The Mediating Effect of Academic Emotions on Perceived Social Support and Self-Regulated Learning Strategies of Science Students

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Abstract: *This descriptive-correlational study aimed to measure the mediating effect of academic emotions on the relationship between perceived social support and self-regulated learning strategies of science students in Davao City. It used three standardized, adapted questionnaires, namely, Academic Emotions, Multi-Dimensional Scale of Perceived Social Support, and Motivated Strategies for Learning, wherein respondents answered in a face-to-face survey. In the data analysis, mean, Pearson r, linear regression analysis, and medgraph using Sobel z-test were used. Results showed that the levels of perceived social support, academic emotions and self-regulated learning strategies were moderate. Moreover, there was a significant correlation between perceived social support and self-regulated learning strategies, perceived social support and academic emotions, and academic emotions and self-regulated learning strategies of students. Furthermore, the result of the mediation analysis showed that academic emotions partially mediate the relationship between perceived social support and self-regulated learning strategies.*

Keywords: *science education, self-regulated learning strategies, perceived social support, academic emotions, mediation, science students, Philippines*

Abbreviations: *DepEd- Department of Education; TVL - Technical-Vocational-Livelihood*

1. INTRODUCTION

The Department of Education [1] recognizes the challenges on internet accessibility and readiness in blended or distance learning that affect the quality of learning delivery amid the COVID-19 pandemic. Studies have shown that learners struggle in managing their learning processes in distance learning, where they study at their own pace. Thus, learning becomes a failure (Lehmann et al., 2014, as cited in Kocdar et al. [2], p.26). This phenomenon is evident in the study locale, where students juggle work, household and school duties, and leisure. Hence, these learning situations put at risk the quality and quantity of submitted module outputs in modular distance education.

Notably, existing works of literature confirm the theory that self-regulated learning enables students to become more successful in self-paced distance education [Kocdar et al. [2]; Anthonysamy et al. [3]; Latipah et al. [4]. Similarly, Kayacan and Ektem[5] conclude that self-regulated learning in science fosters meaningful, self-directed learning, and positive attitudes. Consistently, self-regulated learning strategies contribute to better self-efficacy beliefs among high school students in performing complex science tasks and academic goals Gurcay et al. [6]; Ho et al. [7]. While the above studies show the significance of self-regulated learning, it is in this context the study is conducted in the quest for scaffolding learners and mitigating the impacts of distance learning in the locale.

Meanwhile, a study by Perry et al. [8] in the United States supports the relationship between social support from teachers, parents, and peers and self-regulated learning. It recognizes the critical role of social support in facilitating self-regulated learning among students. This claim is consistent with the studies of Latipah et al. [4], Amalia and Latifah [9], and Laxdal et al. [10] that found a significant positive correlation between social support and self-regulated learning strategies. These studies suggest that students employ more varied learning strategies when they experience higher social

support. A similar meta-analysis result by Lei et al. [11] reveals a significant positive relationship between teacher support and positive academic emotions and vice versa. Thus, these results imply a link of teacher support in promoting positive academic emotions and reducing negative academic emotions of the students. Likewise, Dong et al. [12] shows a positive correlation between family support and enjoyment. Hence, students enjoy academic tasks from caring relationships with their parents. Additionally, a study by Singh et al. [13] reveals a negative association between social support from friends and anxiety. Moreover, a study by Amalia and Latifah [9] shows a significant positive correlation between positive academic emotions and the self-regulation learning strategies of students and vice versa. Therefore, when positive emotions emerge more in learning, students use more varied learning strategies. Furthermore, this study anchors on Zimmerman's Social-cognitive perspective, Self-determination theory by Deci and Ryan, and Control-value theory by Pekrun.

Interestingly, global studies show gaps in the study variables. Kocdar et al. [2] indicate that future research can dwell on determining the self-regulated skills of learners in self-paced learning environments. Also, Asikainen et al. [14] indicate that future research needs to determine the emotions experienced by students in the learning and studying process. This finding resonates with the study by Ben-Eliyahu [15] that there is a lack of research concerning emotions in learning. Similarly, Dong et al. [12] argues that studies about parent factors and the students' academic emotions are scarce. Likewise, the provision of support for students in performing self-regulated learning lacks a clear understanding Dignath &Veenman [16]. In the Philippines, the adoption of modular distance learning amid the COVID-19 pandemic is not the conventional mode of learning delivery over the past years in Philippine basic education. This poses challenges to effective learning. Hence, this learning modality, along with the study variables, is not yet widely explored, resulting in dearth of information published online based on intensive literature review. Thus, these reasons establish the urgency for conducting an empirical study in the locale to scaffold learning processes and outcomes in modular distance education and cushion its impacts.

2. RESEARCH OBJECTIVES

This study aims to determine the mediating effect of academic emotions on perceived social support and self-regulated learning strategies. Specifically, this study sought to answer the following objectives:

1. To determine the level of academic emotions in terms of their:

1.1 Enjoyment;

1.2 Pride;

1.3 Anger; and

1.4 Anxiety

2. To measure the level of perceived social support in terms of their:

2.1 Family;

2.2 Friends; and

2.3 Teacher

3. To ascertain the level of self-regulated learning strategies in terms of their:

3.1 Metacognitive self-regulation;

3.2 Time and Study Environment; and

3.3. Effort Regulation

4. To determine the significance of the relationship between:

4.1Perceived social support and self-regulated learning strategies;

4.2 Perceived social support and academic emotions; and

4.3 Academic emotions and self-regulated learning strategies

5. To find the significance of the mediation of academic emotions on perceived social support and

self-regulated learning strategies.

Hypothesis

The following null hypotheses were treated at a 0.05 level of significance.

1. There is no significant relationship between:

1.1 Perceived social support and self-regulated learning strategies;

1.2 Perceived social support and academic emotions; and

1.3 Academic emotions and self-regulated learning strategies

2. Academic Emotions have no significant mediating effect on the relationship between perceived

social support and self-regulated learning strategies of science students.

3. MATERIALS AND METHODS

3.1. Research Design and Study Sample

This study used nonexperimental quantitative research utilizing the correlation technique. It determines the levels of academic emotions, perceived social support, and self-regulated learning strategies of science students. As stated by Fowler (2008, as cited in Creswell, [17], nonexperimental quantitative research uses survey research to collect numeric descriptions of trends, attitudes, or opinions of a population by studying a sample of that population aimed at the generalization of the results. The study also employed correlational technique to test the association of all variables. According to Creswell [17], a correlational study measures the degree of relationship (or association) between two or more variables without manipulating them. In addition, this correlation study focuses on the relationship between perceived social support and self-regulated learning strategies, perceived social support and academic emotions, and academic emotions and self-regulated learning strategies. The mediation approach was employed in this study where an intervening variable tries to explain the effects of the independent variable on the dependent variable (Creswell [17]. The mediating variable in this study is Academic emotions.

The respondents of this study were the 302 grade 11 science students enrolled in the first semester of the school year 2022-2023 taking Earth and Life Science subject. The study used Slovin's formula to find out the number of respondents. According to Talaue et al. [18], Slovin's formula determines the appropriate sample size. Subsequently, the researcher used stratified sampling in selecting the respondents. According to Ary et al. (2010), stratified sampling is often appropriate when the characteristics of the population may vary in the study relative to subgroups or strata. Thus, respondents were representatives from three Technical-Vocational-Livelihood schools of Baguio District, Davao City, and sex (male and female). A simple random sample was then employed from each identified subgroup to determine the required number needed for the sample size. These schools offer Senior high school TVL track and General Academic Strand in Davao City, Philippines. The distribution of respondents is as follows: School A, 178, School B, 51, and School C, 73. In addition, the identified respondents utilized printed modular learning in the science subject of the school year 2021-2022. Thus, the chosen samples fit the criteria for answering the research instrument of the study. Meanwhile, the exclusion of the study respondents applies to students not enrolled in the said track and strand and grade level of the three technical-vocational high schools in the locale.

3.2. Research Instruments

This study used three key research instruments. First is the adapted questionnaire from a dissertation study by Kim in 2010 on Academic Emotions. It is known as the Academic Emotions Questionnaire developed by Pekrun et al. in 2005. It contains a total of 40 items answerable by a five-Likert scale. It measures the respondents' academic emotions in terms of enjoyment (10 items), pride (nine items), anger (nine items), and anxiety (12 items) with a Cronbach's alpha rating of 0.810, suggesting a good questionnaire. The second is the adapted-modified version questionnaire from a dissertation study by Xiao in 2013 on the Multi-Dimensional Scale of Perceived Social Support (MSPSS) formulated by Zimet et al. in 1988. It includes a total of 12 items answerable by a five-Likert scale. It measures the respondents' perceived social support in terms of the family (four items), friends (four items), and teachers (four items) with a Cronbach-alpha of 0.770 for the total scale suggesting a good

questionnaire. The last is the adapted questionnaire from a dissertation study by Puspitasariin 2012 and Jackson in 2018 on Self-Regulated Learning, specifically the Learning Strategies Scale of the Motivated Strategies for Learning Questionnaire (MSLQ) formulated by Pintrich et al. in 1991. It comprises a total of 24 items answerable by a five-Likert scale. It measures the metacognitive self-regulation (12 items), time and study environment (eight items), and effort regulation (four items) with a Cronbach-alpha rating of 0.855, suggesting a good questionnaire. The teacher experts further validated the three questionnaires, gaining an overall mean rating of 4.74 described as very good.

The five orderable gradations used in interpreting the responses on the variables explored are as follows: 4.20 – 5.00 labeled as very high. If the measure described in the academic emotions, perceived social support and self-regulated learning strategies is always evident or observed. 3.40 – 4.19 labeled as high. If the measure described in the academic emotions, perceived social support and self-regulated learning strategies is often evident or observed. 2.60 – 3.39 labeled as moderate. If the measure described in the academic emotions, perceived social support and self-regulated learning strategies is sometimes evident or observed. 1.80 – 2.59 labeled as low. If the measure described in the academic emotions, perceived social support and self-regulated learning strategies is seldom evident or observed. 1.00 – 1.79 labeled as very low. If the measure described in the academic emotions, perceived social support and self-regulated learning strategies is almost never evident or observed.

3.3. Data Collection Procedure

This study observed the following activities in data collection. After the approval of the University of Mindanao Ethics Review Committee, the researcher submitted a formal letter seeking permission from the office of the Schools Division Superintendent of DepEd Davao City to conduct the study in the field. Next, the researcher sent letters to the school heads of School A, School B, and School C for the conduct of the study to their respective schools. Upon the approval, the researcher personally administered the printed questionnaire to the target respondents, along with the informed consent and retrieved the questionnaires thereafter while adhering to the COVID-19 health protocols. Lastly, the researcher gathered the respondents' questionnaires and systematically tabulated the data in the questionnaires for two days using Microsoft Excel. Afterwards, the researcher forwarded the soft copy of the tabulated data to the designated statistician of the University of Mindanao through email.

3.4. Statistical Tools

This study used the following statistical tools in the analysis and data interpretation of data at 0.05 level of significance. The researcher used the Mean for research objectives numbers one, two, and three to determine the respondents' levels of academic emotions, perceived social support, and self-regulated learning strategies of science students. Mean, known as the average, is the most used measure of central tendency that can serve as an index to represent a group as a whole. It is the sum of all the scores in a distribution divided by the number of scores (Ary et al., 2010).The researcher also used the Pearson product-moment correlation for research objective number four to measure the significant relationship between the study variables. Pearson *r* is a statistical tool used to indicate the direction and the magnitude of the relationship between two variables (Ary et al., 2010); and the *Medgraph Sobel Z test* was used for research objective number five to determine the significant mediation of academic emotions on the relationship between perceived social support and self-regulated learning strategies.

4. RESULTS AND DISCUSSION

4.1. Level of Perceived Social Support

Table 1 shows the level of perceived social support of family, friends, and teachers in modular distance education. As shown, the level of perceived social support of students revealed an overall mean rating of 3.24 with a standard deviation of 0.67, which is described as moderate. It can also be observed from the table that the indicator family registered the highest mean score of 3.53 with a standard deviation of 0.84, which is described as high, followed by friends with mean score of 3.22 and a standard deviation of 0.89, which is described as moderate, and lastly teachers with mean score of 2.97 and a standard deviation of 0.92, which is described as moderate.

Table1. *Level of Perceived Social Support*

Indicators	SD	Mean	Descriptive Level
Family	0.84	3.53	High
Friends	0.89	3.22	Moderate
Teachers	0.92	2.97	Moderate
Overall	**0.67**	**3.24**	**Moderate**

Results displayed that students received high social support in terms of their family. This result implies that their family shows more evident support for their learning endeavors than from friends and teachers during their experience in distance learning. In fact, family support allows students to display personal responsibility for learning, persist in challenging tasks, and exhibit more interest (Perry et al., [8]. Likewise, family support fosters positive emotions and outcomes in learning among students, as stated in the study of Dong et al. [12]. Specifically, students enjoy learning tasks when they receive caring relationships with their family.

In addition, the level of social support from friends and teachers was moderate, indicating their relevance to students' lives. This result is consistent with the study by Cevik and Yildiz [21], stating that support from teachers, peers, and parents encourages students to be persistent in solving problems despite challenging learning tasks. While the level of teacher support is moderate, its impact on students' learning cannot be undermined. It is worth noting that teacher support promotes positive academic emotions among students, thereby eliciting positive learning outcomes (Lei et al., [11]. Likewise, Tannert and Groschner [22] underscore the relevance of teacher support to bridge students' learning at home and their concerns and issues.

4.2. Level of Self-Regulated Learning Strategies

Table 2 displays the level of students' self-regulated learning strategies exhibited by students while having module class in science in terms of metacognitive self-regulation, time and study environment, and effort regulation. As indicated, the overall mean score is 3.27, with a standard deviation of 0.67, described as moderate. Moreover, the indicator Time and Study Environment gained the highest mean score of 3.28 and a standard deviation of 0.68, described as moderate. The indicator Effort Regulation followed with a mean score of 3.27 and a standard deviation of 0.78, and lastly, Metacognitive Self-Regulation displayed the lowest mean score of 3.26 and a standard deviation of 0.65, both of which are labeled as moderate.

Table2. *Level of Self-Regulated Learning Strategies*

Indicators	SD	Mean	Descriptive Level
Metacognitive Self-Regulation	0.65	3.26	Moderate
Time and Study Environment	0.68	3.28	Moderate
Effort Regulation	0.78	3.27	Moderate
Overall	**0.67**	**3.27**	Moderate

Data shows that the level of students' self-regulated learning strategies in science is moderate which may be attributed to their limited knowledge and skills about self-regulated learning strategies, in terms of metacognitive self-regulation, time and study environment, and effort regulation essential to distance learning. Hence, students need to further develop these strategies for enhanced learning in a distance learning environment. In fact, self-regulated learning strategies contribute to students' acquisition of metacognitive knowledge and skills relevant to their learning processes (Mustopa et al., [23]. They are also pivotal for increasing the learning performance of the students (Amalia & Latifah, [9]; Solichin et al., [24].As emphasized in a study by Kayacan and Ektem[5], self-regulated learning promotes self-directed learning and positive attitudes among students. Consistently, self-regulated learning strategies foster better self-efficacy beliefs among grade 9 to grade 12 students in performing challenging academic goals (Gurcay et al., [6]; Ho et al., [7].

4.3. Level of Academic Emotions

Table 3 shows the level of students' academic emotions in terms of enjoyment, pride, anger, and anxiety that students may experience in modular class in science. As revealed, the overall mean score is 2.86 with a standard deviation of 0.49, described as moderate. It can be gleaned from the table that academic emotions in terms of pride and enjoyment indicated a mean score of 3.11 and a standard

deviation of 0.66 and a mean score of 2.95 and a standard deviation of 0.69, respectively, described as moderate. Meanwhile, academic emotion anxiety registered a mean score of 2.91 and a standard deviation of 0.75, described as moderate, and lastly, anger gained the lowest mean score of 2.45 and a standard deviation of 0.79, described as low.

Table3. *Level of Academic Emotions*

Indicators	SD	Mean	Descriptive Level
Enjoyment	0.69	2.95	Moderate
Pride	0.66	3.11	Moderate
Anger	0.79	2.45	Low
Anxiety	0.75	2.91	Moderate
Overall	**0.49**	**2.86**	**Moderate**

Data also revealed a moderate level of positive academic emotions, such as pride and enjoyment. This result conveys that students generally exhibit these sound emotions while undergoing the modular distance learning modality by the Department of Education. Notably, a study by Balaz et al. [25] revealed the importance of positive academic emotions in the academic setting. These emotions allow students to display flexible and creative thinking, thereby eliciting beneficial learning outcomes. Thus, it calls for support for students to boost and sustain their positive emotions in studying.

Interestingly, negative emotions such as anxiety and anger showed moderate and low levels, respectively. These levels reflect the favorable students' emotions in modular learning, which can enhance learning. Consistently, Sverdlik et al. [26] elucidated that anxiety elicits motivation for learning among students to achieve successful learning outcomes. In addition, the low-level result of anger was interesting among respondents, suggesting their positive mood in modular distance learning. In fact, a study by Camacho-Morles [27] found that when students experience anger, they detriment their learning outcomes.

4.4. Correlation between Perceived Social Support and Self-Regulated Learning Strategies

Table 4 illustrates the significance of the correlation between the perceived social support in terms of family, friends, and teachers and self-regulated learning strategies in terms of metacognitive self-regulation, time and study environment, and effort regulation. Results showed that there is a significant relationship between said variables as reflected by its overall r-value of 0.324* and a p-value of 0.000, which is lower than the 0.05 level of significance.

It also showed that the relationship between perceived social support in terms of family and self-regulated learning strategies register an overall r-value of 0.285* and a p-value of 0.000. Thus, it indicates a significant relationship. Similarly, perceived social support in terms of friends and self-regulated learning strategies show an overall r-value of 0.222* and a p-value of 0.000. Hence, it suggests a significant relationship. Finally, perceived social support in terms of teachers and self-regulated learning strategies show an overall r-value of 0.230* and a p-value of 0.000. Therefore, it reveals a significant relationship.

Table4. *Correlation between Perceived Social Support and Self-Regulated Learning Strategies*

Perceived Social Support	Self-regulated Learning Strategies			
	Metacognitive Self-Regulation	Time and Study Environment	Effort Regulation	Overall
Family	.276** .000	.258** .000	.213** .000	.285** .000
Friends	.240** .000	.156** .007	.186** .001	.222** .000
Teachers	.233** .000	.185** .001	.186** .001	.230** .000
Overall	**.330** **.000**	**.263** **.000**	**.257** **.000**	**.324** **.000**

Moreover, data revealed that students' self-regulated learning strategies in science is positively correlated with perceived social support. The indicators indicated the following r-values: metacognitive self-regulation with 0.330*, time and study environment with 0.263*, and effort regulation with 0.257*; and the p-value is <0.05. Therefore, the two variables are significantly correlated. Further, these results imply the key role of social support to student's learning regulation

and processes. This is in accordance with the previous study by Latipah et al. [4], indicating a significant positive relationship between social support (parents, peers) and self-regulated learning. Similarly, studies by Amalia and Latifah [9] and Laxdal et al. [10] indicate a positive correlation between parent and teacher support and self-regulated learning strategies. Therefore, as social support for students increases, their use of self-regulated learning strategies also increases.

4.5. Correlation between Perceived Social Support and Academic Emotions

Table 5 shows the significance of the relationship between the perceived social support in terms of family, friends, and teachers; and academic emotions in terms of enjoyment, pride, anger, and anxiety of grade 11 science students. It revealed an overall r-value of 0.399* with a p-value of 0.000, which is lower than the 0.05 level of significance. This result suggests a significant relationship between perceived social support and students' academic emotions.

It also shows the indicator *family* with an overall r-value of 0.258* and p-value <0.05, which implies that family is positively correlated to academic emotions. Hence, it suggests that family influenced students' academic emotions. Nonetheless, there was no correlation between the indicators, family and anger with a p-value >0.05. Likewise, *friends* with an overall r-value of 0.312* and p-value <0.05 reveal that indicator friends is positively correlated to academic emotions. Thus, it indicates that friends impacted the student's academic emotions. Lastly, indicator *teachers* with an overall r-value of 0.332* and p-value <0.05 indicate a positive correlation with academic emotions. This implies that teachers influenced the academic emotions of the students.

Table5. *Correlation between Perceived Social Support and Academic Emotions*

Perceived Social Support	Academic Emotions				
	Enjoyment	Pride	Anger	Anxiety	**Overall**
Family	.320** .000	.209** .000	.076 .190	.111 .053	.258** .000
Friends	.250** .000	.233** .000	.129* .025	.242** .000	.312** .000
Teachers	.301** .000	.287** .000	.126* .029	.200** .000	.332** .000
Overall	**.383** .000**	**.323** .000**	**.147* .011**	**.246** .000**	**.399** .000**

The above results reveal an overall significant correlation between perceived social support and academic emotions of grade 11 science students. These findings are consistent with the claims of Lei et al. [11] and Tas et al. [28], stating a positive, significant relationship between teacher support and positive academic emotions. Thus, the indicator, teachers, is indeed a determinant in promoting positive academic emotions in the students. Likewise, the results support the studies by Dong et al. [12] and Tannert and Groschner [22], indicating that family support is strongly associated with student's emotional well-being during distance learning. In fact, it shows that students enjoy academic tasks when they receive caring relationships from their families. Additionally, a study by Singh et al. [13] reveals an association between social support from friends and anxiety. It indicates that strong support from friends results in lower anxiety among grades 9 to 12 students. Meanwhile, the result of the indicator anger having no significant correlation with family support opposes the studies by Li et al. [29] and Tannert and Groschner [22] that social support prevented students from experiencing negative emotions.

4.6. Correlation between Academic Emotions and Self-Regulated Learning Strategies

Table 6 presents the significance of the relationship between the academic emotions in terms of enjoyment, pride, anger, and anxiety; and self-regulated learning strategies in terms of metacognitive self-regulation, time and study environment, and effort regulation of grade 11 science students. As depicted, there is a positive, significant relationship between two variables with an overall r-value of 0.461* and p-value of 0.000, which is less than the 0.05 level of significance.

It also shows that indicator enjoyment has a positive, significant relationship between self-regulated learning strategies with an overall r-value of 0.602* and a p-value of 0.000. Likewise, the indicator pride reveals a positive, significant relationship between self-regulated learning strategies with an

overall r-value of 0.571* and a p-value of 0.000. Similarly, the indicator anxiety indicates a positive, significant relationship between self-regulated learning strategies with an overall r-value of 0.165* and a p-value of 0.004. Interestingly, the indicator anger indicates a negative, insignificant relationship between self-regulated learning strategies with an overall r-value of -0.021 and a p-value of 0.722, which is greater than the 0.05 level of significance.

Table6. *Correlation between Academic Emotions and Self-Regulated Learning Strategies*

Academic Emotions	Self-Regulated Learning Strategies			
	Metacognitive Self-Regulation	Time and Study Environment	Effort Regulation	Overall
Enjoyment	.524** .000	.589** .000	.463** .000	.602** .000
Pride	.541** .000	.520** .000	.438** .000	.571** .000
Anger	.009 .873	-.049 .401	-.014 .811	-.021 .722
Anxiety	.191** .001	.103 .074	.138* .016	.165** .004
Overall	**.445**** **.000**	**.405**** **.000**	**.360**** **.000**	**.461**** **.000**

Further, the results for enjoyment and pride and self-regulated learning strategies corroborate the studies by Amalia and Latifah [9], Gaeta et al. [30], and Sverdlik et al. [26] showing a positive, significant relationship between positive academic emotions and self-regulated learning strategies. Thus, it suggests that when positive emotions emerge in learning, students utilize varied learning strategies. However, the result for anger contradicts the study findings that negative emotions have a significant relationship with self-regulated learning strategies.

Nonetheless, the result for indicator anger supports the claim of Gaeta et al. [30] that negative academic emotions have no association with self-regulated learning strategies. Also, the result for anxiety opposes the findings of Asikainen et al. [14] and Gaeta et al. [30], that anxiety has a negative correlation to self-regulation and no correlation between negative academic emotions and self-regulated learning strategies, respectively. On the other hand, it resonates with the study by Sverdlik et al. [26] that anxiety positively predicted self-regulated learning among students. In other words, students' anxiety becomes a motivation to circumvent failure and enhance the use of self-regulated learning strategies.

4.7. Mediation Analysis of the Three Variables

Table 7 displays the mediating effect of academic emotions on the relationship between perceived social support and self-regulated learning strategies. As shown in the path, perceived social support as the causal variable significantly correlated with the mediator variable, which is academic emotions. This is indicated in the computed estimate of 0.292 with specification error of 0.039 and a critical ratio of 7.554 which yield to a p-value of 0.000, which is lower than 0.05 level of significance. In addition, when the mediating variable, academic emotions, is correlated with self-regulated learning strategies, academic emotions is treated as the criterion variable while self-regulated learning strategies is treated as the outcome variable. The result reveals that the computed estimates is 0.493, with specification error of 0.069 and a critical ratio of 7.188 and a p-value of 0.000, thus, there is a significant correlation between the criterion variable and outcome variable.

Meanwhile, when perceived social support (independent variable) is measured if it affects self-regulated learning strategies (dependent variable) which is the outcome variable, the result shows an estimates value of 0.151 with a specification error of 0.050 and a critical ratio of 3.022 and a p-value of 0.003, therefore, there is a there is a significant correlation between perceived social support and self-regulated learning strategies. Finally, the results are consistent with the hypothesis showing that academic emotion mediates the relationship between perceived social support and self-regulated learning strategies; however, only partial mediation is indicated.

Table7. *Mediating Effect of Academic Emotions on the Relationship between Perceived Social Support and Self-Regulated Learning Strategies*

			Estimate	S.E.	C.R.	P
Academic Emotions	<---	Perceived Social Support	.292	.039	7.554	***
Self Regulated Learning Strategies	<---	Perceived Social Support	.151	.050	3.022	.003
Self Regulated Learning Strategies	<---	Academic Emotions	.493	.069	7.188	***

Figure 2 shows the mediating effect of academic emotions on the relationship between perceived social support and self-regulated learning strategies. Since there are significant relationships between path X (perceived social support) and path M (academic emotions); and path Y (self- regulated learning strategies); and path M (academic emotions); and path Y (self- regulated learning strategies), so, the mediation is supported since the effect of M (path a) remains significant after controlling X (path c), then, the result supports partial mediation. As shown, the effect of academic emotions on perceived social support controlling self-regulated learning strategies is not zero but 20, which signifies that there is only partial mediation. Hence, academic emotion has a partial mediating effect on the relationship between perceived social support and self-regulated learning strategies.
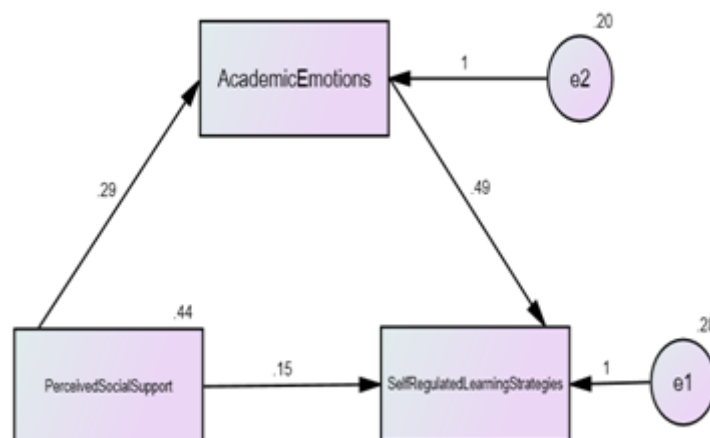

Figure2. *The Mediating Effect of Academic Emotions on the Relationship between Perceived Social Support and Self-Regulated Learning Strategies*

5. CONCLUSIONS

Based on the findings of the study, it can be concluded that the level of perceived social support in terms of family, friends, and teachers was moderate. Likewise, the level of self-regulated learning strategies in terms of metacognitive self-regulation, time and study environment, and effort regulation was moderate. Similarly, the level of academic emotions was moderate. In fact, there was a significant correlation between perceived social support and self-regulated learning strategies; between perceived social support and academic emotions; and between academic emotions and self-regulated learning strategies. Further, academic emotions partially mediate the relationship between perceived social support and self-regulated learning strategies. These findings confirm the anchor theories of the study such as the Control-value theory, self-determination theory, and Zimmerman's social-cognitive perspective.

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