), external regulation is observed.

Some researchers found that there is also a positive relationship between social support and cognitive regulation (Patrick, Ryan, & Kaplan, 2007). Cognitive and behaviour learning processes and positive learning outcomes are promoted by satisfaction of basic needs for autonomy, competence and relatedness. (Reeve, Deci,& Ryan, 2004). Autonomy is promoted by social support learning and autonomy influences the psychological wellbeing and the self-determined behaviors (Levesque, Zuehlke, Stanek, & Ryan, 2004).

In a recent research Wood (2016) that has applied the principles of self-determination theory (SDT) within classroom setting and recommended that student's motivation to involve in learning tasks and engagement in classroom are predicted by the satisfaction of need for autonomy, competence and relatedness. The satisfaction of these needs also play a significant role in student-teacher relationship.

Self-determination theory (SDT), suggested that autonomous self-regulation and competence enhanced by satisfaction of basic needs; autonomy, competence, and relatedness and student's point of view about their teachers' autonomy support (Ryan & Deci, 2000). People who are more autonomous, have confidence toward their abilities get accountability for the consequences of their behaviours, have control of their personal planning and decisions, and are internally motivated (Doyal & Gough, 1991).

Ahmad (2012) found that school adjustment and healthy child-teacher interaction is positively correlated with satisfaction of need reported by children. In educational domain, research findings revealed that there are positive relationship between self-regulated learning strategies, educational outcomes and satisfaction of basic psychological needs (e.g., Vander Elst, Van den Broeck, De Witte, & De Cuyper, 2012).

Academic Locus of Control

"Locus of control direction is a belief about outcomes whether they are based on one's actions or behviours or based on external control/ external events." (Zimbardo, 1985, p. 275). It is defined as "The aspects of an individual that contribute in his/her failures and successes " (Forte, 2005, p. 65).

There are two types of locus of control: *Internal* represents "people who have internal locus of control have belief about outcomes of their actions are controlled by

their own decisions and efforts" (Jatkevicius, 2010, p. 78). *External* represents "people who have external locus of control have belief about outcomes of their behaviours are based on external control, environment and by chance (fate, luck, and so on)" (Jatkevicius, 2010, p. 78).

Number of studies found the relationship between academic locus of control and academic achievements. Particularly, "high educational level leads to increases in internal locus of control" (Slagsvold & Sorenson, 2008, p. 30). Students who receive better grades typically possess an internal locus of control. A research study by Kirkpatrick, Stant, Downes, and Gaither (2008) revealed that students who have internal locus of control have high academic achievement (GPA) then those students who have external locus of control (p. 486). Deep and planed learning processing and strategies mostly used by students who have internal locus of control (Grimes, Millea, & Woodruff, 2004). Students who have some learning impairments, are more likely to tend external locus of control (Firth, Frydenberg, & Greaves, 2008).

There is a positive relationship between internal locus of control and success (Wise, 1999). Shepherd, Fitch, Owen, and Marshall (2006) concluded in their research that the students with high internal locus of control improve their performance daily.

Gratz (1999) discuss that students who face failure and unsuccessful in their carrier adopt and follow external locus of control, this cause less try and less motivated for their goal. Huse, et al. (2007) conclude that when people believe that they have a capability to manage what happens, the individuals will,

- More towards internal locus of control for future behavior.
- Follows different steps and strategies that can better their external environmental conditions.
- Concerned with their abilities and value reinforcements in their achievement.
- Defend against faint attempts that can influence their ability.

Consequently people who have more internal locus of control are conscious for their self efficiency, problem solvers, realistic independence, hard working, reliable and mentally mature (Ossa, 2012). People who look for external sources many not always be wrong because external factor also effects our conditions and situation.

However wrong conclusion reached to us if we use the environment as an excuse. So, the person that are blaming their secondary issues relative to personal resolve always face discrepancy for current situations. These persons will be meaningless, careless, illogical, conflicting disappointed and always need direction (Ossa, 2012).

Locus of control significant predictor of procrastination, and grade in educational domain (Carden, Bryant, & Moss, 2004). There is no significant difference between males and females among academic locus of control (Trice, 1985). An advanced extent of intellectual performance has been noted in students with who follow internal locus of control (Wood, Saylor & Cohen, 2009). Ozment and Lester (2001) reported in their study that those who have high level of internal locus control, their views for next life is always positive.

Those who have high level of internal locus of control show more interested to perform well in school and hunt high level of achievement (Sidelinger, 2010), as compared to those who give up easily and spend their time on externals factors , have external locus of control (Blanchard & Henle, 2008; Wang, 2009). A study showed that high degree of self-motivation, high degree of self-determination and high level of social maturity are significantly positivity correlated with internal locus of control. Academic achievement is also associated with internal locus of control (Nelson & Mathias, 1995).

Students who have internal locus of control are more talented students and have high abilities to learn (Assouline *et* al., 2006; Siegle *et* al., 2010). Another study by Laffoon, Jenkins, and Tollefson (1989) revealed that most talented students and higher achievers had significantly more internal locus of causality as compared to those who are underachievers and less talented. Furthermore, findings of another research shown that students with high achievements have high internal locus of causality (Knight, 1995).

There is a strong relationship between age and locus of control. According to Schieman (2001), locus of control change smoothly as like age or like different stages between development of kids to adolescents, as individuals moving toward adult on set, have internal locus of control and when they are moving toward old age, have external locus of control. Leaving, less motivation and weakening health all are the

factors that put in to a external sense of control, while learning, wedding, economic satisfaction, and religious association are factors contributing in internal locus of control (Schieman, 2001).

Some studies in Pakistan revealed gender differences on self-regulated learning. A study found non-significant results regarding gender difference for self-regulated learning strategies (Fazal, Hussain, Majoka, & Masood, 2012). A recent study findings reported that male students have high level of self-regulated learning strategies as compare to female students (Ahmad, 2012). Another recent study found the same findings that is boys scored high on self-regulated learning than girls (Munir, & Rehman, 2016).

Locus of control also affected by one's cultural history and the way of his/her socialization. Lower class group not have benefits from basic opportunities as compared to predominant like Caucasian's in North America so, external beliefs are high in lower class group (Lefcourt, 1992).

There is strong significant relationship was found between locus of control and gender e.g., women have external locus of control and men have more internal control. Gender gap effects the changes in locus of control, there is a positive relationship between gender inequality and gender differences in sense of control because there are many courses that cover men's and women's life (Slagsvold & Sorenson, 2008, p.29). Students' 96% success is due to their internal locus control (Elias, Uli & Suandi, 2007). Give up, lack of knowledge, insufficient learning and Laziness are the main factors of failure (Lebedina-Mazoni, 2004).

A recent study in Pakistan by Zaidi and Mohsin (2013) also revealed that internal locus of control has been found in male students and external locus of control found in female students. Findings of another study in Pakistan revealed that student's self regulated learning enhance their educational achievements and their ability toward evaluation of their performance (Harris *et* al., 2005).

Negative aspects of external locus of control, are measured by number of studies, for example, some researchers revealed significant results between external locus of control and educational dishonesty (Gallagher, 2010; Pino & Smith, 2003). Classroom stress, classroom and school burnout and under achievements are positively related with external locus of control (Fimian & Cross, 1986). Actions

related dishonesty and some personality constructs, as well as locus of control, studied by Alarape and Onakoya (2003) among students. The results found the academic dishonesty and cheatings behaviours are positively associate with external locus of control. Furthermore, external locus of control had negative effect on student's behaviours, reported that students who have external locus of control tend to show more cheating behaviours. A study on American Students by Trevino and Youngblood (1990) revealed that students with internal locus of control were less likely to connected with unethical behaviors such as cheating in classroom and academic dishonesty.

Another study found significant results between internal locus of control and academic grades. Students who have internal locus of control are more adjusted in classroom and college life, and have high grades in academic performance than those students who have external locus of control toward their behaviors (Kirkpatricket *et* al., 2008). Generally academic achievements are significantly associated with internal locus of control (Carden, Bryant, & Moss, 2004).

Stipek and Weisz (1981) revealed that due to high level of anxiety and for approval high achieving female adolescence undervalue their future high level of academic success. The results of a research study by Strickland and Haley (1980) revealed that male students scored high toward internal locus of control on academic achievement related items as compare to female students. These findings are supported by Dweck (1986) reported that boys are less likely to feel guilt on lack of capability and blame on environmental factors as compare to girls.

Self-determination and academic locus of control. The students who have internal locus of control are more hardworking than those who have external locus of control (Barbuto & Story, 2008). A study showed that locus of control is predicted by self-determination (Reeve, Nix, & Hamm, 2003).

Some researchers found that there is positive correlation between internal locus of control and competence (Siegle *et* al., 2010). In the same way, a research study has revealed that individuals who are high achievers, scored high on items of internal locus of control and individuals who are underachievers scored high on external locus of control (Kormanik & Rocco, 2009). In other words, talented students tended to believe they have more control over their coursework due to the

fact that they could control the learning strategies they used and the amount of effort they put in to their work (Nokelainen, Tirri, & VälimäKi, 2007). Another study revealed that skilled students had a tendency to confidence they have more control on their coursework because of the way that they could control the quality of learning method and their efforts toward studies (Nokelainen et al., 2007) .

Most important principle of self-determination theory is that the fulfillment of need of autonomy, need for competence and need for relatedness predicts internalization of behavior and internal locus of causality (Ryan & Deci, 2003). These findings are supported by Tian, Chen, and Huebner (2014) who found that self-determination skills are significantly related with internal locus of control in predicting self-regulated learning.

High scores on autonomy are positively related with competency, internal locus of control and internal motivation. They all are also predictors of academic achievement. (Della, Fazey, & John, 2001).

All around, students who have internal locus of control feel more confident toward their academic capabilities. The students who have effective learning skills tended to have internal locus of control as compare to those students who have less effective learning abilities. Research by Prociuk and Breen's (1994) found that internal locus of locus is positively correlated with learning skills and academic achievement among college students. In other words, students who have external locus-of-control are prone to suppose that their luck and educational provider control their study outcomes. When their education providers give them educational and learning orientations, they feel more satisfacted of their beliefs (Moore, 2007). Students who have external locus of control, perceived their educational outcomes as control by authority figures and luck, not by their efforts (Oyedele, & Simpson, 2007).

Academic locus of control and self-regulated learning. The individuals who have internal locus of control are more likely to use cognitive strategies and use critical thinking for solve the problem (Kesici, Sahin & Akturk, 2009).

People who have internal locus of control are less prone to feel helplessness, more in favor to use approaching in planning, and more motivated toward task (Shipe, 1971). Some other research studies also support the declaration that people with internal locus of control are less rigid, less likely to focus on employ stereotypes in

their thinking and use more rational thinking patterns or logical ideas (Baiocco, Laghi, & D'Alessio, 2009). The development of communication and verbal skills are better in individuals who have internal locus of causality (Libert *et* al., 2007). Internal locus of control improve the one's abilities and memory (West, Freudeman, & Bagwell 2009). Generally, internal locus of causality predicts creativity among adolescence (Kesici, Sahin, & Akturk, 2009).

Some studies revealed that when internal locus of control is interrelate with gender and age, there is positive result was found between performance grades and internal locus of control however, the relationship between internal locus of control and performance grades is not clear (Gifford, Briceno, & Mianzo, 2006; Jones, 2008)

The locus of control (causal attributions) is regulate one's behaviour that can be positive or negative. The negative behaviors are determined by external locus of control for example when person thinks that the cause of his/her failure is luck (external locus of causality) and next time he/she will not put effort in exam (negative behaviour) The positive behaviours are determined by internal locus of control for example, when a individual thinks that his/her failure is due to lack of effort (internal locus of causality), then individual will put more effort in next time (positive behavior) (Nokelainen *et* al., 2007). Ziegler et al. (2012) explained that people who make more accurate attributions toward their success and failure, they are more likely to engage in self-regulated learning.

Other Contributory Factors

Following are few factors that contribute in development of self-determination, academic locus of control and self-regulated learning.

Culture. Self-determination theory proposed that the three self-determination related needs (autonomy, competence, and relatedness) are natural, universal and fundamental requirements for nature growth of human being. Hence, among across cultures and societies, the satisfaction of these needs involved in the optimal performance of all individuals (Chirkov *et* al., 2003). Self-determination theory acknowledged that people's experiences and interpretational meaning are influenced by their cultures norms and values, for example, experience of autonomy may be interpret as positive or negative, as prevented and supportive (Chirkov, 2009). Cultural norms and values also influence the people's expressions of their needs for

autonomy, competence and relatedness. So, the advantages of self-determination and negative outcomes of frustration of needs of autonomy, competence and relatedness differ across cultures (Cross, Gore, & Morris, 2003). However, many cross-cultural educational psychologists claim that the values and norms of western cultures effect the variables of self-determination and autonomy. For example, Oishi (2000) asserts that autonomy is appreciated in western societies and individualistic nations, but in collectivistic cultures mutually-dependent relationships are appreciated, so the need for relatedness produce conflicts in need for autonomy (Cross, Gore, & Morris, 2003).

The need for autonomy in collectivistic cultures can be refers to the self-acceptance of choices and internalization of the requirements of others (Bao & Lam, 2008). The findings of recent study by Hui et al. (2011) has asserted that the academic interest and motivation in the East as well as in the West is promoted by the satisfaction of these three basic needs (autonomy, competence, relatedness). Academic motivation was significantly predicted by competence, relatedness and autonomy among Chinese students. The need for relatedness is satisfied by connectedness with parents that positively predict the academic motivation. Relatedness had a significant positive relationship with autonomy and competence, illustrating that higher the support, care and acceptance received from their parents, students feel more autonomous and competent. Hence, academic success, learning attitudes, and student's well-being are enhancing by satisfaction of these three basic needs (Vansteenkiste, Maarten, Zhou, Lens, & Soenens, 2005).

The level of autonomy has significantly related with engaging in particular behavior and a degree of wellbeing among adolescence (Ryan, & Deci, 2003). The aim of this study is to find further support of the positive relationship between student's self-regulated learning and self-determination based these needs. This study plan is based on the findings by Chirkov *et* al., (2003) revealed that autonomy significantly predicts academic outcomes that effected by different cultural directions and values.

Self-determination theory also proposed that the satisfaction of need for autonomy, competence and relatedness promote the well-being and natural growth of human being across cultures (Deci & Ryan, 2000). Personal ambitions, preferences and degree of satisfaction of needs and value of these needs varying across cultures (Doyal & Gough, 1991). The aim of cross-cultural researches, examine the universal

useful effects of satisfaction and frustration of self-determination based needs in different cultural forms (Ryan & Deci, 2003). This study extend this perceived cultural model fit among Pakistani university students by investigating the relationship between satisfaction of basic needs and academic self-regulated learning.

Parenting support. According to self-determination theory, the engagement of young people in self-initiated, self-regulated, and volitional behavior is promoted by social environment that is supportive and flexible (Ryan & Deci, 2000). For the development of self-determination, parents play a very vital role in the context of family. The evidence provided by research studies indicate that parents who are autonomously supportive permit their children to investigate and perform the behaviour according to their own interests and standards (Grolnick *et* al., 2002). Research by Soenens and Vansteenkiste (2005) has revealed that in the domain of school, peer relationship and parental autonomy support significantly contributed to self-determination.

In contrast, the main focus of controlling parental style is on outcome as compare to processing and controlling mechanism tend to identifying children's internal motivation and internalization (Grolnick, 2009; Joussemet, Landry, & Koestner). Second, the arrangement of structure by guardians, for example, giving clear statement about behavior, provide ways to improve self-control, boost child's capability, comprehension of approaches to achieve success (Grolnick, 2009). Third, parental association encourages youngster's motivation toward success, internalization of qualities, and students self-regulated learning (Grolnick, 2009). The encouraging and loving home environment additionally fulfills children requirements for need of relatedness. To put it obviously, parental involvement in their children's education and parental self-determination based supportive structure are important to enhancing autonomous self-regulation.

Teacher's autonomy-supportive style. The idea of autonomy supportive environment illustrates an social climate where encouragement, acknowledgement of one's ideas and responsibility such as for learning, opportunities to make decisions and goals related information are available by authority figures (parents and teachers). Encouraging student's achievement, promote questioning, giving significant and reasonable answers to questions, and nonparticipation in arguments are fundamental aspects of autonomy-supportive interactions. So, the minimal burden, criticism,

arguments, and power are determinants of autonomy support (Williams, Gagne, Ryan, & Deci, 2002).

The teachers who provision students with organized material and guidance be likely to have a more autonomy and independence-supportive style (Sierens *et* al., 2009).There are some research studies found that student's self-determination, engagement in tasks and student's adjustment in educational environment is positively correlated with teacher's autonomy support (Soenens & Vansteenkiste, 2005). As autonomy supported by parents contributing student's self-determination, teachers autonomy support for example providing choices, foundation for choices, relating with student's aspects, and reducing the usage of controlling language in the classroom context, play an important role in enhancing student's self-determination (Sierens et.al., 2009). The student's motivation to achieve personal goals, interest toward participation in task and the needs of autonomy and competence are satisfied by teacher-supportive practices in classroom (Reeve & Halusic, 2009). Moreover, the student's competency, interest, satisfaction and enjoyment toward task developed by autonomy supportive environment in classroom context (Black & Deci, 2000). The students who have low level of autonomy may improve their learning performance mainly in an autonomy-supportive environment (Reeve & Halusic, 2009).

Guided and independent practice. Guided practice can help to improve student's motivation and self-regulated learning (Lee, Hyeon, Kyu, & Barbara, 2010). Vidal-Abarca, Mana, and Gil (2010) explored that guided practice of self-regulated strategies improve the reading skill test scores, bettered task engagement and enhanced motivation to read. Discussion with students is one way teachers can help in giving guidance to students in setting goals and review their strategy use and progress, as conferences contribute to encourage student thinking and learning (Montalvo & Torres, 2008). In independent practice students are given chances to repeat the strategy on their own, which can finally reinforce independence (Schunk & Zimmerman, 2007). While direct and precise strategy instruction can be dominant on its own, just a few of students corporate the SRL strategy into their academic procedures without any guidance of autonomous practice (Lee, Jie, Dennis, & Gregory, 2010).

Social support and feedback. Use of SRL strategies and task involvement were dominant in those students who regularly received provision from their teacher

(Patrick *et* al., 2007). The support from parents and teacher is known as feedback or social support. A study revealed that what type of work done by students, how can they improve it further, and important steps that they can use to improve their work are include in effective feedback (Hattie & Timperley, 2007). It can encourage student motivation and self-regulated learning (Wigfield, Klauda, & Cambria, 2010). The students who acknowledged with positive feedback from teachers tend to use SRL strategies to increase their marks in math (Labuhn, *et* al., 2010).

Some research studies found that the teacher's behavior patterns such as collaboration (high level of closeness) and supremacy (high level of power) contribute in student's success (Wubbels & Brekelmans, 2005; Wubbels et al., 2006). Furthermore, teacher behavior toward students seem to be necessary to deal with feelings, opinions, attitude, and thinking of the students (Schunk & Meece, 2006). According to Khine and Fisher (2004), the student-teacher relationship is strong predictor of student's better academic performance, when students seek help from teacher and want to maintain relationship with teacher, they tend to be more engaged in self-regulated learning and put great effort and strive more in the school tasks, achieve good grades. However it was found that the strong relationship between teacher instructional behaviours toward students and student's academic achievement (Patrick *et* al., 2007).

Literature support the postulate of self-regulated learning model by Zimmerman (2000) that environment and external factors play a fundamental role in student's cognitions and self-regulated learning (Gungoren, 2009). Professors promote student's self-regulated learning by organize the material and provide self-regulated learning strategies into course work of a subject (Boekaerts, 1999), this type of teaching also enhance the student's internal motivation and motivate the students to use their skills in learning (Rothbart et al., 2011). This methodology is positively correlated with student's academic achievement (Ommundsen, 2006; Schunk, 2005).

Motivation. Motivation is an important part in self-directed learning, autonomous learning and self-regulated learning. Motivation effects the students in how they adjust engagement in their learning process. During the different stages of self-regulated learning, motivation effects the students in how they adjust engagement in their learning process. Zimmerman (2000 p. 17) declared that if a person cannot motivate themselves to apply self regulatory skills, they are not important. For

students' actual and successful engagement in self-regulated learning, positive motivational beliefs like positive self-efficacy (one's decision about their potential to execute an action) for task, internal value for the tasks and task goals, and goal direction are essential (Boekaerts, 2010).

Rationale of the Study

The purpose of the present study is to investigate the relationship between the variables of basic psychological needs satisfaction (autonomy, competence and relatedness) termed as self-determination, self-regulated learning, and locus of control in academic setting.

From self-determination theory perspective, children who autonomously initiate achievement-related behaviours and learning are more self-regulated than those who do only out of internal feelings of pressure and anxiety. At the same time self-regulation is also considered to be related to better academic performance. Slavin (1990) stated that self-regulated learners set academic goals, select appropriate learning strategies to achieve these goals, and continually monitor goal progress. An internal locus of control generally predicts greater academic success overall (Carden *et* al., 2004; Keith *et* al.,1986; Kirkpatricket al., 2008). Several studies found the relationship between self-regulated learning and autonomy and social support. Findings of a research by Sierens et al. (2009) revealed that student's perception about teacher autonomy-supportive feedback was positively correlated with cognitive regulation. Furthermore, Vansteenkiste et al. (2012) illustrated that students' learning behaviour, such as determination for learning and the usage of self-regulated learning strategies was positively correlated with autonomy-supportive environment.

Many researches explored the proposed relationship in other cultures but none could be found in Pakistani context. Therefore, it deemed interesting to find that how these basic needs effect academic locus of control and self-regulated learning among university students, whether any relationship between these variables exists among students in Pakistani cultural context too; if it does, what is the nature of that relationship. Almost all of the research evidence support only the relationship of autonomy, and competence with self-regulation (Doyal & Gough, 1991; Knee, & Hodgins, 2002; Oishi, 2000; Ryan, & Little, 2003; Wolters, & Taylor, 2011), but did

not emphasized link of relatedness needs with self-regulated learning. Since, Pakistan is a collectivistic culture, therefore, social relatedness seems important in this culture for achieving goals in academic setting. Hence, the goal of current study is also to explore the role of relatedness along other needs (autonomy and competence) and academic locus of control in self-regulated learning among Pakistani university students.

Both locus of control and subjective well-being have been well-studied in Western contexts, but not in Eastern contexts (Spector et al., 2002; White, 2007); nevertheless, there is evidence to suggest that the different nature of cultures like China (Far Eastern) and Southern Africa (South Western) should produce different profiles and relationships between these variables (Stocks, April, & Lynton, 2012). Notably, the differences between individualism and collectivism have been shown to have an effect on locus of control (Spector et al., 2002).

Current research was aimed at conducting on sample of adult university students. In students' personal life, educational life, and career, university level education plays a very significant role (Almarabeh, Majdalawi, & Mohammad, 2016). They face many challenges on daily basis. At this stage individuals tend to interact with environment and make many new relations on the basis of daily basis interaction. So, they are more prone to face psychological problems that affect their academic achievement and career (Esler *et* al., 2016). Some external factors also affect the students' learning including; university teachers are free to adopt teaching style and have choice to change study material according to their own choice, less professional guidance in libraries and laboratories, provide directionless skills and immense focus on theoretical work as compared to practical work (Bashir, Mahmood, & Shafique, 2016).

Current study based on self-determination theory is considering role of personal factors (i.e., self-determination related needs including autonomy, competence, relatedness and academic locus of control along demographic variables) and environmental factors (i.e., parents' and teachers' support) in students' self-regulated learning in university setting (see Figure 2). The basic psychological needs are satisfied by type of regulation that is based on responding to environment (Knee & Hodgins, 2002).

The literature showed that adult students are more motivated to achieve grades than adolescents students (Pellizzari & Billari, 2011). The study based on these variables is needed in university setting because development of these psychological needs along receiving autonomous support from family and teachers as a mode of social relatedness help important to promote education-related outcomes, academic achievement, and school engagement (e.g., Ratelle, Guay, & Chanal, 2005; Ratelle et al., 2007) that predict better future ahead.

METHOD

Chapter 2

METHOD

Objectives

Following are the objectives of this study:

1. To study the relationship between self-determination related needs (autonomy, competence, relatedness), academic locus of control and self-regulated learning among university students .
2. To Study the role of demographic variables (age, gender, difference in education level , family style, Socio-economic status ,number of siblings etc.) in self-determination related needs (autonomy, competence, relatedness), academic locus of control and self-regulated learning among university students.
3. To establish mediating role of academic locus of control for self-determination related needs (autonomy, competence, relatedness) in predicting self-regulated learning.

Hypotheses

Following hypotheses were proposed on the basis of literature:

1. There is positive relationship between self-determination needs (autonomy, competence, relatedness), internal locus of control and self-regulated learning.
2. There is negative relationship between external locus of control and self-regulated learning.
3. There is also negative correlation between external locus of control and self-determination related needs (autonomy, competence, relatedness).
4. Teacher's support is positively related with self-regulated learning.
5. Self-determination related needs (Autonomy, Competence, Relatedness) and internal locus of control positively predict the self-regulated learning.
6. Academic locus of control mediate the relationship of self-determination related needs (autonomy, competence and relatedness) in predicting self-regulated learning.
7. Academic locus of control mediate the relationship of self-determination related needs (autonomy, competence and relatedness) in predicting GPA.

8. Boys have more internal locus of control than girls.
9. Boys have more self-regulated learning than girls.

Operational Definitions

Self-determination. This is based on three basic needs

Autonomy. Autonomy can be defined as the one's involvement in activity on their interest, decision making and personal planning. Autonomy, perhaps the most debated in SDT, refers to the experience of volition and the self-involvement of one's activity (Ryan & Deci, 2002).In this study, autonomy is measured by a rating scale and high score indicates more autonomous and low scores indicates less autonomous person.

Competence. Competence means one's feelings or perceptions of competence with respect to an activity or domain. More specifically, the experience of a sense of effectiveness in interacting with one's environment (Deci & Ryan., 2000).In this study competence measured by a rating scale and high score indicates more competence and low scores indicates less competence.

Relatedness. Relatedness is defined as the experience of love and care by significant others (Deci & Ryan, 2000). In this study, relatedness is measured by a rating scale and high score indicates positive relationship with others and low score show perceived low level of care and love from significant others.

Academic self-regulated learning. Zimmerman and Schunk (1989) defined self-regulated learning in terms of self- generated thoughts, feelings, and actions, which are systematically oriented toward attainment of students' own goals. In this study, self-regulated learning is measured by a rating scale and high scores indicates high self-regulated learning and low score indicate low level of self-regulated learning.

Locus of control. A locus of control orientation is a belief about whether the outcomes of our actions are contingent on what we do (internal control orientation) or on events outside our personal control (external control orientation) (Zimbardo, 1985, p. 275). In this study, locus of control is measured by a rating scale and high scores means external locus of control and low scores means internal locus of control.

p. 275). In this study, locus of control is measured by a rating scale and high scores means external locus of control and low scores means internal locus of control.

Research Design

The present study is a correlational cross-sectional research. Survey method is used for data collection and analyses are quantitative in nature.

Instruments

Basic Psychological Needs Scale (BPNS). The central concept of self-determination theory is the basic psychological needs (autonomy, competence, relatedness) that are universal and natural needs for human being. Self-determination theory postulates that for the development of healthy personality and wellbeing, the satisfaction of basic needs; need for autonomy, need for competence and need of relatedness is essential (Deci & Ryan, 2000). General scale of BPNS address the need satisfaction or frustration in general in one's life, others scales developed from general scale measure the satisfaction or frustration of needs in specific domain e.g Basic Psychological Needs in Exercise Scale. The general scale had 21 items concerning the three needs for Autonomy (7 items; 1, 4, 8, 14, 17, 20), Competence (6 items; 3, 5, 10, 13, 15, 19), and Relatedness (8 items; 2, 6, 7, 9, 12, 16, 18, 21) (see Appendix E). The items have unbalance distributed in basic psychological needs scale on the basis of negatively and positively worded. Reverse score items are 4, 11, 20, 3, 15, 19, 7, 16, 18. To reverse score an item 1 would be converted to a 7 and so on. Score range of BPNS is based on three needs autonomy (7 - 49), competence (6 - 42) and relatedness (8 - 56). Internal consistency for the subscales ranged from acceptable to good (Autonomy α = .65; Competence α = .72; Relatedness α = .82).

Participants were instructed to respond on a scale of 1 (Not at all true) to 7 (Very true), how truly they feel for each statement and high scores indicate the high level of needs satisfaction.

Trice Academic Locus of Control Scale. It is used to measure the internal and external academic locus of control developed by Trice, (1985). This scale measures the locus of control in academic settings. It consists of 28 items (see Appendix F). Responses are based on two point scale true or false. The range of scores is 0-28. Low scores indicates internal locus of control (0-14). Some of the items are "College grades most often reflect the effort you put into classes",

"Professors sometimes make an early impression of you and then no matter what you do, you cannot change that impression" etc. Administration and scoring of the scale takes not more than 20 minutes. The test- retest reliability for students was .90 and Kuder Richardson internal consistency was .50 (Trice, 1985).

Motivated Strategies for Learning Questionnaire (MSLQ). The Motivated Strategies for Learning Questionnaire (MSLQ) by Pintrich, Smith, Garcia & Mckeachie, (1991) is a self-report instrument planned to evaluate the student's different level of using learning strategies and students' motivational orientations toward course. In the current study, control and self-regulation aspects of metacognition of MSLQ was considered, Knowledge aspect was not considered. There are basically two parts to the MSLQ, one is motivation section, and other is Self-regulated Learning section. In this study ,only Self-regulation Scale was used. The Self-Regulated Learning section includes 12 items concerning student's self-management strategies for learning (see Appendix G). Students responded themselves on a seven point Likert scale from 1 = *not at all true of me* to 7 = *very true of me*. Two items are reversed that are 1 and 8. To reverse score an item 1 would be converted to a 7, 2 into 6 and so on. Alpha reliability of this scale is .79. Sore range of Self-regulated Learning scale is 12 to 84.

Demographic Sheet. In this study, the participants' age, gender, department, semester, birth order, SES, last semester GPA their resident place either day scholar or hostilities and how much time they concern to library books and internet for study purpose in a week and other information that also effect on their leaning for example parents support and teacher support to make decisions, no. of friends, participant's mother education, father's education and mother's and father's occupation were asked in demographic sheet, before they proceed to actual instrument (see Appendix D).

Sample

Data of the study was collected by using convenient sampling technique. Sample for the study involved university students ,both Males and Females (n = 356) from different socio-economic-status and different educational level. Age of the respondents range between 17 years to 35 years.

Table 1

Frequencies and Percentages along Demographic Variables (N = 356)

Characteristics	*f(%)*	Characteristics	*f(%)*
Gender		**Residence Place**	
Male	203(57)	Day scholar	125(35)
Female	153(43)	Hostel residence	231(64.7)
Occupation status		**Family system**	
Employed	8(2.2)	Nuclear	239(66.9)
Unemployed	348(97.8)	Joint	117(32.8)
Department		**Mother**	
Social	133(37.3)	Alive	342(95.8)
Natural	153(43)	Deceased	14(3.9)
Biological	70(19.7)	**Father**	
Educational Level		Alive	334(93.6)
BS	140(39.2)	Deceased	22(6.2)
M.Sc.	216(60.5)	**Parents separated**	
SES		Yes	5(1.4)
Low	41(11.5)	No	347(97.2)
Middle	283(79.5)		
High	32(9.0)		

Table 1 exhibits the demographic descriptions of sample their frequency and percentage. These variables include gender, department, education level, SES, Family System and resident etc. The males (n = 203) are higher in frequency than females (n = 153) with a percentage of 57% and 43%, respectively. Most of the students are unemployed. Most of the sample are master students and from natural sciences departments. Majority of the students belong from middle socio-economic status and nuclear family system. There are majority of students in the sample from hostel. For most of the cases in sample, parents are alive and not separated.

Procedure

Main study was done on 356 university students to measure the role of self-determination based variables in academic locus of control and self-regulated learning. For this purpose, Basic Psychological Needs Scale (see Appendix E), Academic Locus of Control scale (see Appendix F) and Self-regulated Learning subscale of MSLQ (see Appendix G), were used. Permission from the authors of scales for the study was acquired (see Appendices A-B). Data were collected from the different departments (natural, social, and biological) of Qauid-i-Azam University. Permission was acquired through administration of institutions. Respondents were verbally informed about the purpose and nature of the study. Participants were assured anonymity and confidentiality regarding the information which they would provide. There was no right and wrong answer on these questionnaires and no time limit was given to the participants. Three questionnaire were used at the same time, and the re-shifting of these questionnaires were done by this, it will not have an effect on the research. Written informed form was taken from participants that was attached at the front of all questionnaires (see Appendix C). Demographic information was taken before they proceeded to actual measures (see Appendix D). Participants were right to leave study any time with no cost and no harm. Participants were asked to respond as honestly as possible. Respondents were also acknowledged for their cooperation. After the collection of data, scoring was done according to the key and analysis done through SPSS-21.

RESULTS

Chapter 3

RESULTS

The present study aims to explore the relationship between self-determination related variables (autonomy, competence and relatedness), academic locus of control and self-regulated learning. The role of demographic variables in relationship between study variables was also explored self-regulated learning (age, gender, department, current semester, SES, study hours, parents and teachers support, residence place (day scholar / hostel lite), family system and study related information of students e.g. how many time concern library and internet for study purpose). Statistical analyses were run through. The internal consistency of the scales was determined by Cronbach's alpha reliability coefficient. Pearson Product Moment Correlations were calculated to determine the relationship between the variables of the current study. Independent sample *t*-test and ANOVA were computed to explore group differences. Step-wise regression analysis was used to study prediction. Hierarchical regression analysis was used to study mediation and moderation. The tabulated results are as follows

Reliabilities and Descriptive Analyses of the Measures

Cronbach's alpha reliability coefficients were computed for every scale to measure the internal consistency to established the applicability of the scales on the sample (N = 356) and descriptive analyses were computed to check mean, standard deviation and skewness and kurtosis were computed to ascertain normality. Transformed scores of raw score were also calculated to interpret mean and standard deviation (see Table 2).

Table 2

Cronbach Alpha and Descriptive Statistics for Scales and Subscales (N = 356)

Variables	No. of items	α	Raw scores *M(SD)*	Transformed *M(SD)*	Range Potential	Range Actual	Skewness	Kurtosis
SRL	12	.85	58.39(12.79)	4.86(1.06)	1-7	1.50-6.83	-.04	.21
ALOC	28	.70	10.00(4.38)	.35(.15)	0-1	.00-.93	-.14	.23
BPNS								
Auto	7	.62	32.57(6.54)	4.65(.93)	1-7	2.14-6.57	.42	-.24
Comp	6	.61	27.75(5.68)	4.62(.94)	1-7	1.67-6.67	.17	-.43
Related	8	.65	38.69(7.00)	4.83(.87)	1-7	2.25-6.50	.04	-.55

Note. SRL = Self-regulated Learning; ALOC = Academic Locus of Control; BPNS = Basic Psychological Needs Scale ; Auto = Autonomy; Comp = Competency; Related = Relatedness.

Table 2, shows all scale have satisfactory reliabilities. Mean value for Self-regulated Learning shows that sample is more inclined towards self-regulated learning in academic setting, and SD value for SRL is high that shows that responses are spread out over a large range of values from the mean. The mean value for Academic Locus of Control shows that sample is more inclined towards internal locus of control in academic setting. Furthermore, the means values of self-determination related variables shows that participants are more confident to engage in social relatedness and overall sample shows high level of social relatedness as compared to autonomy and competence. SD values indicate that responses are spread out over a large range of values from the mean. The values of skewness and kurtosis indicate that scores are normally distributed because the values are between -1 to +1 (Goerge, & Malllery, 2010).

Correlation between Study Variables

Pearson Product Moment Correlation was computed to study the relationship, its intensity, and direction of relationship between self-regulated learning , academic locus of control and self-determination related needs that are autonomy, competence and relatedness (see Table 3).

Table 3

Correlation between Self-determination related Needs, Academic Locus of Control, and Self-regulated Learning (N = 356)

	Variables	*1*	*2*	*3*	*4*	*5*
1.	SRL					
2.	ALOC	-.43**				
3.	Auto	.63**	-.39**			
4.	Comp	.60**	-.26**	.66**		
5.	Related	.50**	-.37**	.53**	.51**	

Note. SRL = Self-regulated Learning; ALOC = Academic Locus of Control; Auto = Autonomy; Comp = Competency; Related = Relatedness.

*p < .05. **p < .01.

As shown in the Table 3, the scales with their subscales are significantly correlated with each other as well as with other variables. The correlation between self-regulated learning and academic locus of control is negatively significant. It's mean that as increases toward external locus of control, self-regulated learning decreases. The correlation between autonomy, competence and relatedness and academic locus of control is statistically negatively significant. Its mean that if self-determination related needs dissatisfied, external locus of control increases. The correlation between autonomy, competence and relatedness and self-regulated learning is positively significant. Its mean that satisfaction of self-determination related needs, increase the self-regulated learning. These results confirmed the first hypothesis of this study (see Table 3).

Correlation of Demographic Variables with Study Variables

Pearson Product Moment Correlation was computed to determine relationship of demographic variables that are, age, GPA, library concern, no. of friends, internet concern, parental support and teacher support with student's self-regulated learning, also along with self-determination based needs and academic locus of control (see Table 4).

Table 4

Correlation of Demographic Variables with Self-determination related Needs, Self-regulated Learning and Academic Locus of Control (N = 356)

Variables	Age	GPA[a]	Library	No. of friends	Internet	Parents support	Teacher support
SRL	**.27****	**.15****	**.12****	**-.20****	.06	.07	**.13***
ALOC	**-.11***	**-.19****	**-.12***	**.23***	-.03	-.09	.03
SD							
Auto	**.26****	**.11***	-.01	**-.16****	.06	**.14***	.075
Comp	**.26****	**.13***	.03	-.09	**.11****	.089	**.12***
Related	**.28****	-.005	-.07	.01	.06	.03	.03

Note. [a]n = 279. SRL = Self-regulated Learning; ALOC = Academic Locus of Control; SD = Self-determination; Auto = Autonomy; Comp = Competency; Related = Relatedness.
$*p < .05$. $**p < .01$.

As shown in the Table 4, self-regulated learning is significantly positively correlated with age, GPA, library concern for study purpose, teacher's support, and significantly negatively correlated with no. of friend. As increasing with age, hours to library concern, GPA and teacher's support, self-regulated learning increased. Academic external locus of control is significant negatively correlated with age, GPA, library concern and significantly positively correlated with no. of friends. It means that increasing with age, hours to concern library, GPA and teacher's support, less external locus of control found. Autonomy is significantly positively correlated with age, GPA and parents support and significantly negatively correlated with no. of friends. With increasing age, GPA, teacher's support and hours to concern library, autonomy increases and less number of friends also increases autonomy. Competence is significantly positively correlated with age, GPA , internet concern and teacher support. With increasing age, GPA, teacher's support and hours to concern library, competence increases. Relatedness is non significantly correlated with age (see Table 4).

Predictors of Self-regulated Learning

Stepwise regressions analysis was computed to check the combined predictive role of self-determination related needs that are autonomy, competence, relatedness and academic locus of control for self-regulated learning. In Step I control variables that are gender and age were added to see their effects. In next step II, self-determination related variables were added and in Step III, ALOC was added. Total three models were generated. Here only final model is reported that shows all as significant predictors for self-regulated learning in order. There separate variables are reported in text (see Table 5).

Table 5

Stepwise Regression Analysis showing the Effect of Self-determination related Needs and Academic Locus of Control on the Prediction of Self-regulated Learning (N = 356)

Variables	*B*	*B*	R^2	ΔR^2	*F*	*95% CI*	
						LL	*UL*
Constant	13.69					.36	27.01
Age	.36	.05	.08			-.13	.87
Gender	-1.00	-.03	.09	.01	17.58***	-3.08	1.07
Locus of Control	-.56	-.19	.24	.15	61.66***	-.80	-.32
Autonomy	.55	.28	.45	.20		.34	.76
Competence	.67	.29	.52	.05		.43	.91
Relatedness	.17	.09	.52	.006	65.78***	.00	.35

Note. CI = Confidence Interval; *LL* = lower limit; *UL* = Upper limit.

***$p < .001$.

Table 5 shows that age and gender accounted 9% of the variance in self-regulated learning together, form which gender has contributed 1% variance. Locus of control after age and gender in predicting self-regulated learning, explaining 24% of variance in combined role with age and gender and individually it has contributed 15% of additional variance to the outcome. Furthermore, self-determination related variables (autonomy, competence, relatedness) are also significant predictors of self-

regulated learning. In combined role with age, gender, and locus of control, these variables explain 51.8% of variance and individually autonomy explains 20% of variance, competence explains 5% variance, and relatedness explains 0.6% variance in the outcome. In total 51.8% of the variance in the self-regulated learning have been explained by the predictors mentioned in Table 5.

Mediation Analyses

Mediating role of locus of control in predicting self-regulated learning.

Mediation is a hypothesized casual chain in which one variable (academic locus of control) gets affected by a second variable (self-determination related needs that are autonomy, competence, relatedness) and in turn, affects a third variable (self-regulated learning and GPA). Mediation analysis was conducted to see the mediating role of academic locus of control for autonomy, competence and relatedness in predicting self-regulated learning while age and gender were taken as control variables. Mediating role of locus of control was confirmed through sobel t-test. (see Table 6,7, 8).

Table 6

Mediating Role of Academic Locus of Control for Autonomy in Predicting Self-regulated Learning (N = 356)

	SRL		
Variables	Model *1 B*	Model 2 *B*	*95%CL*
Constant	8.33	18.50**	[4.73_32.27]
Age (control variable)	.64*	.67**	[.14_1.19]
Gender (control variable)	-1.29	-.70	[-2.89_1.48]
Autonomy (IV)	1.15***	.99***	[.82_1.16]
Locus of control (mediator)		-.64***	[-.88_-.39]
R^2	.41***	.45***	
ΔR^2		.04	
F	82.23***	72.33***	
ΔF		9.90	

Note. B = Un-standardized regression Coefficient.

***$p < .001$. **$p < .01$. *$p < .05$.

Table 6 shows that autonomy is a significant predictor of self-regulated learning explaining 41% variance in Model 1 that significantly positive predict of self-regulated learning. This variance is increased to 45% in Model 2 on adding locus of control as a mediator which indicates that indirect effect is present. Once the locus of control is entered in Model 2, it effect the autonomy role but autonomy does not totally loose significant while locus of control is significant (B = - .64, p < .001). Sobel test (z = 4.14, p < .001) reflects that the locus of control is a partial mediator for autonomy in predicting self-regulated learning. As autonomy increases, external locus of control decreases that results into more self-regulated learning. Indirect effect of autonomy for self-regulated learning in context of locus of control is (β = .16).

Table 7

Mediating Role of Academic Locus of Control for Competence in Predicting Self-regulated Learning (N = 356)

	SRL		
Variables	Model 1 B	Model 2 B	95%CL
Constant	14.13*	25.28**	[12.00_38.57]
Age (control variable)	.55*	.55*	[.02_1.07]
Gender (control variable)	-2.63*	-1.65	[-3.81_.50]
Competence (IV)	1.30**	1.14**	[.95_1.33]
Locus of control (mediator)		-.82**	[-1.05_-.58]
R^2	.39**	.47**	
ΔR^2		.80	
F	75.76**	75.84**	
ΔF		.08	

Note. B = Un-standardized regression Coefficient.

**p < .01. *p < .05.

Table 7 shows competence is a significant predictor of self-regulated learning explaining 39% variance in Model 1 that significantly positive predict of competence for self-regulated learning. This variance is increased to 47% in Model 2 on adding locus of control as a mediator which indicates that indirect effect was present. Once the academic locus of control is entered in Model 2, it effects the competence but competence does not totally loose significant while academic locus of control is

significant (B = -.82, p < .01). Sobel test (z = 3.83, p < .001) reflects that the academic locus of control is a partial mediator for competence in predicting self-regulated learning. As competence increases, external locus of control decreases that results into more self-regulated learning. Indirect effect of competence for self-regulated learning in context of locus of control is (β = .16).

Table 8

Mediating Role of Academic Locus of Control for Relatedness in Predicting Self-regulated Learning (N = 356)

	SRL		
Variables	Model 1 *B*	Model 2 *B*	95%*CL*
Constant	13.21	26.35**	[11.20_41.50]
Age (control variable)	.72*	.76*	[.19_1.34]
Gender (control variable)	-2.03	-1.25	[-3.66_1.15]
Relatedness (IV)	.84**	.65**	[.47_.83]
Locus of control (mediator)		-.82**	[-1.09_-.55]
R^2	.28**	.35**	
ΔR^2		.70	
F	44.89**	45.73**	
ΔF		.84	

Note. B = Un-standardized regression Coefficient.

**p < .01. *p < .05.

Table 8 shows relatedness is a significant predictor of self-regulated learning explaining 28% variance in Model 1 that significantly positive prediction of relatedness for self-regulated learning. This variance is increased to 35% in Model 2 on adding locus of control as a mediator which indicates that indirect effect was present Once the locus of control is entered in Model 2, it effect the relatedness role but relatedness does not totally loose significant while locus of control is significant (B = - .82, p < .01). Sobel test (z = 4.48, p < .001) reflects that the locus of control is a partial mediator for relatedness in predicting self-regulated learning. As relatedness increases, external locus of control decreases that results into more self-regulated learning. Indirect effect of relatedness for self-regulated learning in context of locus of control is (β = .19).

Mediating role of locus of control in predicting GPA. Mediation analysis was conducted to see the mediating role of academic locus of control for autonomy, competence and relatedness in predicting GPA while, taking gender as control variables. In order to confirm the mediating role of locus of control sobel t-test was performed. Sobel test value is non-significant for autonomy (z = .07) and for relatedness (z = .15). For competence it is significant (see Table 9).

Table 9

Mediating Role of Academic Locus of Control for Competence in Predicting GPA (N = 279)

	GPA		
Variables	Model 1 *B*	Model 2 *B*	95%*CL*
Constant	2.67	2.43	[-2.03_2.83]
Gender (control variable)	.16**	.15**	[-.04_.27]
Competence (IV)	.01**	.01*	[-.007_.029]
Locus of control (mediator)		-.01*	[-.002_-.02]
R^2	.04**	.06**	
ΔR^2		.02	
F	7.02**	6.36**	
ΔF		.66	

Note. B = Un-standardized regression Coefficient.

**p < .01. *p < .05.

Table 9 shows significantly positive prediction of competence for GPA explaining 4% of the variance in Model 1. Once the locus of control is entered in Model 2 the competence does not totally loose significant (B = .01*), while locus of control is significant (B = -.01, p < .05). Sobel test (z = -1.97, p < .05) reflects that the locus of control is a partial mediator for competence in predicting GPA. As competence increases, external locus of control decreases that results into more GPA. Indirect effect of competence for GPA in context of locus of control is (β = -.003).

Moderation Analyses

Moderating role of gender in predicting self-regulated learning. In order to evaluate the moderating role of gender for self-determination related needs (autonomy, competence and relatedness) in predicting self-regulated learning while controlling the effect of age. Multiple analysis was performed (see Table 10).

Table 10

Hierarchical Multiple Regression for Moderating Role of Gender for Self-determination related Needs (Autonomy, Competence, Relatedness) in Predicting Self-regulated Learning (N = 356)

	Self-regulated Learning						
						95%CI	
Predictors	R^2	ΔR^2	F	ΔF	B	*LL*	*UL*
Constant	.45	.04	71.14**	22.37**			
Age (control variable)					.67*	.12	1.21
Gender (moderator)					-2.02	-4.25	.20
Autonomy (IV)					.98**	.81	1.16
Autonomy × Gender					-.89**	-1.26	-.52
Constant	.44	.05	68.45**	28.06**			
Age (control variable)					.44	-.11	1.00
Gender (moderator)					-3.11*	-5.32	-.89
Competence(IV)					1.21**	1.02	1.40
Competence × Gender					-1.04**	-1.43	-.66
Constant	.31	.03	39.55**	16.47**			
Age (control variable)					.77*	.16	1.38
Gender (moderator)					-2.40	-4.87	.07
Relatedness (IV)					.77**	.60	.94
Relatedness × Gender					-.71**	-1.06	-.37

Note. β = Standardized regression coefficient; *CI* = Confidence interval.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 10 illustrates moderation analysis for gender that is significant. Autonomy in combined role with gender and age explained 45% of the variance in self-regulated learning, while interaction effect of autonomy with gender has contributed 4% of variance. Interaction effect between autonomy and gender is negative and significant (β = -.89, $p <$ .01) indicates that gender moderated the relationship of autonomy with self-regulated learning. Furthermore, competence along age and gender together explained 44% of the variance in self-regulated learning and in interaction effect with gender explains 5% of variance and competence explains 39% of variance in self-regulated learning (SRL). Interaction effect between competence and gender is negative and significant (β = -1.04, $p <$ .01) indicates that gender moderated the relationship of competence with self-regulated learning.

Furthermore, relatedness along age and gender together explained 31% of the variance in self-regulated learning and in interaction effect gender explains 3% of variance and relatedness explains 28% of variance in self-regulated learning (SRL). Interaction effect between relatedness and gender is negative and significant (β = -.71, $p <$ .01) indicates that gender moderated the relationship of relatedness with self-regulated learning (see Table 10)

Modegraphs made to explore the nature of relationship. Moderated effect of gender in graphs is illustrated in the Figures (see Figures 3, 4, 5).

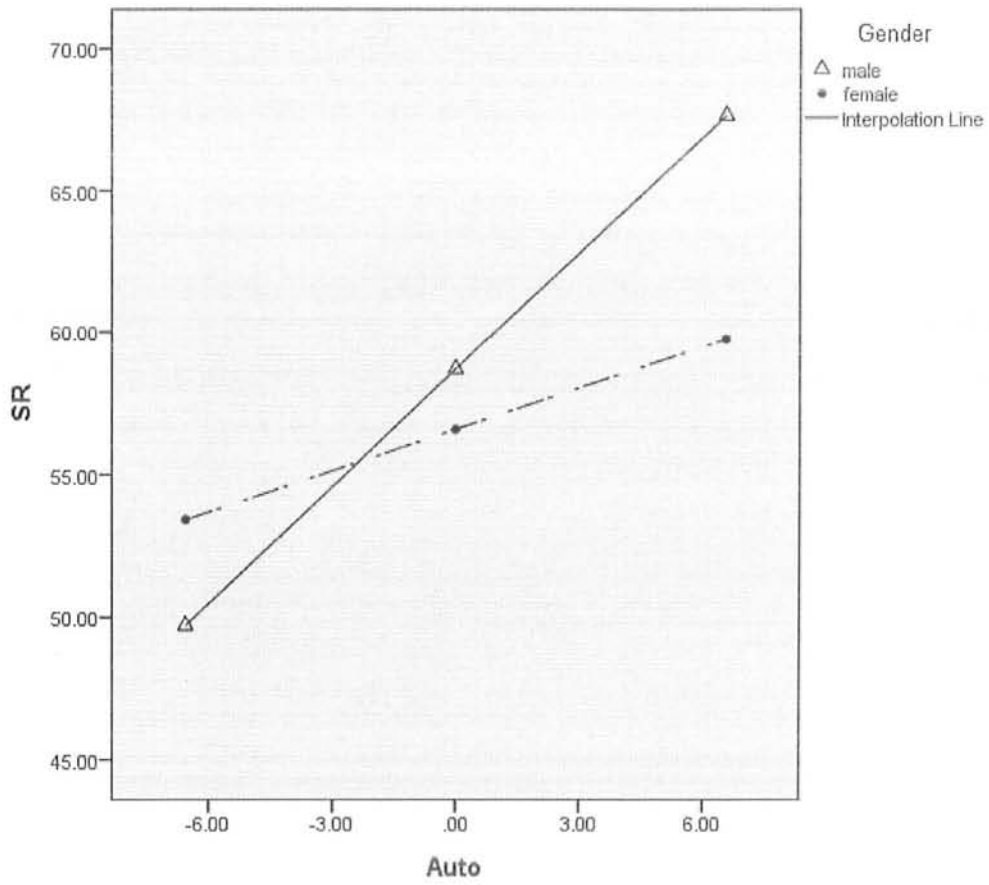

Figure 3. Moderated effect of gender between autonomy and self-regulated learning.

Modegraph explains that gender has a significant interaction effect with autonomy in predicting self-regulated learning. At the point of low level of autonomy female students already have high level of self-regulated learning as compare to male students. As autonomy increases, self-regulated learning increases in both male and female students, but this increase is more pronounced in case of male students as shown by slop ($t = 14.81$, $p < .001$) of the modgraph which is sharper in case of male students as compare to female students ($t = 2.91$, $p < .001$). Fan effect is evident in the interaction, after point of intersection boys are scoring high on self-regulated learning that girls at a given point of autonomy.

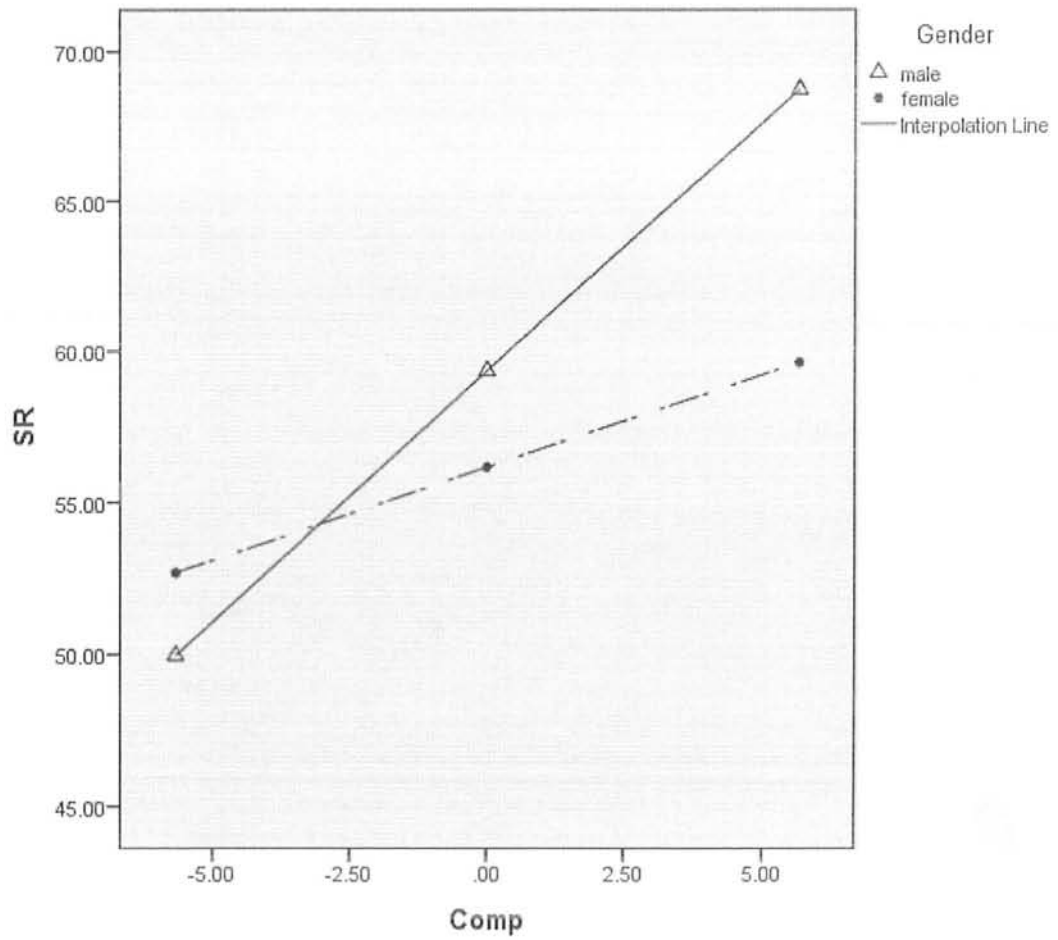

Figure 4. Moderated effect of gender between competence and self-regulated learning.

Modegraph explains that gender has a significant interaction effect with competence in predicting self-regulated learning. At the point of low level of competence female students already have high level of self-regulated learning as compare to male students. As competence increases, self-regulated learning increases in both male and female students, but this increase is more pronounced in case of male students as shown by slop of the modgraph which is sharper in case of male students ($t = 14.24$, $p < .001$) as compare to female students ($t = 3.89$, $p < .001$). Fan effect is evident in the interaction, after point of intersection boys are scoring high on self-regulated learning that girls at a given point of competence.

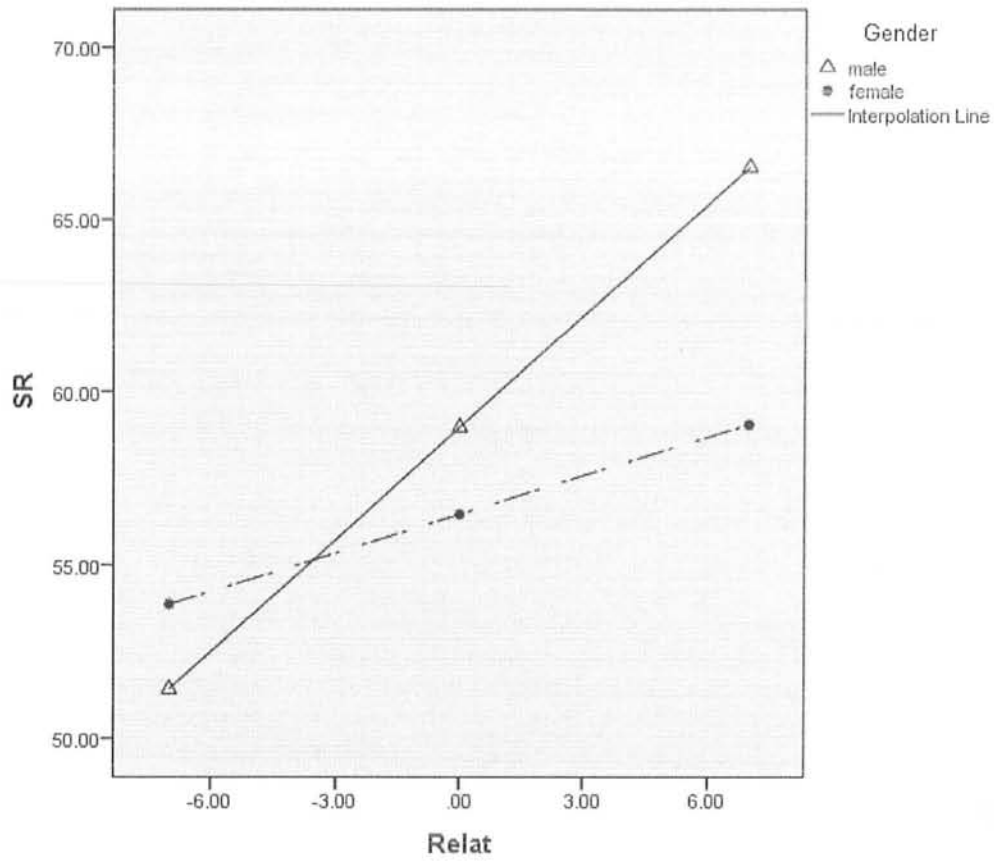

Figure 5. Moderated effect of gender between relatedness and self-regulated learning.

Modgraph explains that gender has a significant interaction effect with relatedness in predicting self-regulated learning. At the point of low level of social relatedness, female students already have high level of self-regulated learning as compare to male students. As social relatedness increases, self-regulated learning increases in both male and female students, but this increase is more pronounced in case of male students as shown by slop ($t = 10.29$, $p < .001$) of the modgraph which is sharper in case of male students as compare to female students ($t = 2.57$, $p < .01$). Fan effect is evident in the interaction, after point of intersection boys are scoring high on self-regulated learning that girls at a given point of relatedness.

Mediating role of age in predicting self-regulated learning. In order to evaluate the moderating role of age for self-determination related needs (autonomy, competence and relatedness) in predicting self-regulated learning while controlling the effect of gender, moderation analysis was carried out using SPSS 21 version (see Table 11).

Table 11

Hierarchical Multiple Regression for Moderating Role of Age for Self-determination related Needs (Autonomy, Competence, & Relatedness) in Predicting Self-regulated Learning (N = 356)

	Self- regulated Learning						
						95%CI	
Predictors	R^2	ΔR^2	F	ΔF	B	*LL*	*UL*
Constant	.43	.01	65.03***	8.05***			
Age (moderator)					-1.14	-3.39	1.10
Gender (control variable)					.70*	.14	1.26
Autonomy(IV)					1.08**	.91	1.25
Autonomy × Age					.12**	.04	.21
Constant	.41	.01	59.70***	7.39**			
Age (moderator)					-2.14	-4.42	.15
Gender (control variable)					.64*	.07	1.21
Competence (IV)					1.27**	1.08	1.46
Competence × Age					.13*	.04	.22
Constant	.29	.01	36.31***	7.14**			
Age (moderator)					-1.83	-4.32	.66
Gender (control variable)					.89*	.27	1.52
Relatedness (IV)					.79**	.61	.96
Relatedness × Age					.11*	.03	.19

Note. β = Standardized regression coefficient; *CI* = Confidence interval.

*$p < .05$. **$p < .01$. ***$p < .001$.

Table 11 illustrates moderation analysis for age that is significant. Autonomy in combined role with age and gender explained 43% of the variance in self-regulated learning, while interaction with age has contributed 1% of variance. Interaction effect between autonomy and age is positive and significant ($\beta = .12, p < .01$) indicates that age moderated the relationship of autonomy with self-regulated learning.

Furthermore, competence along gender age together explained 41% of the variance in self-regulated learning and individually age explained 1% of variance in interaction with self-regulated learning (SRL). Interaction effect between competence and age is positive and significant ($\beta = .13, p < .05$) which indicates that age moderated the relationship of competence with self-regulated learning.

Furthermore, relatedness along gender age together explained 29% of the variance in self-regulated learning and interaction with age explained 1% of variance in self-regulated learning (SRL). Interaction effect between relatedness and age is positively significant ($\beta = .11, p < .05$) indicates that age moderated the relationship of relatedness with self-regulated learning. Modegraphs were made to explore the nature of relationship. Moderated effect of age in graphs is illustrated in the Figures (see Figures 6, 7, 8).

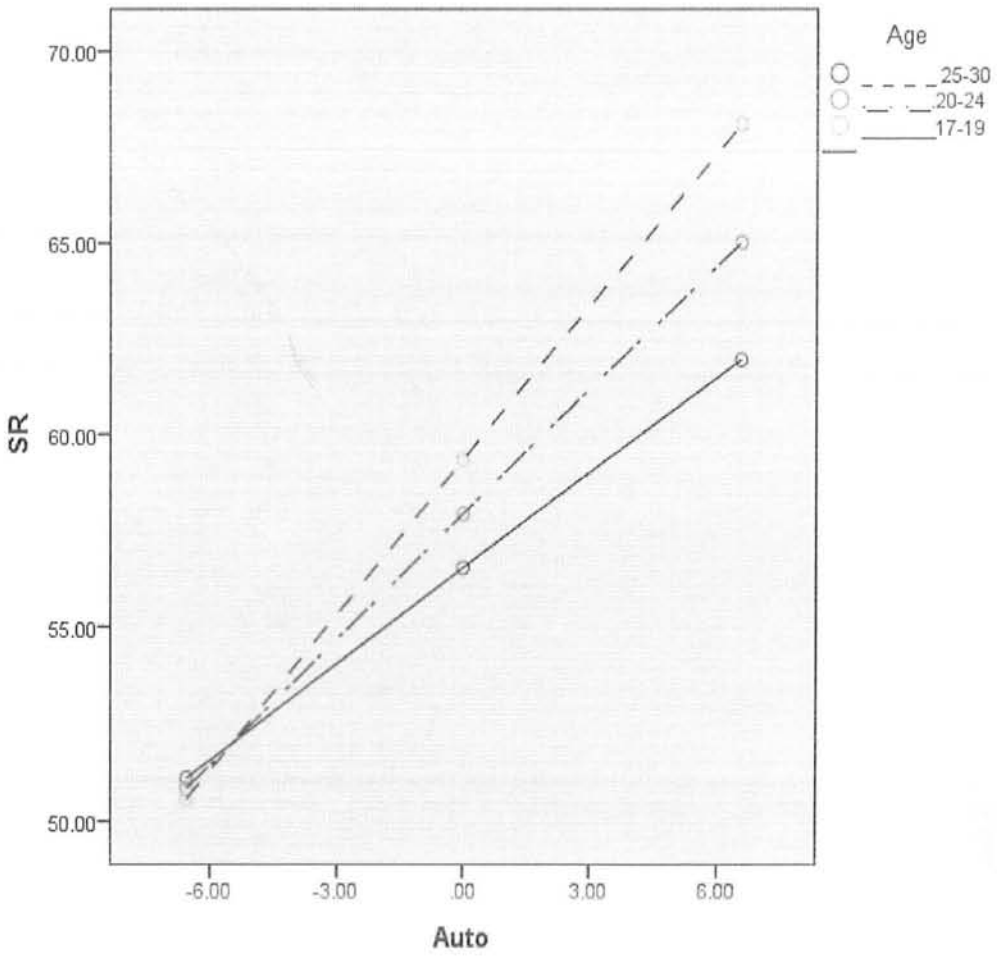

Figure 6. Moderated effect of age between autonomy and self-regulated learning.

Modegraph explains that age has a significant interaction effect with autonomy in predicting self-regulated learning. At the point of intercept, all groups of age show low level of self-regulated learning at the point of low level of autonomy. As age increases, as autonomy increases, self-regulated learning also increases as shown by slope of the Modgraph. For older group that is 25-30 years, with increasing autonomy, self-regulated learning increase more sharply (t = 12.94, p < .001) than middle (20-24 years),. (t = 12.45, p < .001) and youngest group (17-19 years),. (t = 5.82, p < .001).

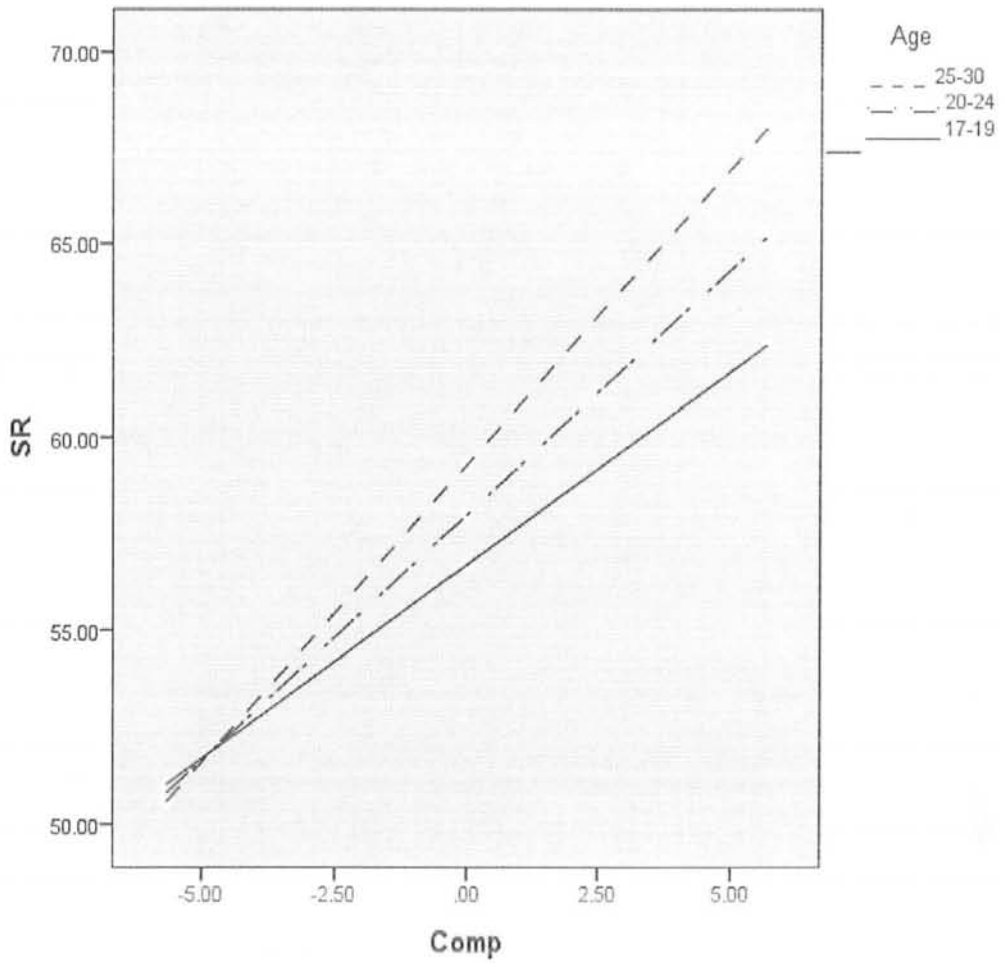

Figure 7. Moderated effect of age between competence and self-regulated learning.

Modegraph explains that age has a significant interaction effect with competence in predicting self-regulated learning. At the point of intercept, all groups of age show low level of self-regulated learning at the point of low level of competence. As competence increases, self-regulated learning increases as shown by slops of the Modgraph. For older group (25-30) years, with increasing competence, self-regulated learning increase more sharply ($t = 13.04$, $p < .001$) than middle (20-24 years)., ($t = 11.75$, $p < .001$) and youngest group (17-19 years)., ($t = 7.03$, $p < .001$).

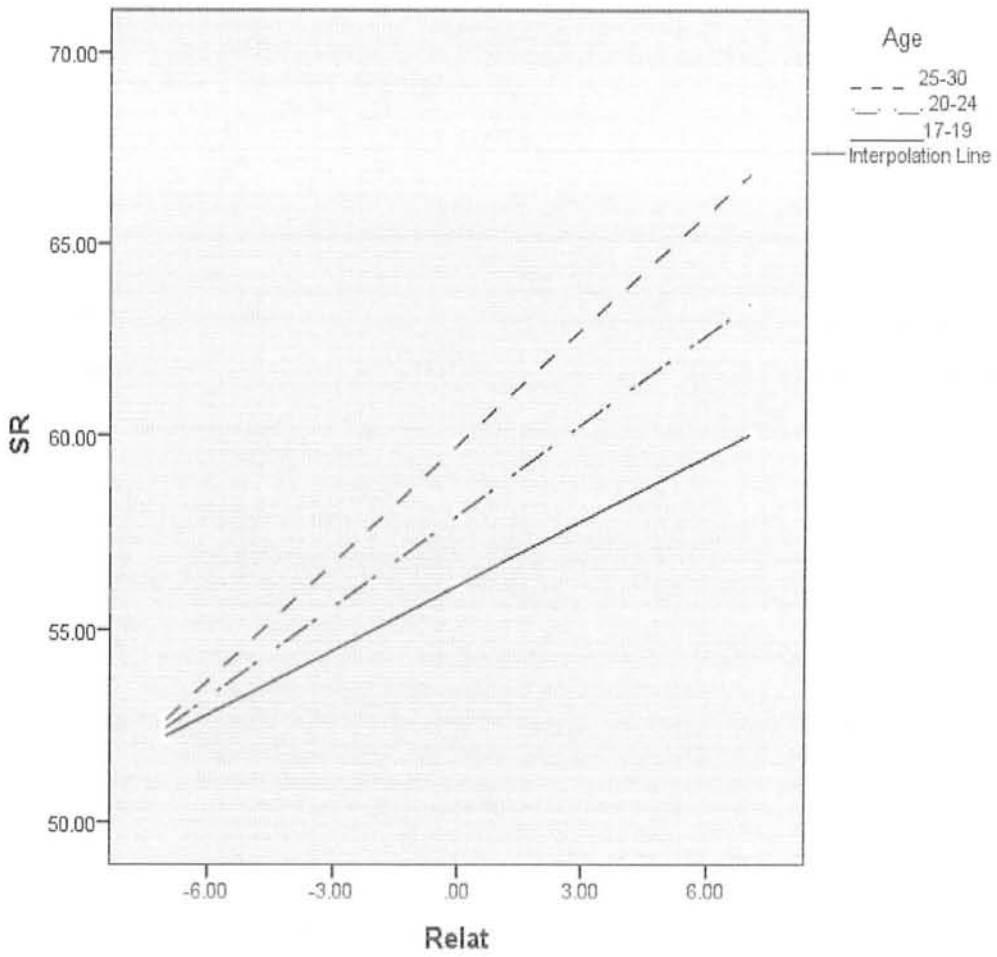

Figure 7. Moderated effect of age between relatedness and self-regulated learning.

Modegraph explains that age has a significant interaction effect with relatedness in predicting self-regulated learning. At the point of intercept, all groups of age show low level of self-regulated learning at the point of low level of social relatedness. As age increases, the level of relatedness increases in turn self-regulated learning increases as shown by slops of the Modegraph. For older group (25-30) years, with increasing social relatedness, self-regulated learning increase more sharply (t = 9.35, $p < .001$) than middle (20-24 years).,(t = 8.81, $p < .001$) and youngest group (17-19 years).,($t = 4.12, p < .001$).

Group Differences on Study Variables

Independent sample t-test has been conducted to study group differences along the demographic variables that are gender, education level(BS and M.Sc.) and place

of residence (day scholar or hostel-residence) on study variables (see Table 12, 13 and 14).

Table 12

Gender Differences on Self-determination related Needs, Academic Locus of Control, and Self-regulated Learning (N = 356)

	Male Students (n = 203)		Female Student (n = 153)				95%CI		
Variables	*M*	*SD*	*M*	*SD*	*t(353)*	*P*	*LL*	*UL*	*Cohen's d*
SRL	60.75	13.93	55.28	10.37	4.07	.00	2.82	8.10	0.44
ALOC	9.35	4.92	10.86	3.36	-3.24	.00	-2.14	-.59	0.35
SD									
Auto	33.75	7.43	31.01	4.71	3.98	.00	1.38	4.09	0.44
Comp	28.41	6.08	26.87	4.97	2.55	.01	.35	2.73	0.27
Related	39.94	7.35	37.01	6.13	3.96	.00	1.47	4.37	0.43

Note. SRL = Self-regulated Learning; ALOC = Academic Locus of Control; SD = Self-determination; Auto = Autonomy; Comp = Competency; Related = Relatedness.

Table 12 reflects that male students score significantly high on self-regulated learning than female students. While, female students have significantly high external locus of control that male students. Male students are significantly more satisfied with respect to autonomy, competence and relatedness. Cohen (1988) defined Cohen's *d* effect sizes as small, $d = .2$, medium, $d = .5$, and large, $d = .8$ (p. 25). However ALOC and competence show small Cohen's *d* effect size, that indicate small differences in groups and SRL, autonomy, relatedness show medium Cohen's *d* effect that indicate there is moderate differences in groups (see Table 12).

Table 13

Comparison of Education level on Self-determination related Needs, Academic Locus of Control, and Self-regulated Learning (N = 356)

Variables	BS (n = 140)		MSC (n = 216)				95% *CI*		
	M	*SD*	*M*	*SD*	*t*(353)	*p*	*LL*	*UL*	*Cohen's d*
SRL	52.69	9.95	62.06	13.09	-7.20	.00	-11.93	-6.81	-.80
ALOC	10.82	3.43	9.46	4.83	2.88	.00	.43	2.28	0.31
SD									
Auto	30.63	4.97	33.83	7.12	-4.62	.00	-4.55	-1.83	-.52
Comp	25.96	4.78	28.92	5.92	-4.95	.00	-4.13	-1.78	-.55
Related	36.53	6.19	40.09	7.15	-4.82	.00	-5.01	-2.11	-.53

Note. SRL = Self-regulated Learning; ALOC = Academic Locus of Control; SD = Self-determination; Auto = Autonomy; Comp = Competency; Related = Relatedness.

Table 13 reflects that students of M.Sc. have significantly high self-regulated learning than students of BS. While, students of BS have more external locus of control than students of M.Sc. Students of M.Sc. are more self-determined or have significantly more satisfaction with respect to autonomy, competence, and social relatedness than students of BS. ALOC shows small Cohen's *d* effect size that indicates there is small difference in groups. Autonomy, competence and relatedness show medium Cohen's *d* effect size that indicate there is moderate differences in groups. SRL show large Cohen's *d* effect size that indicate there is large group differences (see Table 13).

Table 14 reflects that students who live in hostels have significantly high self-regulated learning than day scholars. While, hostellities have more internal locus of control than day scholars. Students who live in hostels are more self-determined with respect to autonomy, competence, and social relatedness than day scholars. There is small differences among groups because Cohen's *d* effect size for SRL, ALOC and competence is small (see Table 14).

Table 14

Comparison along Place of Residence on Self-determination related Needs, Academic Locus of Control, and Self-regulated Learning (N = 356)

	Hostellites ($n = 231$)		Day scholar ($n = 125$)				95% *CI*		
Variables	*M*	*SD*	*M*	*SD*	*t*(353)	*P*	*LL*	*UL*	Cohen's *d*
SRL	59.34	13.48	56.63	11.24	1.90	.05	-.08	5.49	.21
ALOC	9.50	4.50	10.93	4.01	-2.98	.00	-2.38	-.48	-.33
SD									
Auto	32.93	6.93	31.89	5.72	1.43	.15	-.38	2.47	_
Comp	28.23	5.88	26.88	5.19	2.15	.03	.11	2.59	.24
Related	38.80	7.12	38.50	6.80	.38	.70	-1.23	1.83	_

Note. SRL = Self-regulated Learning; ALOC = Academic Locus of Control; SD = Self-determination; Auto = Autonomy; Comp = Competency; Related = Relatedness.

One way ANOVA was computed to compare difference along departments (social, natural and biological) a self-regulated learning, self-determination related needs, and academic locus of control. The categories were formed on the basis of university departments. Only for significant *F*-values of post hoc analysis was done to check the differences between groups for respective variables (see Table 15).

Table 15 shows mean differences of departments on study variables. This analysis produced a significant results for self-determination related needs, self-regulated learning and academic locus of control. The Post-Hoc Tukey analysis showed that students from natural science and biological science have more external locus of control than students from social sciences. This analysis also produced significant results for self-determination related needs and self-regulated learning that are students from social sciences are more self-determined and high in self-regulated learning as compared to students from biological sciences and natural sciences (see Table-15).

Table 15

One-way Analysis of Variance for Departmental Differences on Self-determination related Needs, Academic Locus of Control, and Self-regulated Learning (N = 356)

Variables	Social $n = 133$		Biological $n = 70$		Natural $n = 153$						95% CI	
	M	*SD*	*M*	*SD*	*M*	*SD*	*F*	*I > j*	*D(I-J)*	*S.E*	*LL*	*UL*
SRL	65.45	13.57	57.02	9.46	52.84	10.30	43.27***	1 > 2	8.43*	1.69	4.43	12.42
								1 > 3	12.61*	1.36	9.39	15.82
								2 > 3	4.18*	1.66	.27	8.09
LOC	8.10	4.99	11.27	3.93	11.06	3.34	22.14***	2 > 1	3.16*	.61	-4.60	-1.72
								3 > 1	2.95*	.49	-4.11	-1.80
SD												
Auto	35.86	7.87	30.05	4.90	30.84	4.43	32.07***	1 > 2	5.80*	.89	3.71	7.90
								1 > 3	5.01*	.87	3.32	6.70
Comp	30.42	5.93	26.43	4.96	26.03	4.86	26.90***	1 > 2	3.98*	.78	2.13	5.83
								1 > 3	4.38*	.62	2.90	5.86
Related	41.49	7.51	36.85	5.35	37.11	6.44	18.44***	1 > 2	4.63*	.99	2.30	6.97
								1 > 3	4.37*	.79	2.50	6.24

Note. SRL = Self-regulated Learning; ALOC = Academic Locus of Control; SD = Self-determination; Auto = Autonomy; Comp = Competency; Related = Relatedness.

*$p < .05$. **$p < .01$. ***$p < .001$.

DISCUSSION

Chapter 4

DISCUSSION

The nature of the present study has been primarily aimed toward application of self-determination theory (autonomy, competence & relatedness) in academic locus of control and self-regulated learning of university students. Role of demographic variables in the relationship of variables was also explored. Results from analyses on these variables found that there is meaningful relationship between these variables among university students.

The satisfactory consistency range of measures is between .60 to .90 (Bland, Altman, 1997), so alpha coefficient for all scale were satisfactory. The alpha coefficient for the measure of Self-regulated Learning is .85, for the measure Basic Psychological Needs Satisfaction is .83 and for the Academic Locus of Control scale (28 items) has been found to be .70. Similarly, the alpha coefficient for the Autonomy subscale of BPNS is .61, for the Competence subscale of BPNS is .62 and for the Relatedness subscale of BPNS is .65. Overall reliabilities of scales and sub-scales indicate that scales are reliable and acceptable for satisfactory internal consistency

The value of mean on each scale and subscale represents the participant's average scores. The values of standard deviation indicate that responses are scattered from the mean of each variable. Higher the mean scores, greater the perceived it. So, means value indicate that overall sample of current study shows high level of self-regulated leaning, satisfaction of needs for relatedness, autonomy, and competence (see Table 2). The reason behind this, university students receive more autonomy support from teachers as well as parents, as a result, they feel more capable to analyze new things and make social relations, that's promote self-regulated learning among them. At university level, cognitive development of students includes logical or rational thinking, conceptual understanding and decision making so students are more toward use of self-regulated learning (Nejad, 1990).

Among descriptive statistics, the scales and subscales have skewness values less than 1 representing that distribution lies inside it (Miles & Shevlin, 2001). Skewness values that are positive show that tail present on the right side that's shows existence of higher values. Although negative values of skewness show that tail present on left side that's demonstrate the existence of lower values. Normally, distributed scores indicated by values of kurtosis (Kim, 2013).

Pearson Product Movement correlation was conducted to study the relationship among study variables. The first hypothesis of the present study was that "There is positive correlation between self-determination related needs (autonomy, competence & relatedness) and self-regulated Learning". The hypothesis was supported by the findings of this study as self-determination needs (autonomy, competence & relatedness) is positively and statistically significant correlated with self-regulated learning (see Table 3). These results are consistent with the previous studies by (Sierens et al., 2009; Vansteenkiste et al., 2012; Vander Elst, Van den Broeck, De Witte, & De Cuyper, 2012; Vansteenkiste, and Soenens, 2013; Wood, 2016). However, needs related to self-determination (autonomy, competence and relatedness support) are more essential in educational domain. According to self-determination theory, satisfaction of these needs endorse self-regulated learning by development of student's inner motivation and enhancing interest (Ryan & Deci, 2002). University students are more autonomous because of greater support from teachers and parents in exploring new things, and making more social relationships to gather information as compare to college students (Taylor et al, 2010). However their self-regulated learning becomes influenced by satisfactory need of autonomy and relatedness.

The Second hypothesis of the present study was that "There is negative correlation between external locus of control and self-regulated learning". The hypothesis was supported by the findings as external locus of control is negatively and statistically significant correlated with self-regulated learning (see Table 3). These results are supported by previous studies e.g Baiocco et. al., (2009), Kesici, et al., (2009), Libert et. al. (2007), Matud et. al. (2006), West, et. al (2009), Yurtsever (2006), showed that there was negative relationship between external locus of control and self-regulated learning, and positive and significant relationship between internal LOC and self-regulated

learning. Student's external attributions (failure due to other's power) toward their o0utcomes of behaviors make them, less motivated and less interested toward learning where as internal credit (failure due to lack of effort) make them motivated and to put more effort in learning by self (Ryan, Connell, & Plant, 1990). Individuals with internal locus of control are less vulnerable to feel helplessness, mostly use logical thinking in planning, and more motivated toward task related behaviours (Shipe, 1971). One more study showed that skilled students had a predisposition to confidence they have more have power over their work because they could control the feature of learning method and manage their study material (Nokelainen *et* al., 2007).

The third hypothesis of the present study was that "There is also significant and negative correlation between external locus of control and self determination related needs (autonomy, competence, relatedness)". The external Locus of Control was negative and significantly correlated with autonomy, competence and relatedness (see Table 3). These results are consistent with the previous studies by (Barbuto & Story, 2008; Burden, 2008; Laptosky, 2002; Lebedina, 2004; Moore, 2007; Reeve, Nix & Hamm, 2003; Siegle et al., 2010) showed that there was negative relationship between self-determination (basic needs satisfaction) and external locus of control and positive relationship between self-determination (basic needs satisfaction) and internal locus of control. Researchers revealed that self-determination predict the internal locus of control (Reeve, Nix, & Hamm, 2003). High achievers and talented students tend to consider they have more power over their coursework that they could manage their struggle they put in to their work and gain credit on the basis of their effort (Nokelainen *et* al., 2007). Furthermore, students feel more confident toward their capabilities and more likely to have an internal perceived locus of causality when they have choices to explore new material (Ryan & Deci, 2002).

Fourth hypothesis of the present study was that "Teacher's support is positively related with self-regulated learning". Correlation analysis of study variables with demographic variables shows that the self-regulated learning is significantly positively correlated with teacher support (see Table 4). The reasons behind is that if teacher give choices to students, clearly directions, give reflective feedback regularly on their academic results, and appreciate the students, it enhance students learning. This finding is

consistent with the previous studies by (Hattie, & Timperley, 2007; Labuhn *et* al., 2010; Ommundsen, 2006; Patrick, Ryan, & Kaplan, 2007; Rothbart *et* al., 2011; Schunk, 2005; Wigfield, et al.,2010; Wubbels et al., 2006). Results with demographics reveal that GPA is significantly positively correlated with self-regulated learning, internal locus of control and self-determination based needs (see Table 4). So, the reason behind it may be that students who receive autonomy, feel more responsible and motivated to achieving high GPA (Ryan & Deci, 2002). Moreover student's attribution toward their effort motivate them to do hardworking and achieve their goals (Schunk & Meece, 2006). The students with high internal locus of causality show more attention to perform well and gain higher achievements than those who show less attention toward their work (Hadsel, 2010). Age is significantly positively correlated with self-regulated learning, internal locus of control and self-determination (see Table 4). Students relatedness with their teacher as well as with their peers increase during university level (Juvonen, 2006). Moreover, internal and autonomy-related motivation high in older students than younger (Taylor et al., 2010). Student's tend to make more internal attributions toward their failure or success with increasing age (Wubbels & Brekelmans, 2005).

But, Library concern for study purpose is significantly positively correlated with self-regulated learning, and internal locus of control The library is an influencing and social situation that promote student needs related to self-determination and the internal motivation for investigation and commitment to practical information that increase student learning by self (Deci & Ryan, 2000). However, students who use self-regulated learning strategy have high self-esteem, self-concept and life satisfaction (Boekaerts, 2010).

Internet concerns for study purpose significant correlated with only competence (see Table 4). More talented students are more likely to search and organize their study material (Nokelainen, *et* al., 2007).There are non-significant differences are found along no. of siblings, birth order and semester with respective correlation with each variable.

At the period of adolescence to adult, student's self-regulation mostly influenced by social factors. At this period, th*e process of autonomy support,* involves acknowledge the students like inimitable volitional beings by accept their viewpoint, offering chances

for making important decisions and giving significant rationales in less interesting activities to perform well (Grolnick, 2009). By getting autonomy support, students may not face problems to make social relations. However, parent support is significantly positively correlated with autonomy and teacher support is significantly positively correlated with self-regulated learning. Furthermore, no. of friends is negatively correlated with self-regulated learning and autonomy and positively correlated with external locus of control. Reason is that, the period of greatest susceptibility to peer pressure is adolescence, during which the desire to gain popularity is at peak (Brown 2004). University students have high vulnerability to influence by peer pressure as in result, they more likely to engage in activities that may cause long time negative effect on their learning and career (Carrel, Sacerdote, & West, 2013).

The fifth hypothesis of the present study was that "self-determination related needs (autonomy, competence, relatedness), and internal locus of control positively predict the self-regulated learning". Stepwise regression analysis was run through, for predictors of self-regulated learning. Academic locus of control and self-determination related variables (autonomy, competence, relatedness) were significant predictors of self-regulated learning (see Table 5). These results are consistent with the previous studies by (Chirkov, 2009; Chirkov *et* al., 2003; Chen, Huebner, & Tian, 2014; Niemiec & Ryan, 2009; Tariq, 2011). Total variance of self-regulated learning explained by these variables is 50 %. The stronger predictors are autonomy and acdemic locus of control. Autonomy explains 20% of variance and locus of control explains 15% of variance in SRL (see Table 5). Self regulated learning increases with satisfaction of need for autonomy that guide individuals to their inner goals and requirements, that are companionable with perfect future (Brown & Ryan, 2003). Students with internal locus of control have logical thinking and use effective cognitive methods however, they are tended to involve in self-regulated learning (Jones, 2008).

The sixth hypothesis of the present study was that "Academic locus of control mediate the relationship of self-determination skills in predicting self-regulated learning". Results of mediation analysis shows academic locus of control is significant partial mediator for autonomy, competence and relatedness in predicting self-regulated learning. (see Table 6, 7 ,8). These results are supported by previous findings e.g (Deci & Ryan,

2000; Ryan & Deci, 2002; Reeve, Nix, & Hamm, 2003). Ryan and Deci, (2002) claim that students who behave according to their preference, and students do task on the basis of their desires more tended toward internal locus of control. So, students who credit their success and failures to their efforts,more likely to engage in self-regulated learning (Deci & Moller, 2005; Schunk & Pajares, 2009).

The seventh hypothesis of this study was "Academic locus of control (ALOC) mediate the relationship of self-determination skills (autonomy, competence and relatedness) in predicting GPA". Results of present study shows ALOC is non-significant mediator for autonomy and relatedness but, ALOC is partial mediator for competence in predicting GPA (see Table 9). These findings are consistent with past literature (e.g. Assouline et al., 2006; Laffoonet et al., 1989; Siegle et al., 2010). Some studies found positive relationship between internal locus of control and grade points, when gender and age correlated with locus of control (Gifford, Briceno & Mianzo, 2006; Shepherd et. al. 2006). The reason is that with increasing age, students gain more autonomy support, make more social relations and tend to belief on their efforts that improve their academic achievements and internal locus of causality.

Moderation analysis run through, results shows that gender moderated the relationship of autonomy, competence and relatedness with self-regulated learning. Male students are more autonomous, competent, and have more social relatedness and self-regulated learning, than female students (see Table 10). The reason is that in cognitive development gender differences have been found. Range of cognitive development is higher in men as compared to women. Self-determination in expressing feelings, ideas, point of views, use of abilities in making decisions, and self-determination toward spare time are high in male adolescence than female adolescence (Field, 2005). On the other hand, boys also receive more encouragement and support to do their best (Drewa, 1961, p.31). Moreover, in our culture, male students are more allowed to make decisions by their own choices.

Some studies indirectly examined the satisfaction of one or two psychological needs in the education domain through perceptions of autonomy and competence (Cox, Smith, & Williams, 2008; Laurin, & Nicolas, 2009), relatedness excluded, the current

study concerned this gap, by focusing these three needs (autonomy, competence and relatedness) together in academic domain. In Pakistani culture, social relatedness affects the self-regulated learning among university male students. Reason behind this, male students have more opportunities to develop social relationships in Pakistan.

Moderation analysis run through, results shows that age moderated the relationship of autonomy, competence and relatedness with self-regulated learning (see Table 11). Result is supported by study Yukselturk and Bulut, (2009) that revealed as children develop on the way to adulthood, they feel more satisfied for self-determination related needs and are motivated to learn. In Pakistani culture, the common concept of education is the preparation of career life (Bhatti & Afzal, 1987). Mental development studies among adolescence claim that the most of the young people from eighteen years of age have desire to continued education. At that time, individual had to be educated for successful career. Nowadays one had to be educated to become superior. However, their educational life effected by many others factors including parents support, teachers attitude, parental practices, cultural and social norms (Flanagan, 1962, p. 207). University students need autonomy, support from significant others to make their learning better. Additionally, with increasing age, changes in cognitive processes e.g thinking, decision making and reasoning make students mature in their social relationships and logical thinking (Zimbardo & Boyd, 1999).

Group differences of Demographic on Study Variables

Independent Sample t-test was computed across mean differences to study responses of male and females on study variables. Results obtained showed a statistically significant t-values for all the study variables. The results showed that male students are more satisfied for need of autonomy, competence and relatedness than female students (see Table 12). It was also found that male students have more internal locus of control than female students (see Table 12). These findings support the hypothesis 8 of this study. Results of t-test showed that female students were scored less on self-regulated learning as compared to male students as shown in Modegraph of moderation (Figures 2, 3, 4). This results support the hypothesis 9. These results are also consistent with the previous findings as previous findings by (Moore, 2007; Stipek & Weize, 1981; Zaid & Mohsin,

2013). The reason of these differences is that in Pakistani culture, male students are dominant, receive more autonomous support and have more opportunities to build relationships than female students (Fazal, Hussain, Majoka, & Masood, 2012; Munir, & Rehman, 2016).

Mean differences of educational level (BS, M.Sc.) of students on study variables. Significant results is found for all study variables. Result shows that M.Sc. students are more competent, autonomous, have internal locus of control, social relatedness and have more self-regulated learning than BS students (see Table 13). Cognitive point of view is that knowledge comes from learning, and these changes in knowledge bring change in actions (Sawyer 2006) These results are consistent with effect age on study variables.

Mean differences of residence place (hostel residence and day scholars) of students on study variables. Significant results is found for academic locus of control, self-regulated learning and competence. Result shows that students of hostel residence are more competent, have internal locus of control and have more self-regulated learning than day scholars (see Table 14). The reason behind this may be hostellites are more free to take decision, manage their time according to their own choices and have no distraction. Researchers claimed that students who live in hostels and live away from their families and homes are high achievers than students who live with their siblings and families (Borland & Howsen, 1999). Non-significant differences are found along family system with respective t-value for each variable.

One way ANOVA computed to study the mean differences of departments on study variables. The Post-Hoc Tukey analysis produced students from social science are more competent, autonomous, have internal locus of control, social relatedness and more self-regulated learning as compared to students from biological sciences and natural sciences (see Table 15). The reason behind this may be is that departments of social sciences promote practical or field work that enhance students self-regulated learning. There are non-significant differences are found along participant's mother and father's occupation and mother's and father's education with respective one way ANOVA for each variable. Analysis not done with Socio-economic-status because the number of students from middle SES was high as compared to low and high ,unequal distribution.

Conclusion

The current study found that self-determination theory is applicable in Pakistani context among university students. Finding shows that academic locus of control is mediator for autonomy, competence and relatedness in predicting self-regulated learning. Role of age and gender was found to be moderators. So, by promoting self-determination related needs, internal locus of control increases that enhance the self-regulated learning among university students. When male students receive autonomy and social relatedness they have better self-regulated learning than female students. With increasing age, self-regulated learning increases by satisfaction of self-determination related needs.

Limitations and Suggestions

There are also some limitations of this study and some suggestions for future studies to improve, continue and develop further information in understanding the topic of self-regulated learning.

- By using convenient sampling techniques, participants of the study were selected from different departments of Quaid-e-Azam University. Because of this sampling technique, most of the sample of this study belong to middle socio-economic-status. So, the findings of the study would not be generalized to all level of socio-economic status across Pakistan. For better generalization of results, collect data from large number of participants from different universities and from equal number of participants form different level of socio-economic status.
- The correlational method was used in this study that not provide cause and effect relationship between study variables. So it can affect the prediction values of results. Because to use of self-report measure, the chances of bias responses are high, as socially acceptable style. So, it suggest to future researchers, use longitudinal method to explore factors that contributing in self-regulated learning among university students.
- The current study use only two mini theory of self-determination theory so, it ignored many others factors that contribute in self-regulated learning for example, self-concept, self-esteem, life satisfaction and how environmental factors enhance

self-determination related needs. So, it suggest to future researchers, use other mini-theory like Organismic integration theory that concerns different dimensions of external motivation with their factors, valuable effects and their outcomes. This theory explains the types of self-regulation and degree of motivation. OIT concerned how social environment and interaction effect the motivation level, belief system and self-determination level and what type of factors enhance the one's autonomy. Organismic integration theory explains the degree of self-determination from non-self-determined to fully self-determined. OIT predominantly point out that one's internalization is effected by relatedness and autonomy.

- Train teachers, to promote these needs in class among all students without discriminating age, gender and educational level.

Implications

- The present study makes comprehensible connection between self-determination related needs and academic locus of control in students' learning and achievement which reflects application of self-determination theory in our university settings. The practical implications of this study for educational purpose and results recommended that self-determination related needs and academic locus of control have important role in self-regulated learning and students' academic achievement. Hence, these must be promoted in students to achieve better results as self-regulated learning leads to better GPA, so better future.
- This study also supports the earlier literature on self-regulated learning and academic achievement. So, this study have theoretical implications, and suggest strength of self-determination theory in Pakistan culture. Additionally, relatedness has found to be significant predictor of self-regulated learning, which was ignored in previous studies. Pakistan is a collectivistic culture, that may be the reason of its role in SRL, is that people frequently seek social support from others (e.g. teachers, parents, peers etc.) to accomplish their goals. Therefore promoting these skills will also lead to better SRL and GPA.

- This study can help teachers/educators to plan interventions and programs that enhance the self-regulated learning and academic achievement.
- Another practical implication of this study is that teacher and parents support promote the self-regulated learning among students. Therefore, parents and teachers role needs to be enhanced in promoting university students skills to have better outcomes.
- The results of this research will provide helpful information for promoting the student's self-regulated learning at educational institutions of Pakistan.
- Results found satisfaction of needs, LOC and high SRL in male students. So, there is need to promote autonomy support for girls and girls LOC.

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4(1), 12-18.

Appendices

Appendix A

Re: Scale permission for Basic Psychological Needs scale

DE Deci, Edward <deci@psych.rochester.edu> Reply |
Fri 2/10, 9:31 PM
You

Inbox

You replied on 2/10/2017 11:30 PM.

You have our permission too use the Basic Psychology Needs Scale for your masters research.

Ed Deci
--
Edward L. Deci
Professor of Psychology and
Helen F. & Fred H. Gowen Professor in the Social Sciences
University of Rochester
P.O. Box 270266 (for US Mail)
355 Meliora Hall (for Couriers)
Rochester, NY 14627
Office Phone: 585-275-2461
Office Fax: 585-273-1100
Email: deci@psych.rochester.edu
Web site: selfdeterminationtheory.org

From: "zubi ." <zubana.afzal@hotmail.com>
Date: Friday, February 10, 2017 at 6:05 AM
To: Edward Deci <deci@psych.rochester.edu>
Subject: Scale permission for Basic Psychological Needs scale

I am a student of Master in Psychology at National Institute of Psychology, Qauid-i-Azam University Islamabad. I want to use *Basic Psychological Needs Scale i*n my research that is requirement of my master degree.Kindly give me permission to use this scale. I will be very thankful to you.

Thanks!

Reply | Delete Junk | ...

Re: Scale Permission

Appendix B

Trice, Ashton Delmer - tricead <tricead@jmu.edu>
Thu 10/27/2016, 7:10 PM
You

Reply |

Inbox

You replied on 10/28/2016 11:55 AM.

Yes, certainly. Do you need a formal letter, or will this email be okay?

On Oct 27, 2016, at 2:48 AM, zubi . <zubana.afzal@hotmail.com> wrote:

Respected Sir,

I am a student of Master in Psychology at National Institute of Psychology, Qauid-i-Azam University Islamabad. I want to use Academic Locus of Control Scale in my research that is requirement of my master degree.Kindly give me permission to use this scale. I will be very thankful to you.

Thanks!

Sent from my Samsung Galaxy smartphone.

Appendix C

National Institute of Psychology

Center of Excellence

Informed Consent

I am M.Sc. research student at National Institute of Psychology, Quaid-i-Azam University, Islamabad. I am doing a research which is required for practical fulfillment of my M.Sc. Degree.

I request you to support my purpose and participate in this research project. I am trying to explore learning strategies of students and their impact on their academics. For this, I am giving you a booklet based upon three questionnaires and a demographic sheet. I assure you that any personal information provided will be kept confidential and will only be used for research purpose. You have full right to withdraw at any stage of questionnaire administration. However, I will request to complete all measures once you volunteer to participate. There is no right and wrong answer. Kindly report your personal experience as honestly as possible. This will help me in achieving my research objectives. Please provide your consent through endorsing the signature in the prescribed space.

Your participation will be highly appreciated.

Thank you!

Signature:_____

Name: Zubana Afzal

Zubana.afzal@hotmail.com

National Institute of Psychology

Appendix D

Demographic Information

1.	Gender	Male ☐ female ☐
2.	Age (years)	.....
3.	No. of siblings	
4.	Birth order in siblings	.....
5.	Education Level	BS. ☐ Master ☐
6.	Department	.....
7.	Semester	.....
8.	Last Semester GPA	.....
9.	Living in	hostel ☐ day scholar ☐
10.	Your occupation status	employed ☐ Unemployed ☐
11.	Mother	Alive ☐ Deceased ☐
12.	Father	Alive ☐ Deceased ☐
13.	Parents separated/divorced	Yes ☐ No ☐
14.	Father Education	.....
15.	Father Occupation	.....
16.	Mother Education	.....
17.	Mother Occupation	.....
18.	Family System	Joint ☐ Nuclear ☐
19.	Daily Study Hours	_____

20.How many time in a week you consult _____

Library books.

21. How many time in a week you consult _____

Internet for study.

22. In your opinion, your Socioeconomic Status belongs to_____ of total Pakistani Population.

33% Low ☐ 33%Middle ☐ 33%High ☐

23. How many friends you have that you meet in daily bases. _____

24. How much your parent's support you to make decision and independent.

1.Never 2. Rarely 3. Sometimes 4. Often 5. Always

25. How much your teacher's support you to make decision and independent.

1.Never 2. Rarely 3. Sometimes 4. Often 5. Always

Appendix E

Basic Psychological Needs Scale

Instructions. Listed below are the statements that represent your opinions about your abilities in academics. Select the option that is best relevant to you.

1	2	3	4	5	6	7
very untrue of me	Untrue of me	Somewhat untrue of me	Neutral	Somewhat true of me	True of me	Very true of me

	Statement	1	2	3	4	5	6	7
1	I feel I am free to decide for myself how to live my life.							
2	I really like the people I interact with.							
3	Often, I do not feel very competent.							
4	I feel pressured in my life.							
5	People I know tell me I am good at what I do.							
6	I get along with people I come into contact with.							
7	I pretty much keep to myself and don't have a lot of social contacts.							
8	I generally feel free to express my ideas and opinions.							
9	I consider the people I regularly interact with to be my friends.							
10	I have been able to learn interesting new skills recently.							
11	In my daily life, I frequently have to do what I am told.							
12	People in my life care about me.							
13	Most of the days I feel sense of accomplishment from what I do.							
14	People i interact with on daily basis tend to take my feelings into consideration.							
15	In my life I do not get much of a chance to show how capable I am.							
16	There are not many people that I am close to.							
17	I feel like I can pretty much be myself in my daily situations.							

18	The people I interact with regularly do not seem to like me much.							
19	I often do not feel very capable.							
20	There is not much opportunity for me to decide for myself how to do things in my life.							
21	People are generally pretty friendly towards me.							

Appendix F

Academic Locus of Control Scale

Instructions. Listed below are the statements that represent your opinions about your control on academics. Select the option that is best relevant to you.

True = 0 False = 1

	Statements	**0**	**1**
1	College\ university grades most often reflect the effort you put into class		
2	I came to college\ university because it was expected of me.		
3	I have largely determined my own career goals.		
4	Some people have expertise in writing, while others will never write well no matter how hard they try.		
5	At least once, I have taken a course because it was easy to get a good grade.		
6	Professors sometimes make an early impression of you and then no matter what you do, you cannot change that impression.		
7	There are some subjects in which I could never do well.		
8	Some students, such as student leaders (CR,GR)get opportunities that they don't deserve in college\university classes.		
9	I sometimes feel that there is nothing I can do to improve my situation.		
10	I never feel really hopeless there is always something I can do to improve my situation.		
11	I would never allow social activities to affect my studies.		
12	There are many more important things for me than getting good grades.		
13	Studying every day is important.		
14	For some courses it is not important to go to class.		
15	I consider myself highly motivated to achieve success in life.		
16	I am a good writer.		
17	Doing work on time is always important to me.		
18	What I learn is more determined by college/university and course requirements than by what I want to learn.		
19	I have been known to spend a lot of time making decisions which others		

	do not take seriously.		
20	I am easily distracted.		
21	I can be easily talked out of studying.		
22	I get depressed sometimes and then there is no way I can achieve what I know I should be doing.		
23	I think Things will probably go wrong for me in the future.		
24	I keep changing my mind about my career goals.		
25	I feel I will someday make a real contribution to the world if I work hard at it.		
26	There has been at least one instance in college/university where social activity impaired my academic performance.		
27	I would like to graduate from college/University, but there are more important things in my life.		
28	I plan well and I stick to my plans.		

Appendix G

Self-regulated Learning subscale of MSLQ

Instructions. Listed below are the statements that represent your opinions about your self-regulation in academics. Select the option that is best relevant to you.

1	2	3	4	5	6	7
very untrue of me	Untrue of me	Somewhat untrue of me	Neutral	Somewhat true of me	True of me	Very true of me

	Statements	1	2	3	4	5	6	7
1.	During class time I often miss important points because I'm thinking of other things.							
2.	When reading for the course, I make up questions to help focus my reading.							
3.	When I become confused about something I'm reading for class, I go back and try to figure it out.							
4.	If course materials are difficult to understand, I change the way I read the material.							
5.	Before I study new course material thoroughly, I often read it to see how it is organized.							
6.	I ask myself questions to make sure I understand the material I have been studying in this class.							
7.	I try to change the way I study in order to fit the course requirements and instructor's teaching style.							
8.	I often find that I have been reading for class but don't know what it was all about.							
9.	I try to think through a topic and decide what I am supposed to learn from it rather than just reading it over when studying.							
10.	When studying for this course I try to determine which concepts I don't understand well.							
11.	When I study for this class, I set goals for myself in order to direct my activities in each study period.							
12.	If I get confused taking notes in class, I make sure I sort it out afterwards.							