A Qualitative Account of The Nature and Use of Self-Regulated Learning (SRL) Strategies Employed by University Students

Effat Alvi
University of the Punjab, Lahore, Pakistan, effat.alvi@uqconnect.edu.au

Zafar Iqbal
University of the Punjab, Lahore, Pakistan

Fatima Masood
University of the Punjab, Lahore, Pakistan

Tooba Batool
University of the Punjab, Lahore, Pakistan

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Abstract: Students' conceptions of how they initiate, plan, implement and monitor self-regulated learning (SRL) strategies have practical implications for teaching and learning. This study explores the nature and use of SRL strategies employed by university students as it occurs in naturalistic settings, for example, studying in non-classroom environments. Framed within the social cognitive perspective, it focuses on a group of students from an under-researched population. Focus group interviews were used to elicit information about the nature of SRL strategies and contexts for their use. The findings reveal that students employ a range of SRL strategies, from shallow to cognitively rich and deep processing. Furthermore, the use of SRL strategies alters under different contextual influences such as personal goals, SRL phase specific conditions, semester and academic capabilities.

Introduction

Self-regulated learning (SRL) is critical to enable success among students from an early age through all stages of learning. Human behavior and learning is regulated through internal and external influences. Self-regulation is the ability to develop control over one's thoughts, feelings, cognition, motivation and actions within the external environment (Bandura, 1986). This social cognitive view suggests that SRL is a social process that is influenced by personal (e.g., control over one's own thoughts, feelings, motivation and actions), behavioral (e.g., skills, practice, self-efficacy), and environmental factors (e.g., social norms, influence on others, access in community) in a reciprocal fashion. It is a cyclical process in which learners set their goals, use different strategies to achieve their goals, and monitor and evaluate their performances (Butler & Winne, 1995). Overall, it encourages students to take responsibility of learning by employing metacognitive, motivated, and strategic actions (Zimmerman, 2002).

Consistent with the social cognitive perspective (Bandura, 1986; Zimmerman, 2000), we view SRL to be composed of three essential components including metacognition, motivation, and strategic actions of learners (Zimmerman, 1989) occurring within a social context. Metacognition, within the context of SRL, refers to the capability of learners to understand and monitor their cognitive processes and thinking. It involves two constituent elements including knowledge and regulation (see Lai, 2011). Metacognitive knowledge includes one's knowledge about oneself as a learner (Zimmerman, 1986), factors that affect one's performance, knowledge about one's learning strategies (declarative knowledge), and when and why to use those strategies (conditional knowledge) (Veenman, Hout-Wolters, & Afflerbach, 2006). Whereas, metacognitive regulation involves planning activities,

understanding, interpreting and manipulating cognitive tasks (cognitive experiences) (Butler & Cartier, 2004), and evaluation of the efficacy of the processes and products of learning as well as monitoring processes employed during learning (Weinstein, Acee, & Jung, 2011; Whitebread & Pino Pasternak, 2010). Overall, metacognition within SRL refers to the process of taking charge of one's learning by planning how to approach a learning task, monitoring comprehension, and evaluating progress with the completion of a task.

Motivation includes learners' beliefs and attitudes that affect the development and use of metacognitive skills, such as self-efficacy beliefs (Pintrich & Schunk, 2002). During the process of SRL, students develop motivation from internal (personal) and external (environmental) reinforcement factors (Bandura, 1986). These factors encourage students to achieve their goals (Grant & Dweck, 2003). These include self-efficacy (degree to which one is confident that one can perform a task) and epistemological beliefs (beliefs about the origin and nature of knowledge) (Richter & Schmid, 2010), goal orientation, interests and displaying and monitoring progress.

Strategic actions refer to the learners' set of knowledge, skills and behaviors that allow them to effectively and efficiently perform their tasks. These involve a deliberate engagement in the learning task, organizing learning strategies and ensuring appropriate implementation of these strategies (Butler, Beckingham, & Lauscher, 2005). Such actions may relate to either metacognition or motivation or both and include for example, goal setting, planning, and taking strategic actions to achieve a goal.

A considerable bulk of research has explored SRL related strategies of students at different levels and in different contexts such as Australia (Effeney, Carroll, & Bahr, 2013), China and Germany (Wang, Schwab, Fenn, & Chang, 2013), Iran (Mahmoodi, Kalantari, & Ghaslani, 2014), Malaysia (Puteh & Ibrahim, 2010), Turkey (Ozan, Gundogdu, Bay, & Celkan, 2012) and the United States (Anthony, Clayton, & Zusho, 2013). Students' use of SRL strategies has been directly related to their academic achievement (Zimmerman, 1990). Similarly, researchers urge the need for students to improve their learning skills and strategies in order to ensure success at university level (Iqbal, Sohail, & Shahzad, 2010).

This paper explores the nature and use of SRL strategies employed by university students while it occurs in naturalistic settings (e.g., studying in non-classroom environments) in greater detail. The knowledge generated through this study is specific to a context (Pakistan) where there is a paucity of research on SRL processes and strategies. Although a few studies have examined some related yet different aspects, such as, learning and study strategies (Iqbal, 2005; Iqbal, et al., 2010), and study habits (Iqbal & Shehzadi, 2002; Jamil, 2001); these vary in their point of emphasis with respect to SRL. For example, Iqbal and colleagues (2010) examined the learning and study strategies employed by Pakistani students by using Learning and Study Strategies Inventory (LASSI); however, they did not emphasize SRL as a focal point. Nevertheless, some research has examined SRL through quantitative methods and measures, for example, development and validation of an academic self-regulation scale (ASRS) (J. H. Akhtar & Mahmood, 2013), impact of self-regulation skills on academic performance (Khathawala & Bhamani, 2015) and relationship between academic self-efficacy and SRL (Ahmad, Hussain, & Azeem, 2012). However, these studies did not examine students' SRL strategies in detail, neither did they attend to why do students use specific strategies in specific contexts. We attempt to fill this gap in literature by contributing details about the nature and use of SRL strategies employed by students enrolled in a well-reputed public university located in a large urban city of a developing country, Pakistan. This knowledge is particularly needed since students' theoretical conceptions of how they initiate, plan, implement and monitor their learning experiences have practical implications for teaching and learning (Zimmerman, 1986).

SRL – Zimmerman's Social Cognitive Model

SRL as a theoretical framework has been explored from a variety of approaches including operant, phenomenological, information processing, social cognitive, volitional, Vygotskian, and cognitive constructivist (see Zimmerman, 2001). Bandura's social cognitive perspective (1986) provides a strong background for SRL and emphasize that SRL is a process which is influenced by the interaction between personal, behavioral and environmental factors. Consistently, we do not see SRL as a fixed trait. Rather, we believe that SRL is not only a cognitive process, but is also a social process which is influenced by internal (personal) and external (environment, outcomes) factors.

Several models of SRL have emerged from the social cognitive perspective with an emphasis on close association of cognition and social functioning embedded within a context in which it occurs (Bandura, 1986). Some prominent work include three stage development sequence proposed by Biemiller and colleagues (Biemiller, Shany, Inglis, & Meichenbaum, 1998) and cyclical model of Zimmerman (2000, 2002, 2008). Zimmerman's cyclical model has served as a theoretical foundation for a number of studies that evaluate learners' self-regulatory processes within academic, non-academic and naturalistic settings (Bonner et al., 2002; DiBenedetto & Zimmerman, 2010; McPerson & Renwick, 2011). These studies emphasize different aspects of SRL (e.g., academic regulation, health management, mastery of musical skills) and used varied methodologies (e.g., SRL microanalytic methodology, diary records, direct observations).

Zimmerman's (2000, 2002, 2008) cyclical model of SRL highlights three phases of self-regulation including forethought, performance control, and self-reflection as demonstrated in Fig. 1.
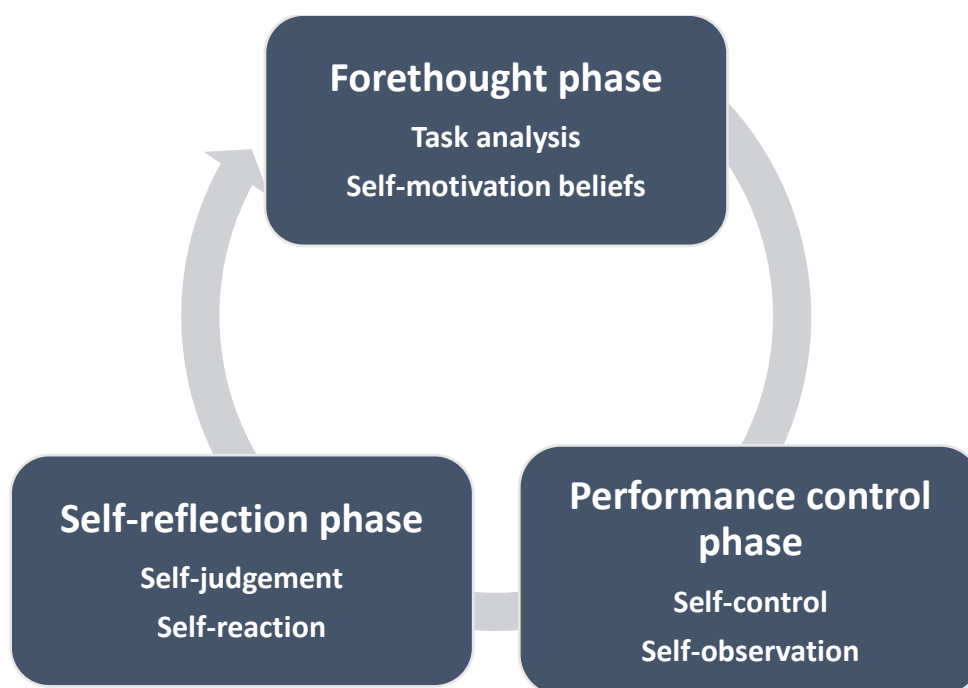

Figure 1: Zimmerman's model of SRL - A visual representation.

During the forethought phase, learners set their learning goals (Zimmerman, 1998). This phase involves task analysis and self-motivation. Task analysis includes goal setting and strategic planning. Students make specific goals for learning and make a strategic plan to achieve their goals. Self-motivation involves self-efficacy, outcome expectations, intrinsic

interest and learning goal orientation. While self-efficacy refers to the beliefs that students have about their abilities, outcome expectations relate to the consequences of learning such as a high Grade Point Average (GPA) or job etc. Besides, intrinsic interest is the students' personal interest in learning. Learning goal orientation refers to the process in which students attach particular importance to the learning process for its own merits.

The performance control phase emphasizes self-monitoring of performance by the learners (Zimmerman, 1998, 2002). In this phase, learners implement the plans which were formulated in the forethought phase. Performance phase includes self-control and self-observation. Self-control has sub-processes including self-instruction, imagery, attention focusing and task strategies. Whereas, self-observation involves self-recording and self-experimentation.

The self-reflection phase highlights an engagement in self-reflection after performance (Zimmerman, 1998, 2002). This phase includes self-judgment and self-reaction. Self-judgment has two sub-processes: self-evaluation and causal attribution. While students observe their performances according to some standards during self-evaluation, they find out the causes of their mistakes and success during causal attribution. Self-reaction also includes two sub-processes: self-satisfaction and adaptive response. Self-satisfaction refers to learners' motivation in learning. However, learners adjust to enhance the effectiveness of their learning strategies by generating adaptive responses.

We framed this study within Zimmerman's model of SRL because of several reasons. First, the model in itself is comprehensive and covers majority of the key processes that are relevant for understanding students' self-regulatory behaviors (Panadero & Alonso-Tapia, 2014). It offers explicit definitions of the underlying self-regulatory processes within each of its three general phases and further elaborates on how different processes interact (Zimmerman & Moylan, 2009). We used these descriptions to develop and phrase open-ended questions for the focus group interviews. This allowed us to elicit information about the nature and use of SRL strategies employed by university students. Second, the temporal sequencing of the model allows us to ask questions from participants that target their past, present and future behaviors with respect to SRL. For example, what have you done to achieve your study goals for this semester?, what are the reasons for your current performance? and what would you do to improve your performance? This enabled participants to separate their self-regulatory behaviors into phases, such as prior to, during, and after learning within a specific situation. Furthermore, the temporal dimensions of the cyclical phases allow the model to be customized according to the needs of almost any task, activity or context in order to understand human regulation (Cleary, Callan, & Zimmerman, 2012). Importantly, it can be regarded both as a predictor and an outcome of learning and performance (Schmitz & Wiese, 2006). Consequently, it has been employed in academic (e.g., preparing for an exam, problem solving) and non-academic (e.g., music, sports, health, work) settings within varied contexts (Bonner, et al., 2002; Effeney, et al., 2013; Kadhiravan & Suresh, 2008; McPerson & Renwick, 2011). This allows us to focus on the situational influences and the process character of everyday learning of university students; and link it to a context where there is relatively less emphasis on strategic learning (Iqbal, et al., 2010), and little information about the nature and use of students' SRL strategies.

Methodology

A review of related research in Pakistan highlights the use of quantitative methods and measures to examine different aspects related to SRL (e.g., Ahmad, et al., 2012; J. H. Akhtar & Mahmood, 2013; Khathawala & Bhamani, 2015); with little or no research that

directly examines the nature and use of students' SRL strategies in detail. Consistently, an exploratory qualitative research design helped us to explore an under researched topic by focusing on the *what* and *why* questions related to the nature and use of SRL strategies employed by university students (Hesse-Biber & Leavy, 2011).

For the purpose of this study, we invited students enrolled in a two years Master's degree program at one of the well-reputed public sector universities located in a large urban city of Pakistan. Based on a convenience sampling technique (Patton, 2002), the participation in the study was kept completely voluntary. Consequently, a total of 37 students, three males and 34 females, enrolled in the 2nd (n=20/37, 54.05%) and 4th (n=17/37, 45.94%) semesters of a Master's degree program, agreed to participate in the focus group interviews. Fifty-one percent of these students had a cumulative GPA of 3.00 or higher whereas forty-nine percent had a cumulative GPA ranging from 2.00 to 2.99.

Focus Group Interviews as a Self-Contained Research Method

We used focus group interviews as a self-contained research method for two reasons. First, it allowed us to examine the nature and use of SRL strategies among university students as an individual as well as a group disposition (Hesse-Biber & Leavy, 2011). The socially oriented environment during focus group interviews allowed the participants to engage in dynamic interactions with each other as well as with the researchers leading to shared or collective construction of meaning (Barbour, 2008). This was particularly important, since the participants were similar, familiar and cooperative with each other. Second, it helped us to develop detailed insights into SRL strategies of a group of students from an under researched population. The knowledge generated in this way is highly contextualized and consistently not generalizable.

The six groups were relatively homogeneous in nature since all the participants were volunteers from the same degree program, semester (either 2nd or 4th), and university. Moreover, they came from similar socio-economic backgrounds. We conducted a total of six focus group interviews, with each group comprising four to eight members (Hesse-Biber & Leavy, 2011). We developed a coding reference scheme to maintain the confidentiality of our participants and to provide us with some basic information. For example Zoha (F, S2, 3.00, FG2), refers to a participant who is assigned a pseudonym Zoha, a female (F), enrolled in the 2nd semester of a Master's degree program (S2), has a GPA of 3.00 and participated in focus group no. 2 (FG2).

A pair of researchers conducted the focus group interviews. While one of us documented important notes and non-verbal behaviors during focus group interviews, the other managed the interview and the group (Patton, 2002). We began each of the interviews by introducing ourselves and the purpose and procedures of the study. We emphasized the common ground among the participants by referring to their degree program and acquaintance with each other. We further emphasized voluntary participation, confidentiality and their right to withdraw from the study at any time without any obligation. As we conducted the interviews, we facilitated the participants to share their views and experiences in a relaxed environment. Yet, we moderated the discussions by developing and re-directing the focus on the area of interest through a semi-structured interview protocol. Almost similar questions and procedures were used for all six groups (Hesse-Biber & Leavy, 2011). Each interview lasted between 40 to 90 minutes. We recorded the interviews on a digital recorder and later transcribed for meaning.

The questions asked during interviews were based on Zimmerman's model of SRL (Zimmerman, 2002). We developed a total of nine open-ended questions to explore the nature

and use of students' SRL strategies. These questions referred to the three phases of the cyclical model. For example, we asked the following questions to elicit information about the *forethought* phase*: What are your study goals for this semester? What have you done (and would you do) to achieve your goals?* Similarly, we asked questions like, *How do you focus attention on a learning task?* and *What are the reasons for your current performance in learning?* to generate information about *performance control* and *self-reflection* phases of SRL. The full list of interview questions is available from the first author on request.

Data Analysis and Representation

We analyzed data generated from focus group interviews at both an individual as well as group level (Hesse-Biber & Leavy, 2011). In doing so, we not only attended to what each individual group member has said, but also examined the group dynamics and interaction. We particularly focused on the overall patterns and trends that emerged as a group narrative.

The first step of analysis was to examine the individual transcript of each of the participants. We worked together on the transcription and analysis procedures. We used NVivo 10 for the development, management and organization of data, nodes and categories. The coding process started with descriptive coding and advanced through open coding. Consequently, we developed broad categories, however little interpretation was made at this stage (Flick, 2009; Richards, 2009).

After the first round of analysis, we identified the dominant trends and initiated another round of coding emphasizing the whole rather than individual patterns (Hesse-Biber & Leavy, 2011). Informed by the initial analysis conducted at an individual level; this time, we focused on the patterns as they emerged from group discussions and then organized them into broad categories. For example, as we analyzed individual responses to the question that inquired students' study goals, we grouped their responses into three categories including learning, performance, and learning and performance oriented goals. Later, we examined their responses in a group to see how do these trends develop within a particular focus group discussion? It was interesting to note mixed patterns as presented in Fig. 2. While FG1, 2, 4 and 6 highlight dominance of a particular learning goal orientation; FG 3 and 5 represent mixed orientations. Further analysis revealed that FG1, 2 and 4 were conducted with students enrolled in the 2nd semester of their degree program. This may imply that students learn to disagree and form their own opinions as they spend more time with each other (2nd semester students tend to have similar opinions regarding their learning goals when compared with the 4th semester students who have diverse opinions).
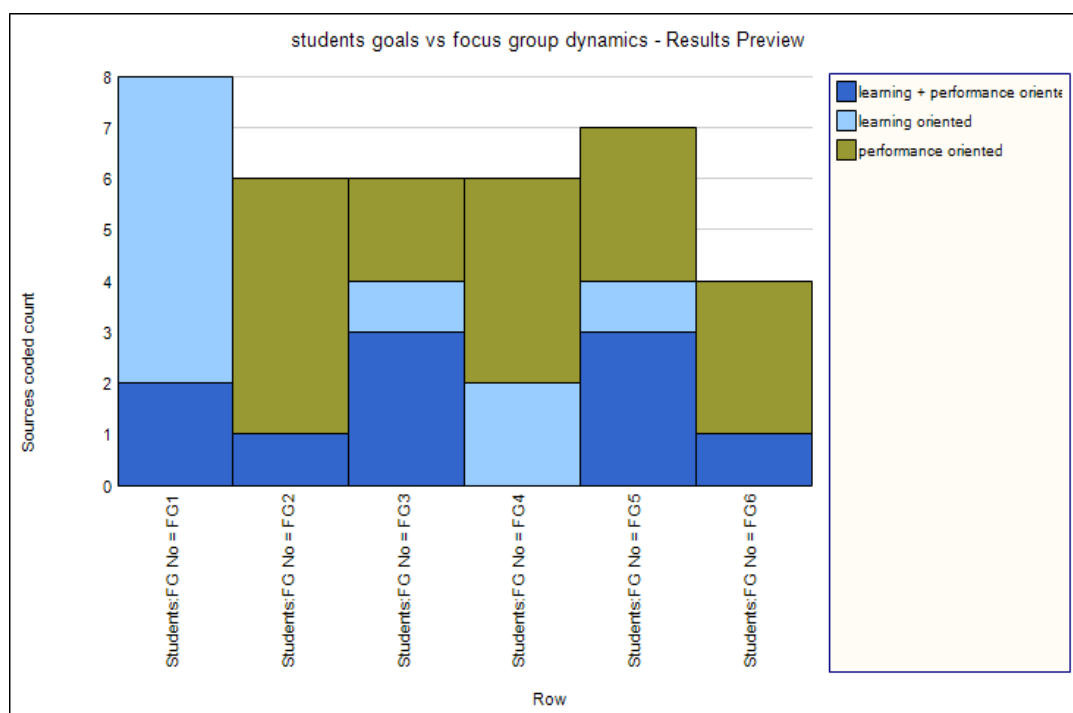
Figure 2: Students' goal orientations and focus group dynamics.

The interplay between the individual and group level analyses helped us to identify students' SRL related strategies and experiences, and further developed insights into how they formed, reflected and justified their opinions. This knowledge was grounded in the ways we conducted interviews, interacted with our participants and constructed meaning (Flick, 2009). Overall, we see this interaction, analysis and interpretation as a dynamic process which lead us to develop a more contextualized understanding of the process.

Consistent with the research purposes, we organize the findings into two main sections highlighting the nature and use of SRL strategies employed by university students. This discussion is grounded in Zimmerman's model of SRL (Zimmerman, 1989, 2000, 2008). We adopt different ways to represent findings from our study. While the first section explores the nature of SRL strategies used by university students, we simplify and synthesize data using matrix displays, tables and graphs in a systematic and enumerative way (Miles & Huberman, 1994). This approach worked well given the rich, descriptive nature of data. However, the second section elucidates why do students use different SRL strategies in response to particular contexts (e.g., during exams). Here, we present findings as a group narrative accentuating different patterns that emerged during group interactions (e.g., Gulliksen & Hjardemaal, 2016).

Findings and discussion
The Nature of SRL Strategies

This section presents an overview of the types of SRL strategies employed by university students. We have sorted them into four major categories including cognitive, meta-cognitive, motivational and resource management strategies.

Cognitive Strategies

The participants reported using a number of cognitive strategies during the focus group interviews. The most commonly reported cognitive strategies include making and consulting notes, highlighting or focusing on important points, elaboration, chunking, attention focusing and repeating. Tab. 1 presents some examples as follows.

Cognitive strategies	%age of students reporting the strategy	Description
Making and consulting notes	81%	"If I don't understand something then I focus more on the notes [that I've made during the lecture] to see what did the teacher tell about that thing." [Anam, F, S2, 3.33, FG4]
Highlighting or focusing on important points	67.56%	"We underline the main points . . . . We write the important points" [Hina, F, S2, 3.23, FG1]
Elaboration	51%	". . .when we explain something to others [peers], then we make them understand some points, however [if we] can't clarify some other points, . . . we get to know that we also need to learn more about those things. . . " [Zoya, F, S4, 2.51, FG5]
Chunking	40.54%	"we divide . . . That someone has to do this, someone else has to do that. So in this way, each of us give our point of view in group [and we learn]" [Ali, M, S2, 3.02, FG1]
Attention focusing	35%	"Sometimes if I haven't read [about the topic], then I pay more attention in the class while the teacher is teaching" [Nusrat, F, S4, 2.78, FG5]
Repeating	11%	"For example, if I have to check that I have memorized my notes [or not], I will repeat it thoroughly . . ." [Aliza, F, S4, 2.46, FG5]

Table 1: Description of cognitive strategies

It is important to note that high-achieving students reported using wider cognitive strategies than low-achieving students (Effeney, et al., 2013). They used varied and adaptive strategies based on their needs such as consistent work. Whereas, low achieveing students relied on less effective strategies which were not reported by the higher achieveing students, for example, repetition. This trend is apparent in Fig. 3 which presents a comparison of the cognitive strategies used by high-achiving students (GPA=3.50-3.99, n=3) with low-acheiving students (GPA=2.00-2.49, n=7).
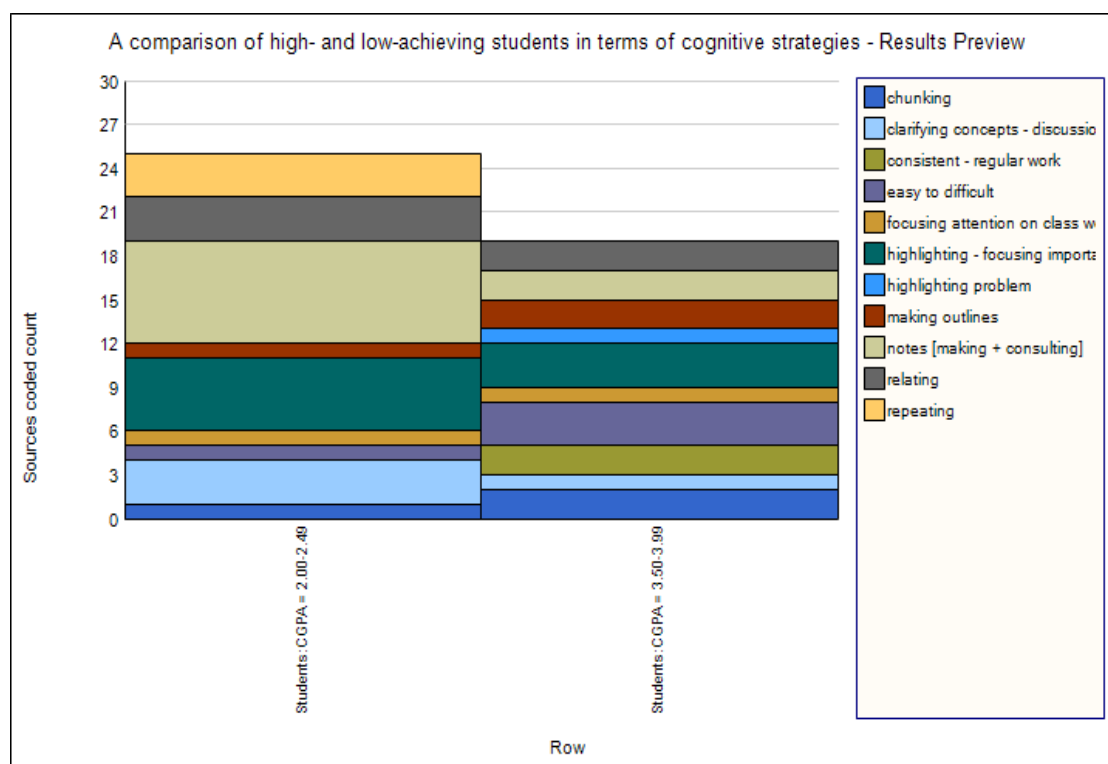
Figure 3: Comparing the cognitive strategies of high- and low-achieving students.

Fig. 3 shows that low-achieving students mainly rely on making and consulting notes, highlighting important points, relating and repeating information as their main strategies. Besides, they reported using shallow processing strategies (e.g., repeating) (Anthony, et al., 2013; DiFrancesca, Nietfeld, & Cao, 2015). In contrast, high-achieving students reported an increased regulation (e.g., consistent work) and wider range of strategies (e.g., highlighting/identifying problem) (Al-Awan, 2008; Effeney, et al., 2013).

Overall, note-making and consulting the notes emerged as the most commonly used strategy employed by university students. There was a consistent pattern of referring to notes during learning. The students created their own notes or personal records of learning content during lectures and frequently referred to these notes as they engage in activities after learning, for example, preparing for an exam. Besides, S2 students reported using shallow strategies, for example, using dictionaries, recording the lecture and repeating which were not reported by the S4 students. It is likely that students modify and refine their strategies not only with respect to specific contexts (e.g., task) but also as they spend more time within a particular context (e.g., university; S2 students reported using shallow strategies which were not mentioned by S4 students) (Anthony, et al., 2013).

Meta-Cognitive Strategies

The informants reported using a number of strategies that emphasize meta-cognitive regulation (Butler & Cartier, 2004; Zimmerman, 1986). Some of the frequently reported strategies include: understanding the problem ("If there is some problem [in learning], then I focus on what is the problem, what is that *thing* which is not letting [me] to solve the problem. . ." [Nusrat, F, S4, 2.78, FG5]), planning time ("I make a *time routine*, that if I have this [much] chapters . . . so I limit time that I have to finish [those chapters] within that much time" [Maryam, F, S4, 2.97, FG3]) , and consulting the task descriptor to understand and

interpret the task ("First of all, I consult the outline [of the task] to identify steps that are highlighted by the teacher [to complete the task], then I follow those steps" [Nusrat, F, S4, 2.78, FG5]) (Butler & Cartier, 2004). Besides, they also reported using self-evaluative and self-corrective strategies (Weinstein, et al., 2011; Zimmerman, 2000). Most of the students reported that they were not satisfied with their current performance. Overall, the level of students' satisfaction with their current performance is demonstrated in Fig. 4.
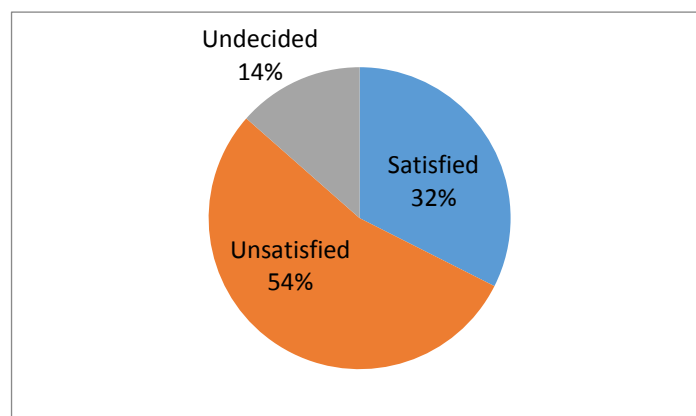

Figure 4: Students' satisfaction with their current performance.

As students judged their performances during the focus group discussions, they also talked about the reasons behind their current performances (i.e., causal attribution) (Zimmerman, 1998, 2000). Although some of them were not sure of the causes (16.21%), a majority linked their low performance to a lack of consistent and hard work (37.83%). Some of the students (13.5%) also find it difficult to adjust to the new system of university (e.g., ". . . we switched from the annual to semester system, so we spent [a lot of time] in adjusting to this new system . . . we came from the rote learning system and did not know how to attempt a concept based paper. . ." [Nusrat, F, S4, 2.78, FG5]). Loong (2013) also demonstrated that pre-university international students establish an increased use of SRL strategies as they spend more time in their new learning environment. This is because the increased time allows students to become more familiar and comfortable. Consistently, our study demonstrates that students' engagement in SRL behaviors is relevant to the time spent in university as they enter in a more comfortable state of learning.

Besides, some students also (13.5%) blamed teachers for their low performance (e.g., "It [low performance] is because of the teachers, since they don't give us scores, we do a lot of work in papers but they don't give us scores. . ." [Aliza, F, S4, 2.46, FG5]). This finding is supported by Nausheen (2016) who argues that postgraduate students in Pakistan tend to assign the responsibility of their learning outcomes to external sources such as teachers. This tendency can be attributed to the highly teacher controlled learning environments with little opportunities for self-regulation of learning and performance.

Motivational Strategies

The participants related to different motivational orientations during focus group interviews including performance (45.94%), learning (27.02%) and learning and performance oriented goals (27.02%) which influenced their engagement in SRL (Dweck & Master, 2008; Grant & Dweck, 2003). They provided different reasons for their goals, for example, obtaining a degree or job, social recognition, and personal interests. They also identified

strategies for goal-achievement including, consistent work, focusing attention on class work, consulting resources, planning time and making notes. Moreover, they related to both internal (e.g., relating learning to daily life, strategic actions - moving from simple to complex, intrinsic interests) and external (e.g., regulating environment, test scores, "we have to study . . . we consider it [study] as a burden on ourselves") sources of motivation to help them develop interest in learning (Bandura, 1986). However, students with a GPA of 3.50 or higher referred to intrinsic sources of motivation (e.g., "To develop interest, first do the easy things, start from easy topics then move to difficult topics. [When you] get the easy topics then you [also] develop interest" [Nida, F, S2, 3.67, FG2]); which shows that internal sources of motivation are positively related to students' academic performance. Amir and Kamal (2011) also find that intrinsic goal orientation is significantly related to students' academic achievement. They argue that students' performance is significantly improved in those courses/subjects which they perceive as challenging and intriguing. This trend is attributed to their curiosity as well as a desire for the mastery of learning task.

On the other hand, a majority of participants (35.13%) related to external sources (e.g., test scores) as an indicator of their performance. Nausheen (2016) also demonstrates that Pakistani postgraduate students are more inclined towards extrinsic sources of goal orientation and almost readily connect to concepts like grades, rewards, competition when compared with intrinsic goal orientation concepts such as challenge, curiosity, control of learning and task value.

The participants (27.02%) admitted that they procrastinate during learning, (e.g., "I always work at the last deadline" [Zobia, F, S2, 2.55, FG4]). Further examination of their motivational orientations revealed that they tend to have performance oriented goals (e.g., "and my goal is to obtain a good GPA" [Zobia, F, S2, 2.55, FG4]) which are related to academic procrastination (Zimmerman, 2000). On the other hand, 13.51% of the participants reported persistent behaviors during learning (e.g., "I keep on studying until the material is learned" [Eiman, F, S4, 2.88, FG3]) which are critical for SRL (Pintrich & De Groot, 1990). Job and colleagues (Job, Walton, Bernecker, & Dweck, 2015) argue that students with a functional growth mindset (a belief that intelligence can be increased and that success is based on hard work) and non limited willpower engage in effective forms of self-regulation and achieve higher grades than students who have a fixed mindset (intelligence and abilities are fixed not incremental) and limited theory of willpower.

University students tend to procrastinate when they are either not motivated or prefer leisure time activities (Schmitz & Wiese, 2006). The data from our study show that students have distal and performance oriented goals. However, performance goals are positively related to learning when the focus is on attaining success (e.g., improving CGPA) rather than avoiding failure (e.g., withdrawal) (Grant & Dweck, 2003). Interestingly, the participants of our study appear to have performance approach goals with a focus on attaining success. For example, obtaining a job and/or degree, improving CGPA, and furthering studies by getting admission in higher level programs such as Masters of Philosophy (MPhil). This may explain why some of the participants in our study with performance goals have a CGPA of 3.50 or higher (e.g., Humaira mentioned that her goal is to improve her GPA by improving learning). In case of Humaira, her performance goal (good GPA) is dependent on a learning goal which was not emphasized directly. Although performance approach goals may have beneficial effects on learning and performance, they are also related to academic procrastination and withdrawal of effort.

Resource Management Strategies

While self-regulation involves well-defined goals and planning, it further requires students to manipulate available resources and maximize learning environments (Zimmerman, 1986). The participants of our study reported that they consult different resources (e.g., library, books, internet), seek assistance, and work in groups to maximize learning and performance during different situations (e.g., preparing for exams, working on assignments) (Anthony, et al., 2013).

The most notable trend that emerged through our data is to seek social assistance (Effeney, et al., 2013). While this is a substantial aspect of SRL (Zimmerman & Martinez-Pons, 1986), our participants identified two dimensions of this process. First, all of them reported seeking assistance when, for example, stuck in a problem while learning, coping. Most of them reported trying on their own before asking others (e.g., peer, teacher, elder) for help. Second, students not only self-regulate their learning and performance by seeking assistance, they also reported regulating learning by providing assistance to others. For example, ". . . sometimes they [junior peers] come to ask about something, they're not understanding something, so we explain the concept to them, so we [also] get to know if we know this thing . . . if our concept is clear, because this is how [we made] the other person understand [something]." [Samreen, F, S4, 2.20, FG5]. Samreen's engagement in self-reflection at this point highlights her tendency to observe her performance (providing help) and evaluate its effectiveness (success) (Zimmerman, 1998).

While academically capable students appeared more inclined towards using available resources such as books, internet, and library; a considerable number of students (56.75%) emphasized working in groups to self-regulate their learning. For example, Eiman [F, S4, 2.88, FG3] asserted that, "we discuss the assignment in a group, that this is our topic, and what sources can provide us with the related information?, and how can we improve our presentation or assignment etc?." Overall, the participants exhibit a strong tendency for seeking social assistance as a means of regulating their learning and performance. Peers and teachers were among the most commonly identified social sources to seek guidance. This suggests that even at the university level, some students may not have internalized SRL strategies which is why they tend to seek social assistance. Although constructive social interactions have been positively linked to SRL (Alvi & Gillies, 2015), an over-reliance on social sources for help demonstrates low levels of self-regulation (Effeney, et al., 2013).

The Use of SRL Strategies

The discussion in the focus group interviews centred on students' use of SRL strategies. The information elicited during this interaction lead to an understanding of their preferred strategies in response to contexts (e.g., task, semester, exams). The analysis revealed that students' use of SRL strategies is influenced by multiple factors including personal preferences, SRL phase specific requirements (e.g., tasks), context specific factors (e.g., semester) and academic success.

The beginning of the focus group discussions focused on students' study goals, preferences and strategies to help them achieve their goals. As the discourse became more explicit, we noted that they did not reach a shared position, rather they projected multiple identities and rationales behind their choices. It was not surprising to note that their SRL related strategies and processes varied according to specific goal orientations. For example, Nusrat (F, S4, 2.78, FG5) described her goal as, ". . . to obtain a degree and to get a job." Consistently, she described her goal-achievement strategies as: ". . . we take classes and we read the notes [given by the teachers], we attend the lectures, we prepare assignments, we do

everything to achieve our goals." Her goal orientation also influences her self-evaluation and causal attribution processes (Zimmerman, 1986). While she is not satisfied with her performance, she believes that her current performance is due to teachers: ". . . sometimes teachers don't give good marks [in our department] when compared with other departments." It follows that performance oriented students tend to rely on surface level strategies (e.g., reading notes, attending lectures, preparing assignments) which are directly related to their goals (e.g., degree). However, they do not accept the responsibility of their performance and tend to blame others (e.g., teachers). This could be because they are unable to differentiate between effective and ineffective study approaches (DiFrancesca, et al., 2015). In contrast, students with intrinsic values, for example, appear more calibrated in their cognitive strategies (e.g., see Nida's comments in section entitled "Motivational Strategies") (Pintrich & De Groot, 1990) and SRL related processes (e.g., self-evaluation and causal attribution). Consistently, Nida is satisfied with her current performance and attributed it to a sound "background knowledge." Background/pre-requisite knowledge has been specifically related to improved test performance than self-regulation (Peverly, Brobst, Graham, & Shaw, 2003). Nida clearly relates to it for her better academic performance (CGPA = 3.67). This shows that she is flexible in how she structures her learning strategies. She adapts her strategies based on her needs which shows that she is cognitively aware and strategic which are critical elements for SRL.

It seems as if students' use of SRL related strategies is further influenced by the specific SRL phase (Zimmerman, 1998) and the tasks they find themselves in (Anthony, et al., 2013; Butler & Cartier, 2004). For example, the most commonly reported strategies elicited from the questions based on the forethought phase include: making and consulting notes, highlighting and focusing on important points, and focusing attention. However, as students move from the forethought phase to performance control phase (Zimmerman, 1998), they tend to prefer different strategies. For example, they frequently reported seeking social assistance, consulting different resources and focusing on the problem as major strategies to help them cope with problems as they learn or perform a task. On the other hand, they referred to doing consistent work or spaced practice etc as a means of adaptive response to their current performance during self-reflection phase. This suggests that the participants navigate between the pluralities of choices in terms of SRL related strategies since SRL skills are highly context dependent (Hadwin, Winne, Stockley, Nesbit, & Woszczyna, 2001; Zimmerman, 2000). It appeared to us as if their configuration of preferred strategies is linked to the specific phase of SRL they find themselves in.

It is important to note that the university students' use of SRL related strategies is also influenced by the context/situation (e.g., semester), particularly in terms of motivation. While there was a strong support for *extra* or *hard* work among S2 students during focus group discussions (e.g., "[I will improve my performance] by working harder [than before] and by studying more. . . " [Anam, F, S2, 3.33, FG4]), S4 students stressed the need for consistent work (e.g., ". . . to go through the notes or lecture on daily basis and to complete the assignments or projects before time so that there's no problem" [Eiman, F, S4, 2.88, FG3]). Our results imply that students tend to focus on vague (e.g., hard work) and massed study practice during the first year of their university program (Zimmerman, 1998), however with time they learn the need for regular and spaced study. Nevertheless, the amount of time spent studying does not necessarily predict desirable learning outcomes. In fact, a deeper understanding of learning material and higher satisfaction with the learning results can be achieved if the time spent on studying is used effectively (Schmitz & Wiese, 2006).

Moreover, S2 students emphasized cognitive and meta-cognitive strategies such as highlighting or focusing on main points, clarifying concepts, chunking, moving from easy to difficult, and group work a bit more than S4 students. On the other hand, S4 students

concentrated on taking classes regularly, consulting a variety of resources and independent practice. Loong (2013) examined international students' SRL and its relation to Mathematics achievement in an off-shore Australian pre-university program at an Asian country and noted that an increased use of SRL strategies is established when students become more familiar and comfortable with their new learning environment. Similarly, the data from our study suggest that students develop specific and adaptive patterns of SRL as they progress and spend more time in the university.

The informants also discussed different SRL related strategies during interviews. In their description and reflection of the strategies, some fundamental differences in the ways they use these strategies were also highlighted. For example, although there was a strong support for a strategy "making and consulting notes," students reported different ways of using it. Habiba (F, S2, 3.62, FG4) and Zobia (F, S2, 2.55, FG4) both referred to this strategy as an important way to regulate their learning during exams. However, both differed in the ways they reported using it, for example, Habiba explains:

> First I read my notes, then I read the book. [This is because] what I have written in my own words is very easy [for me to understand]. It clarifies my concepts, after that, I consult the book, so it is much easier for me to study.

Habiba's use of strategy is different from the one reported by Zobia during the same focus group interview: "I see for once, the things that the teacher has highlighted [during the lecture] or that I've noted." Both responses indicate varying levels of metacognitive awareness and strategy use. While Habiba appears to know how can she benefit from the strategy and effectively uses it, Zobia's remarks indicate using the same strategy at a surface level with a lack of metacognitive awareness (Anthony, et al., 2013; Butler, et al., 2005).

Overall, our analysis reveals that students with a high GPA show adaptive patterns of SRL by selecting and using effective strategies (e.g., consulting different resources, systematic study, consistent work) when compared with the low-achieving students who reported relying on low-level strategies and that too at a surface level (e.g., making and consulting notes, repetition) (DiFrancesca, et al., 2015).

Conclusions

In this study, we explored the nature and use of SRL strategies that university students pursue during the course of their study program in non-classroom environments. Framed within the social cognitive perspective, we view SRL as a contextualized process, influenced by interactions between personal, behavioral and environmental factors (Bandura, 1986). We used focus group interviews to encourage dialogue and interaction among our participants who came from an under researched population, so the findings generated from this study are highly contextualized.

Overall, our results indicate that students use a range of SRL strategies starting from limited and shallow to wider, cognitively rich, and deep processing. Not surprisingly, academically capable students tend to choose a wider range of strategies. This finding is consistent with the results of studies conducted in different and academically advanced contexts such as Australia (e.g., Effeney, et al., 2013) and Jordan (Al-Awan, 2008). Our study further identified note-making (and consulting of notes) and repetition (rehearsal, memorization) as dominant strategies reported by university students. While note taking and rehearsal strategies are frequently reported in the SRL research from different contexts and regions such as the United States (Lawanto & Santoso, 2013; Peverly, et al., 2003) and Turkey (Fettahlioglua, 2011), these strategies are more closely related to test performance rather than self-regulation. For example, Peverly and colleagues examined whether note-

taking strategies are positively related to college students' self-regulation. They concluded that note-taking help students to memorize information and perform better on tests rather than self-regulation. Consistently, the fact that a majority of the participants from our study referred to note making as a frequently used strategy may relate to their performance oriented goals with an increased emphasis on improving grades. On the other hand, Lawanto and Sontoso demonstrate that engineering students engage in more effective forms of SRL (e.g., planning, monitoring, and regulating strategies) when they use enhanced guided notes (EGN) instead of standard guided notes (SGN) provided by the instructor. While both EGN and SGN aim to reduce students' cognitive load with a focus on the cognitive processing of, and engagement in, the learning content after the lecture; EGN also prompt students to evaluate their SRL strategies. This shows that notes can be used as an innovative and effective instructional material to support students' SRL. Although we did not examine the content of students' notes in this study, our findings demonstrate that academically capable students have meta-cognitive awareness as they make and consult notes. However, there is a need to train students to move beyond the traditional note taking practice to support their SRL behaviors.

Similarly, students' dependence on shallow strategies (e.g., repetition) may provide insights into the instructional practices they are exposed to during classroom teaching (Anthony, et al., 2013; Nausheen, 2016). Our findings are consistent with the results of Anthony and colleagues who examined the quantitative and qualitative accounts of all-female high school students' SRL strategies in a large metropolitan city of the United States. Based on analyses of qualitative data, they concluded that students tend to use shallow level processing strategies such as rote memorization, rehearsal, and reviewing notes. The researchers associated this tendency to instructional practices that reinforce memorization and recitation of facts. Interestingly, their analyses are based on all-female high school students, and our findings are also drawn from a female dominant sample of university students based in a large urban city of a developing country. Although cultural disparity may have triggered variations, these findings also draw our attention to the possibility that gender differences play a critical role in students' use of, and engagement in, SRL strategies (Zimmerman & Martinez-Pons, 1986).

The participants of our study emphasized social influences such as group work and social assistance as a means of developing SRL (Zimmerman & Martinez-Pons, 1986). They further reported using social assistance as a way of engaging in self-reflection (Zimmerman, 2000). They view *help* or *social assistance* as a two-fold process in which they regulate their learning and performance not only be *receiving help* but also by *providing help*. Here, students clearly engage in reciprocal interaction by understanding their cognitive processes (personal), explaining and modeling skills to others (social environment) and observing their own performance (behavior patterns) (Bandura, 1986). An over-reliance on help has often been related to low levels of self-regulation. However, this might be due to the fact that there is a lack of resources in universities in Pakistan (e.g., online tool kits, student support services, academic writing support units) (M. M. S. Akhtar, Rafi, Ahmed, & Rauf, 2015) which has often caused intellectual brain drain (Sajjad, 2011). Moreover, traditional teaching practices are prevalent at higher education institutions in Pakistan (Khalid & Azeem, 2012) which are not supportive of SRL. These factors may have contributed to an over-reliance on social assistance among Pakistani students.

With reference to the use of SRL strategies by university students, we noted that students alter their strategies under different contextual influences such as goal orientations, SRL phase specific conditions, semester and academic capabilities. Consistently, students' goal preferences influence the strategies they use (Zimmerman, 2000). For example, students with performance oriented goals tend to use surface level strategies and did not accept the

responsibility of their performance. Overall, these notions are consistent with the work of researchers from academically advanced contexts who argue that SRL related strategies, behaviors and skills are highly context and task specific (e.g., Anthony, et al., 2013; Pintrich & De Groot, 1990).

Our findings support the fact that learners engage in varied yet critical behaviors and processes related to SRL during different phases as suggested by the Zimmerman's cyclical model (Zimmerman, 2000, 2002, 2008). Consistently, the participants of our study tend to regulate their strategies through different phases of SRL such as prior to, during, and after learning. This temporal regulation of learning strategies demonstrates a stronger link between the cyclical model and learning tasks in a different regional context. While it provides us with a comprehensive picture of SRL dynamics, we are able to determine and separate different self-regulatory behaviors that university students engage in. Furthermore, we are able to add to the substantive validity of Zimmerman's cyclical model with respect to our specific context. While the model has been effectively employed to examine key self-regulatory processes within academic and non-academic settings in western contexts, our study supports the fact that the three phases of the cyclical model can be applied to different types of learning activities in varied regional contexts such as Pakistan.

Our findings further demonstrate that university students develop adaptive patterns of SRL as they spend increased time in university. This trend is consistent with the students coming from different geographical regions such as South Asia, Middle East, Asia Pacific and Africa studying in an off-shore Australian program at an Asian country (Loong, 2013). This is interesting given the finding that international students who come from similar backgrounds and study at an on-shore Australian university face many difficulties during learning (Prescott & Hellstén, 2005). These differences are attributed to western learning environments which are different from most of the Asian and African contexts.

Researchers often urge the need to study why students use particular strategies over others with a specific focus on SRL in multiple contexts (Hadwin, et al., 2001). This study is an important step in understanding the nature and use of SRL strategies of university students coming from an under researched context where the notions of life-long and strategic learning have not been fully actualized (Iqbal, et al., 2010). These findings are important because if educators can understand students' self-regulatory behaviors and strategies, they can guide students towards more effective self-regulatory processes, and thus towards increased regulation and achievement outcomes.

It is important, however, to be aware of the limitations, as we interpret the findings generated from this study. While the study is highly contextualized in nature, the findings are certainly limited and do not aim for generalization. Moreover, the sample predominantly comprised female volunteers from a rather homogenous background, which further imposes limitations in terms of gender. This is critical given the research findings that boys and girls engage in different patterns and behaviors during SRL (Zimmerman & Martinez-Pons, 1990).

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