

## A Study of Triadic Reciprocal Association of Variables in Language Learning Strategies

Nur Fadzilah Muhamad Zamani<sup>1</sup>, Nur Sherina Zainal Abidin<sup>2</sup>,  
Afiqah Abd Aziz<sup>3</sup>, Madaha Hanafi<sup>4</sup>, Aina Athirah binti Rozman  
Azram<sup>5</sup>, Noor Hanim Rahmat<sup>6</sup>

<sup>1,2</sup>Akademi Pengajian Bahasa, Universiti Teknologi MARA Cawangan Johor, Kampus Segamat, 85000 Segamat, Johor Darul Ta'zim, Malaysia, <sup>3</sup>Akademi Pengajian Bahasa, Pusat Asasi Universiti Teknologi MARA, Cawangan Selangor, Kampus Dengkil, <sup>4</sup>Akademi Pengajian Bahasa, Universiti Teknologi MARA, Cawangan Perak, Kampus Tapah, Tapah Road, 35400 Perak, Malaysia, <sup>5</sup>Akademi Pengajian Bahasa, Universiti Teknologi MARA, 40450 Shah Alam, Selangor, Malaysia, <sup>6</sup>Akademi Pengajian Bahasa, Universiti Teknologi MARA Cawangan Johor, Kampus Pasir Gudang, 81750 Masai, Johor Darul Ta'zim, Malaysia  
Email: nurfadzilahzamani@uitm.edu.my, nursherina@uitm.edu.my, afiqahaziz@uitm.edu.my, madaha@uitm.edu.my, aathirah@uitm.edu.my, noorh763@uitm.edu.my

Corresponding Author Email: nurfadzilahzamani@uitm.edu.my

To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v13-i5/16818> DOI:10.6007/IJARBSS/v13-i5/16818

**Published Date:** 11 May 2023

### Abstract

The issue of language learning strategies has long been discussed in the education field. It is undeniably important to help instructors understand learners' individual variances and, hence, define the impacts of learning strategies on learners' language acquisition. With the uniqueness displayed in each learning strategy, the one-size-fits-all approach seems unreliable to cater to all learners' needs but a preferred learning strategy does ensure learning satisfaction. The objective of this study is to investigate the influence of individual characteristics, behaviour, and the environment on learning among undergraduates. The quantitative study was done with 122 respondents who answered a replicated survey from Wenden and Rubin (1987). Part one is the demographic profile. Section B has 19 items on Individual Characteristics, section C has 11 items on Behaviour and section D has 11 items on Environment. The findings demonstrated that individual characteristics, behaviour, and the environment show a positive impact on learning. Besides that, there is also a significant relationship between the three variables revealed in this study. Suggestions for future research are discussed in this study.

**Keywords:** Language Learning Strategies, Reciprocal Determinism, Individual Characteristics, Behaviour, Environment.

**Introduction****Background of Study**

Throughout the course of the last few decades, there has been an ever-increasing need for information about successful ways of language acquisition. For rapid fluency increases, effective language learning strategies are essential. Many descriptions of language learning processes have been provided by scholars, with each focusing on how pupils process new information and which strategies they apply. Various researchers employ a variety of terminology to describe how a language is acquired. Language learning strategies are the deliberate actions or routines that language learners participate in to improve as learners and accelerate their development with the language.

The earliest research of language learning methods categorised them into various classes. O'Malley and Chamot (1990) offered a more comprehensive explanation of how to learn a new language. They classify the strategies as cognitive, metacognitive, and socio-affective, with the latter two pertaining to the learning process and the former to the tasks at hand (repetition, reasoning, analysis, etc), (engaging oneself and others, for example cooperating with peers and requesting explanation).

Throughout the past two decades, there has been a dramatic shift in the field of language acquisition and instruction, with a greater emphasis on students' classroom success. For instance, researchers in the field of second language acquisition have moved their attention to how learners receive new information and what strategies they employ to comprehend, acquire, or remember the information. Zarrinabadi et al (2021) propose that students' deliberate thoughts and actions to achieve a learning objective can be considered as their language learning strategies. The two primary types of learning strategies are direct and indirect. Under their respective main categories, subcategories are also labelled. Students apply direct strategies during the learning process in order to build the target language. To compensate for deficiencies in the target language, students employ a variety of strategies, including memory strategies for retrieving and storing information, cognitive strategies for processing new information, and compensation strategies (Garca-Sánchez and Garca-Martin, 2021; Zarrinabadi et al., 2021).

As a result, the majority of past research has focused on how to identify, describe, and categorise various learning approaches (Pradhan and Das, 2021; Tran and Tran, 2021). Research into successful learning strategies will tremendously help both second-language instruction and the understanding of individual variances in this process.

The positive pedagogical implications of understanding the differences in strategy use among effective language learners can be applied to influence and facilitate the achievement of less effective language learners, resulting in the discovery of a direct correlation between language learning strategies and student performance. Because learning strategies are transferable, the strategies employed by successful students can be used to direct the education of their less-successful peers. Due to Malaysia's pivotal location in Southeast Asia and the well-established correlation between language acquisition competency and subsequent educational and economic success, language proficiency is a growing concern in the country. So, it is crucial to investigate how pupils spend their time in high school to enhance their language skills. This will establish the extent to which these activities are being carried out and their suitability for building linguistic and communicative fluency among Malaysia's numerous ethnic groups.

Knowledge of one's chosen technique of language study can have a significant impact on a student's capacity to master a new language. Children are highly motivated when

teachers emphasise practical strategies for language acquisition. Numerous studies have examined the correlation between motivation and various approaches to learning a new language. It is underlined that learners; motivation not only serves as a catalyst to initiate language acquisition and increases the possibility of persevering through the difficult process, but also can compensate for some learner's inadequacies. Given that their motivation has become more stable as a result of prior learning experiences, learners may not rely on motivation to achieve exceptional learning outcomes. However, if certain factors demotivate a student, their learning will suffer. In contrast, the research conducted by Zheng and Richard (2021) revealed a feeble correlation between motivation, anxiety, and academic achievement in Chinese among young Thai CFL learners. These diverse findings indicate the need for additional research in various learning environments. Due to the increasing significance of language acquisition, a considerable lot of research has been devoted to clarifying efficient ways of language acquisition (LLS). LLS helps pupils enhance their language abilities, which is its primary function. Several studies have revealed that young language learners rely primarily on cognitive, social, and compensatory strategies. Sani and Ismail (2021) discovered that young Malaysian language learners employ both direct and indirect strategies, suggesting that these students can be trained to use a variety of approaches to enhance their linguistic competence. As the global value of language learning increases, so does the need for efficient techniques to study them.

### **Statement of Problem**

Despite the recognized importance of language learning strategies in facilitating language acquisition, many language learners are not aware of how to use them effectively, leading to poor language learning outcomes. Effective use of language learning strategies can lead to several benefits for language learners. In a study conducted by Nejad et al (2022), participants who used language learning strategies reported significant improvements in their language learning efficiency compared to those who did not. Language learning strategies such as elaboration, summarisation and inferencing were found to be particularly effective in improving efficiency (Shen et al., 2023). Additionally, using language learning strategies can also increase motivation and self-regulation in language learners. Learners who used self-regulated learning strategies, such as planning, focusing, and self-monitoring reported higher levels of motivation and were more likely to engage in self-directed learning activities (Pagalilauan, 2023). These strategies allow learners to take control of their learning, which can lead to increased motivation and a greater sense of accomplishment. Another study by Affandi et al (2023) identified that practicing is an important strategy in writing since it allows learners to create numerous repetitions, which is proven to be beneficial in learning a language.

However, there are also some challenges being faced by learners when they would like to incorporate language learning strategies. Despite the benefits of using LLS, many learners struggle to use them effectively due to various challenges. A study by Wen (2022) found that learners often lacked knowledge of language learning strategies and were not trained in their use. Besides that, learners also often faced challenges in selecting appropriate language learning strategies for different tasks and contexts. Although previous studies have examined individual and contextual factors that influence the use of language learning strategies, there is a gap in the literature regarding the triadic reciprocal association of variables in LLS. This study aims to contribute to the research on effective language learning strategies by

investigating successful variables to help instructors understand learners' individual variances.

### **Objective of the Study and Research Questions**

This study investigates the general learning strategies used by learners. It explores how individual characteristics, behaviour and the environment influence learning among undergraduates. Specifically, this study is done to answer the following questions;

- How does individual characteristics influence learning among undergraduates?
- How does behaviour influence learning among undergraduates?
- How does the environment influence learning among undergraduates?
- What is the relationship between individual characteristics and behaviour?
- What is the relationship between individual characteristics and the environment?
- What is the relationship between behaviour and environment?

### **Literature Review**

#### **Language Learning Strategies**

Oxford (1990) described language learning strategies as actions or techniques used to assist language acquiring and language learning to make it more enjoyable, self-directed, and effective. The strategies that have been identified include language learning strategies by (Oxford, 1990; O'Malley and Chamot, 1990). Oxford's language learning strategies are more consistent and comprehensive than other classification of strategies (Jones, 1998). Oxford divided the language learning strategies into two which are direct and indirect strategies. Direct strategies include 1) memory, 2) cognitive, and 3) compensation strategies, while indirect strategies comprise 1) metacognitive, 2) affective, and 3) social strategies. Oxford (1990) explained memory strategies as producing mental connections and employing actions which become great assistance in the process of communication. Cognitive strategies, on the other hand, are utilised in forming and reviewing internal mental modes and later producing messages in the target language or also known as the process of analysing and reasoning, while compensation strategies are used in continuing the communication especially in making prediction of unknown word when the language is beyond the learners' range. For indirect strategies, metacognitive strategies support learners to manage their learning process by planning, arranging, focusing, and evaluating, affective strategies allow learners to control their feelings related to language learning, while social strategies aid interaction with others by asking questions and cooperating with others.

Next, O'Malley and Chamot (1990) classifications of the language learning strategies are 1) cognitive, 2) metacognitive and 3) affective or social strategies. Their classifications of language learning strategies are developed from interviews with both novices and professionals and theoretical studies of reading comprehension and problem solving. According to them, cognitive strategies involve the conversion of the learning materials, metacognitive strategies encompass the strategies of directing learning by planning, monitoring, and evaluating the learning activity, while affective or social strategies comprise the learner's strategies in communicative interaction with another person in solving problems.

#### ***Past Studies on Language Learning Strategies***

Existing literature on language learning strategies usually explores how language learning strategies are used efficiently for language competency among students in contexts

of which different popular factors such as gender, proficiency and motivation are applicable (Rahimi, 2018; Khamkhien, 2010). Aziz and Shah (2020) in their study of language learning strategy for English language learners in Polytechnic highlighted that pre-university students are low-to medium-level users of strategies in which most of the participants preferred metacognitive (behaviour) and cognitive (individual characteristics) strategies. The small purposive sample research revealed that technical courses students adopted and used the same metacognitive and cognitive strategies too to tailor to their goals, needs and lacks in English language. This mirrors the results by Radwan (2011) showing that Omani students of high proficiency in English language also used metacognitive (behaviour) strategies more than other categories. Both studies explored six variables (metacognitive, compensatory, cognitive, social, affective and memory and it was found out that the least preferred variable in language learning strategies is the same; the affective factor. Hence, both studies represent the importance of metacognitive and cognitive factors in selecting language learning strategies regardless of the background and proficiency of the students.

Teng et al (2021) found a crucial relationship between the metacognitive (behaviour) strategies motivations in learning the language. The study involved 620 participants enrolling in university online courses. The metacognitive strategies for online language learning were measured using 14 items Online Self-regulated Learning Questionnaire (OSLQ) and it showed that students with high motivation are usually self-determined to be able to adopt behavioural strategies in learning the language on their own. Similarly, Teng and Huang (2019) emphasised that students have to activate their metacognitive strategies to analyse their prior knowledge and self-regulate their behaviours and actions towards language learning especially when it is conducted online. It is important to be able to self-regulate the learning process using metacognitive strategies to be able to gain as much knowledge as in physical traditional classroom mode.

Machimana and Genis (2022) in quantitative descriptive research on the learning language strategies used by low (English scores of below 50%) and high performing (English scores of higher than 80%) second language learners highlighted that both categories of students prefer different types of strategies. High performers predominantly used behavioural and individual characteristics strategies while low performers resorted to social and memory strategies. The findings aligned with Vygotsky's sociocultural theory in which it stated that learners will be able to self-regulate and internalise learning once they have passed the social activity phase. Thus, this research will be studying triadic reciprocal association of variables (individual characteristics, behavioural and environment in language learning to see the learning language strategies preferred by the sample group and to find out any feasible relationships.

### **Conceptual Framework**

This study is rooted from Bandura's (1978) reciprocal determinism. The theory states that three factors influence how people act and the factors are individual characteristics, behaviour and also their environment. Bandura (1978) also adds that these three factors are associated by a triadic reciprocal causation. This means one factor can have influence on the other. In the context of this study, how learners perform in their learning is influenced by the three factors mentioned by (Bandura, 1978). These factors are moved through the use of learning strategies and the strategies used are by Wenden & Rubin (1987) and they are cognitive components, metacognitive self-regulation and resource management. With reference to figure 1 below, learning is influenced by (a) Individual characteristics. Individual

characteristics for this study are measured by learners; use of cognitive components. According to Rahmat et.al (2017), cognitive factors include learners' perception of his/her success or failure Next, learning is also influenced by (b) behaviour. Learners' behaviour is influenced by the environment. A positive environment will create a positive outcome and vice versa. Finally, learners are also influenced by the (c) environment. Learning can be successful when learners use the resource management around them.

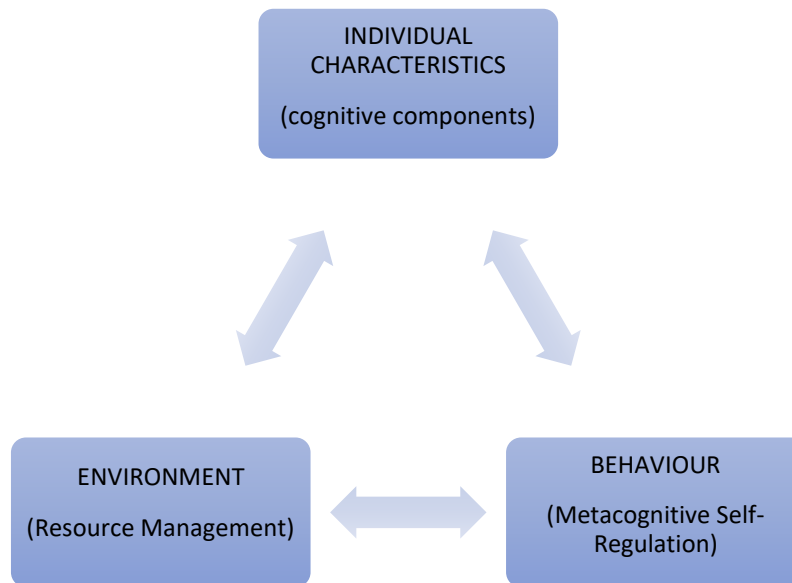


Figure 1- Theoretical Framework of the Study  
Triadic Reciprocal Association of Variables in Language Learning Strategies

### Methodology

This quantitative study is done to investigate the causes of work burnout. 122 respondents participated in this study. The 5-likert scale instrument used a survey adapted from (Wenden & Rubin, 1987). Table 1 shows the distribution of items in the survey. Part one is the demographic profile. Section B has 19 items on Individual Characteristics, section C has 11 items on Behaviour and section D has 11 items on Environment.

Table 1

*Distribution of Items in the Survey*

	RECIPROCAL DETERMINISM (Bandura, 1978)	LANGUAGE LEARNING STRATEGIES (Wenden & Rubin, 1987)				
B	INDIVIDUAL CHARACTERISTICS	COGNITIVE COMPONENTS	(i)	Rehearsal	4	19
			(ii)	Organization	4	
			(iii)	Elaboration	6	
			(iv)	Critical Thinking	5	
C	BEHAVIOUR	METACOGNITIVE SELF-REGULATION				11
D	ENVIRONMENT	RESOURCE MANAGEMENT	(i)	Environment Management	5	11
			(ii)	Effort Management	4	
			(ii)	Help-Seeking	2	
						41

Table 2

*Reliability of Survey***Reliability Statistics**

Cronbach's Alpha	N of Items
.951	41

Table 2 shows the reliability of the survey. The analysis shows a Cronbach alpha of .951, thus, revealing a good reliability of the instrument chosen/used. Further analysis using SPSS is done to present findings to answer the research questions for this study.

## Findings

### Findings for Demographic Profile

#### Q1. Gender

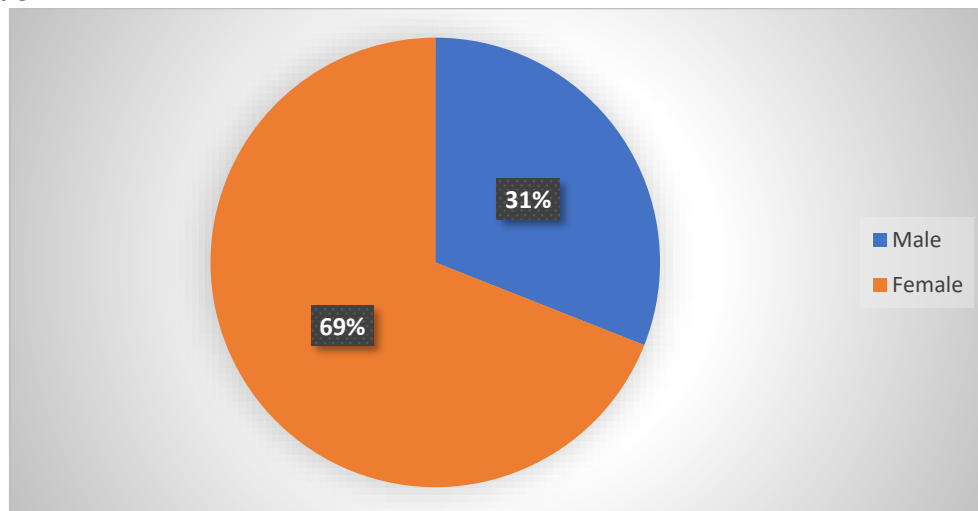


Figure 2-Percentage for Gender

Figure 2 shows the percentage for gender. 31% of the respondents are male while 69% are female.

#### Q2 Level of Study

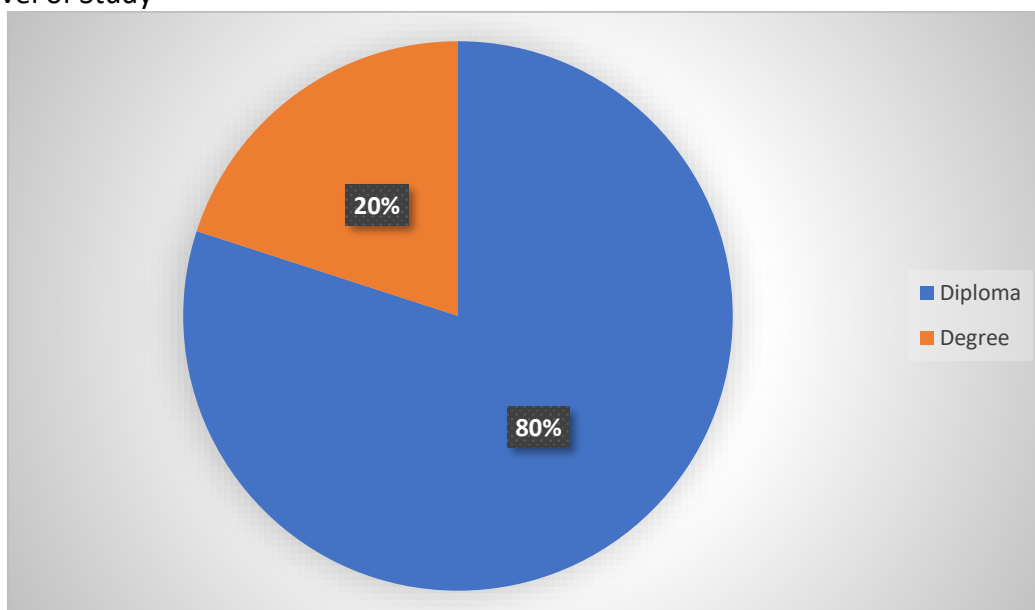


Figure 3-Percentage for level of Study

Figure 3 shows the percentage for level of study. 80% of the respondents are studying at diploma level while 20% are at degree level.



Q3 Semester

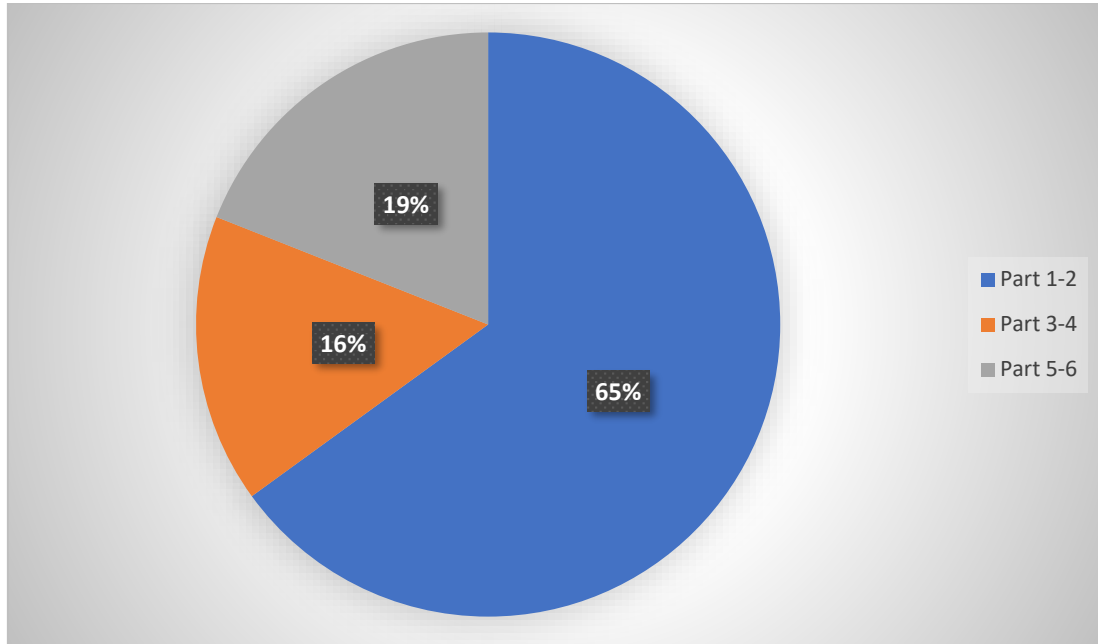


Figure 4- Percentage for Semester

Figure 4 shows the percentage for semester. 65% of the respondents are in part 1-2. Next, 15% are doing part 3-4 while 19% are in part 5-6.

Q4 Faculty

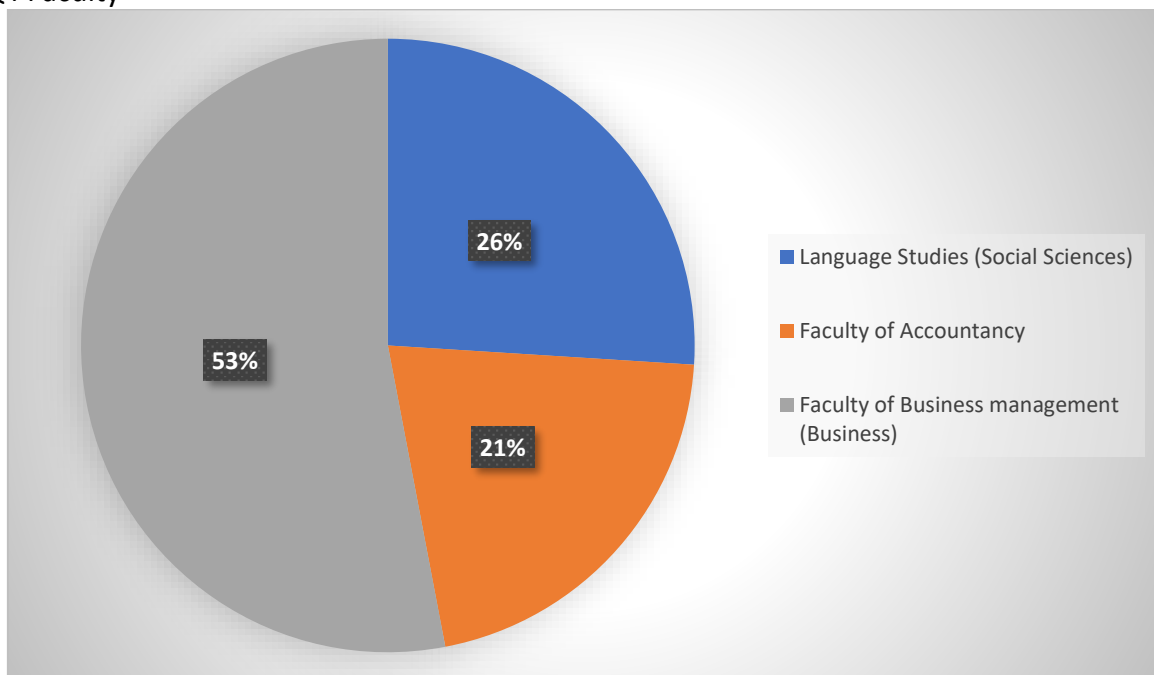


Figure 5- Percentage for Faculty

Figure 5 presents the percentage for faculty. 26% of the respondents are in social sciences. 21% are in the faculty of accountancy while 53% are from the faculty of business.

*Findings for Individual Characteristics*

This section presents data to answer research question 1: How does individual characteristics influence learning among undergraduates? In the context of this study, individual characteristics refer to cognitive components such as (i) rehearsal, (ii) organization, (iii)elaboration and (iv) critical thinking.

(i) Rehearsal (4 items)

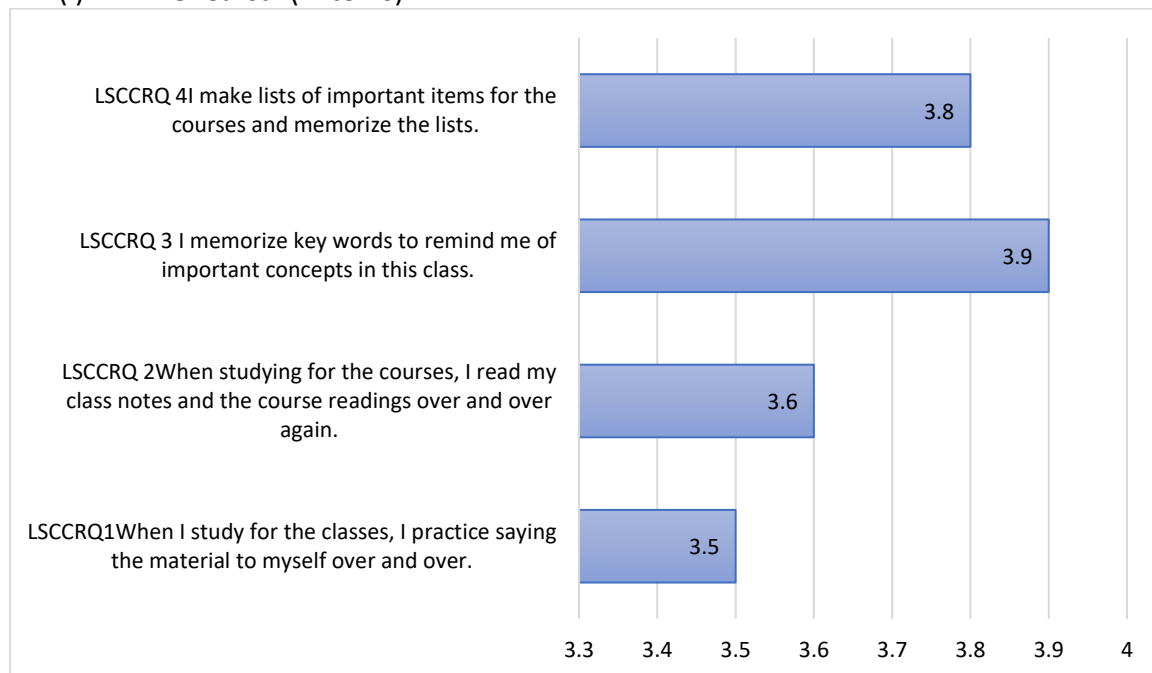


Figure 6- Mean for Rehearsal

Figure 6 shows the mean for rehearsal. The highest mean is 3.9 for the item “I memorize key words to remind me of important concepts in this class.”. Next, is the mean of 3.8 for the item “make lists of important items for the courses and memorize the lists”.

(ii) Organization (4 items)

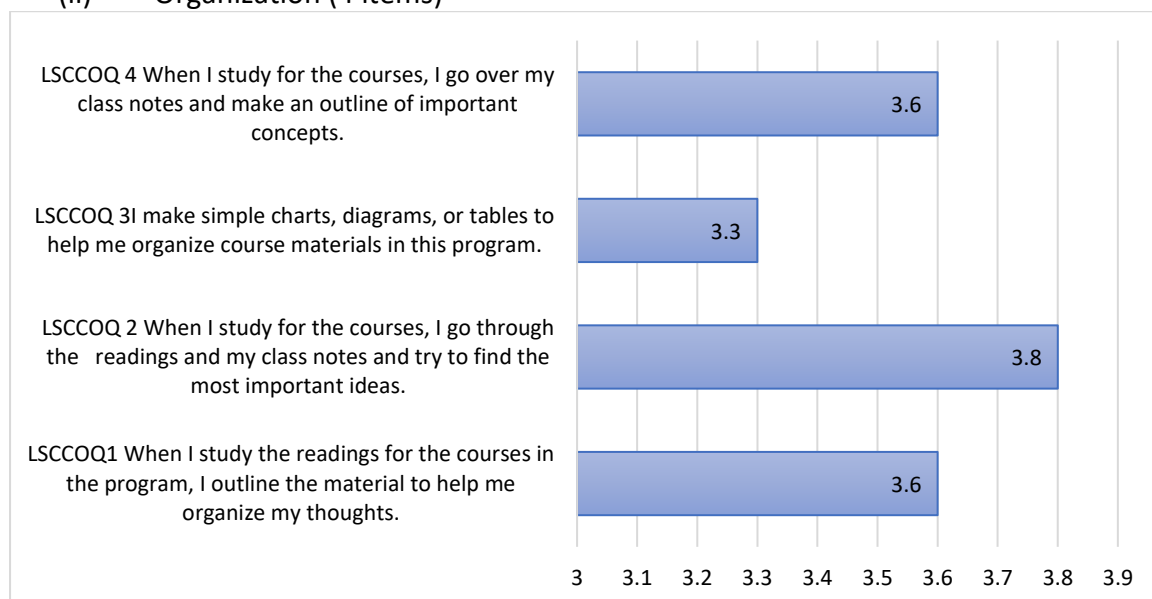


Figure 7- Mean for Organization

Figure 7 presents the mean for organization. The highest mean is 3.8 for the item “When I study for the courses, I go through the readings and my class notes and try to find the most important ideas”. This is followed by two items with the same mean of 3.6 and they are “When I study the readings for the courses in the program, I outline the material to help me organize my thoughts” and “When I study for the courses, I go over my class notes and make an outline of important concepts”.

(iii) Elaboration (6 items)

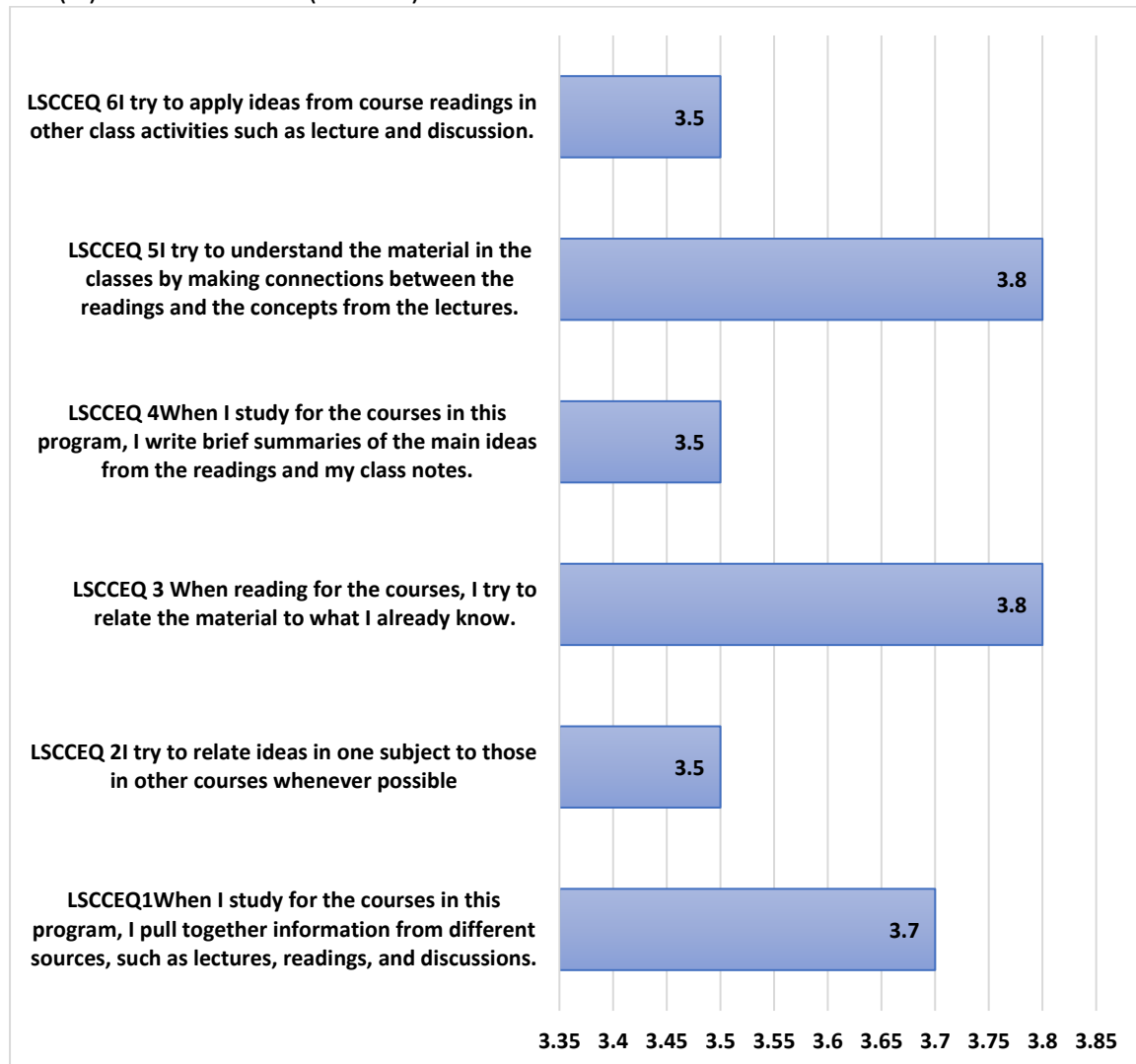


Figure 8- Mean for Elaboration

Figure 8 shows the mean for elaboration. Two items share the highest mean of 3.8 and they are “When reading for the courses, I try to relate the material to what I already know” and “try to understand the material in the classes by making connections between the readings and the concepts from the lectures”.

(iv) Critical Thinking (5 items)

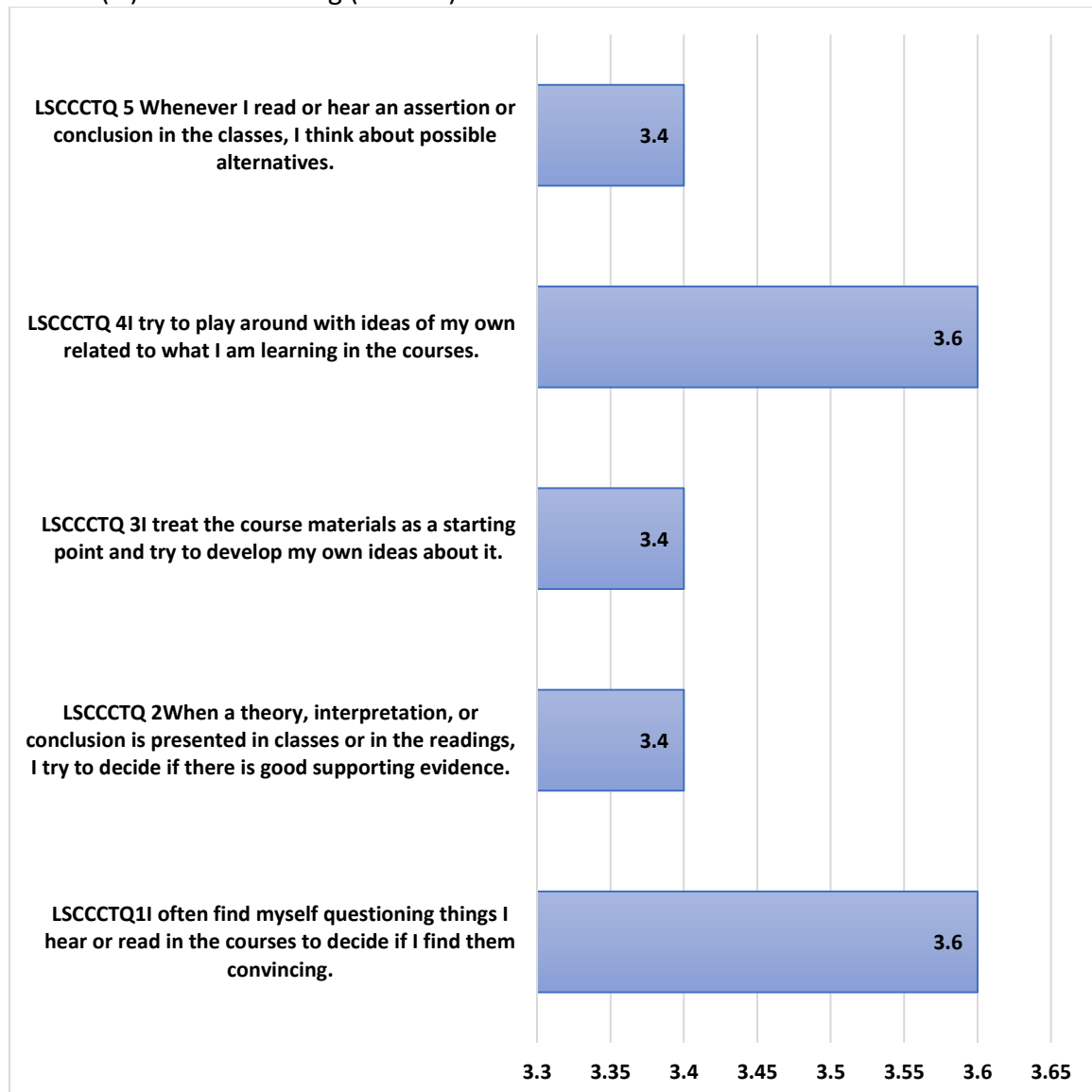


Figure 9- Mean for Critical Thinking

Figure 9 shows the mean for critical thinking. Two items share the same highest mean of 3.6 and they are “often find myself questioning things I hear or read in the courses to decide if I find them convincing” and “Whenever I read or hear an assertion or conclusion in the classes, I think about possible alternatives”.

*Findings for Behaviour*

This section presents data to answer research question 2: How does behaviour influence learning among undergraduates? In the context of this study, behaviour is measured by metacognitive self-regulation.

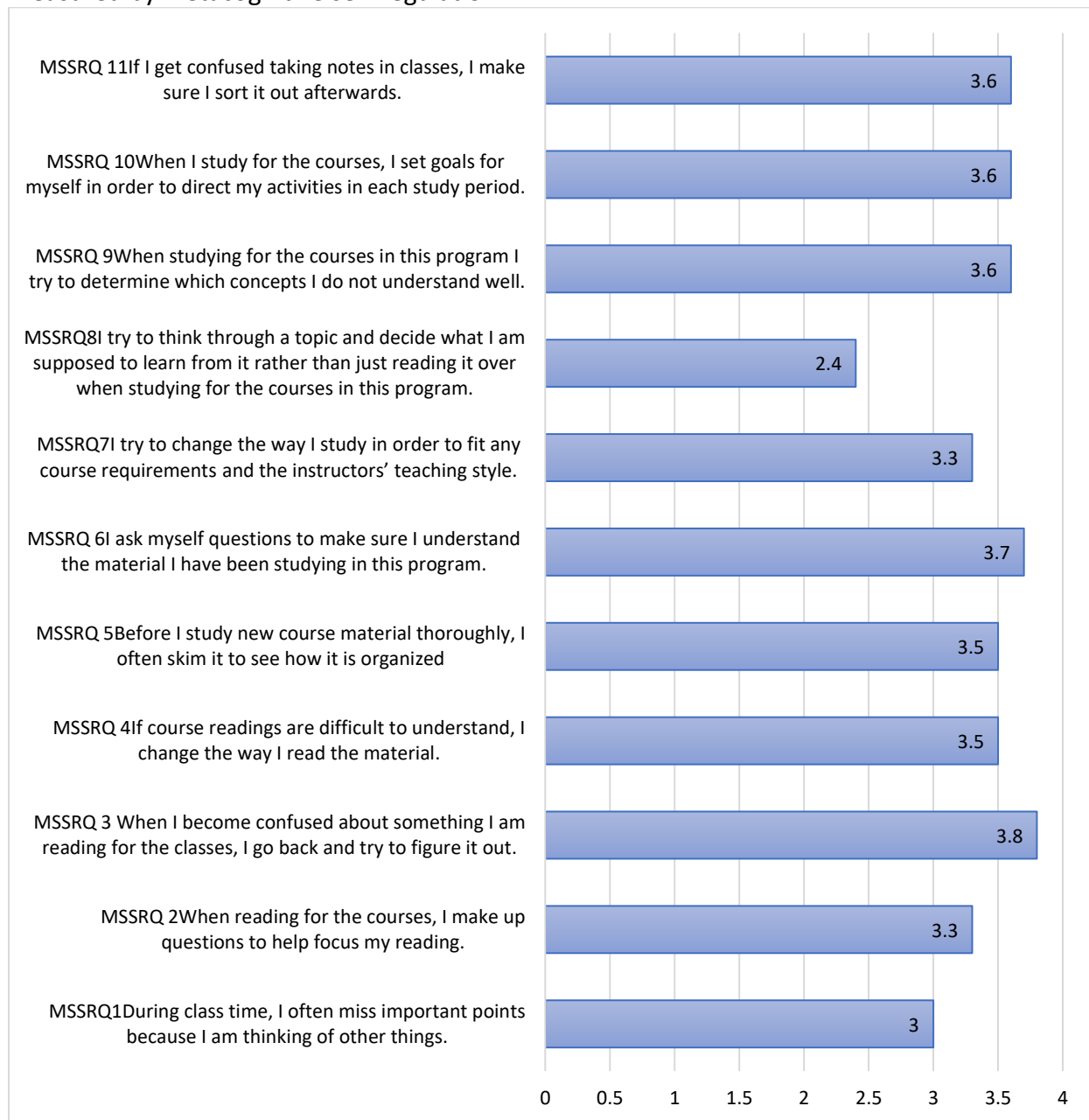


Figure 10- Mean for Metacognitive Self-Regulation

Total 10 shows the mean for metacognitive self-regulation. The highest mean is 3.8 for the item "When I become confused about something I am reading for the classes, I go back and try to figure it out.". This is followed by the mean of 3.7 for "ask myself questions to make sure I understand the material I have been studying in this program."

### Findings for Environment

This section presents data to answer research question 3: How does the environment influence learning among undergraduates? In the context of this study, the environment is measured through resource management such as (i) environment management, (ii) effort management and (iii) help-seeking.

#### (i) Environment Management (5 items)

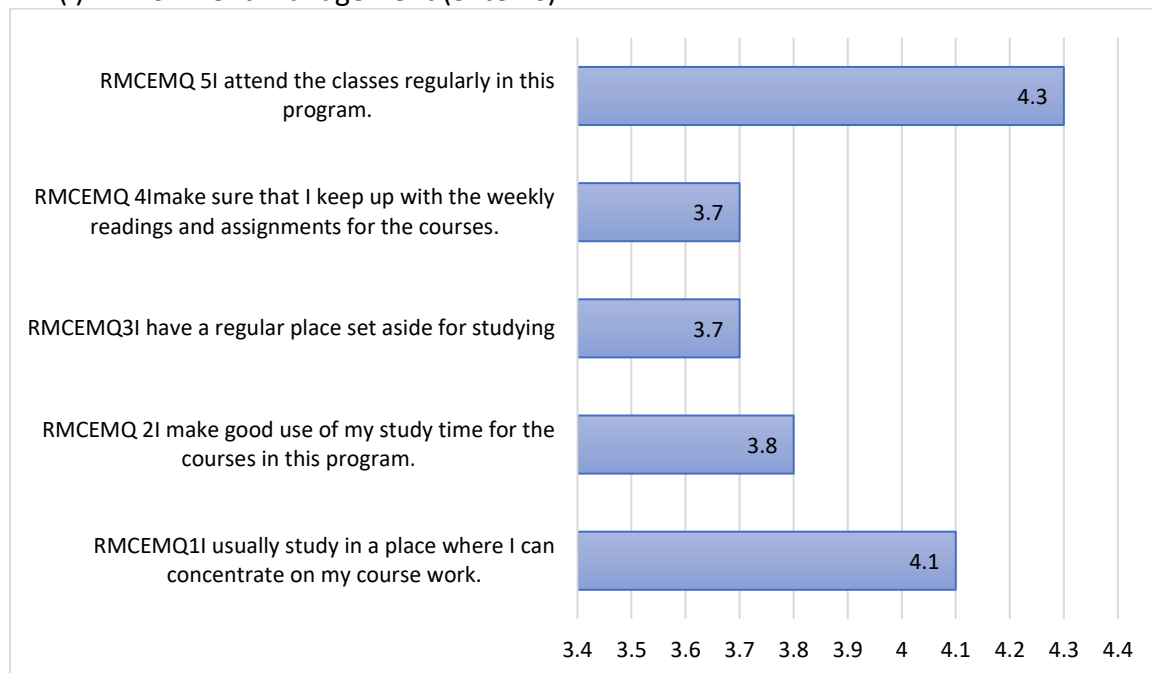


Figure 11- Mean for Environment Management

Figure 11 shows the mean for environment management. The highest mean is 4.3 for “attend the classes regularly in this program”. This is followed by the mean of 4.1 for “usually study in a place where I can concentrate on my coursework”. The item “make good use of my study time for the courses in this program” has a mean of 3.8.

## (ii) Effort Management (4 items)

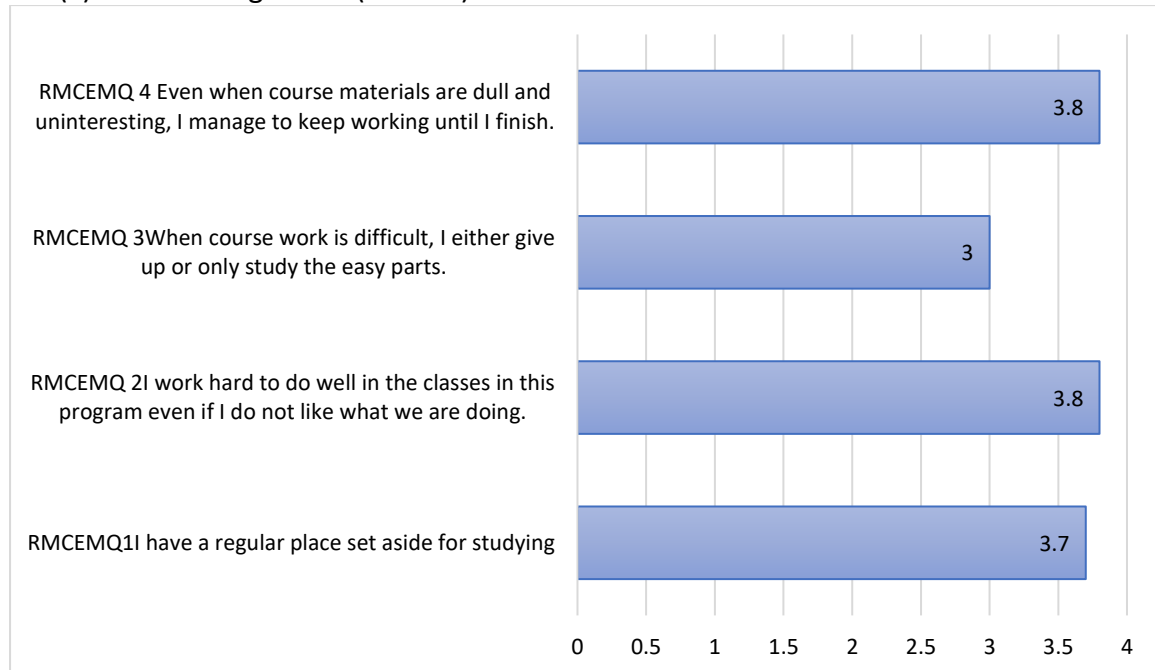


Figure 12- Mean for Effort Management

Figure 12 shows the mean for effort management. Two items share the same highest mean of 3.8 and they are “work hard to do well in the classes in this program even if I do not like what we are doing” and “Even when course materials are dull and uninteresting, I manage to keep working until I finish”.

## (iii) Help-Seeking (2 items)

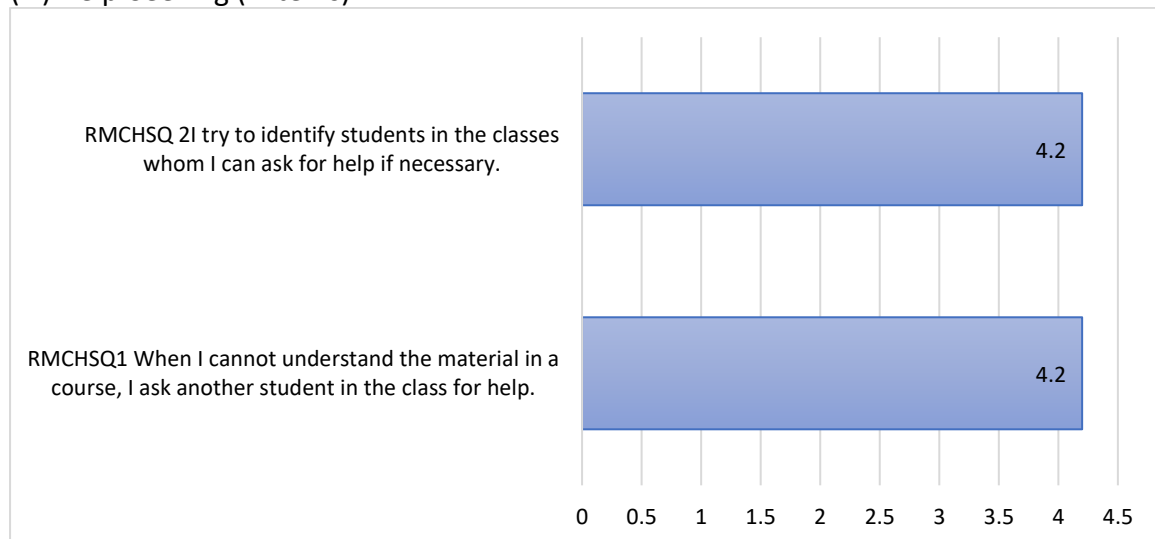


Figure 13- Mean for Help-Seeking

Figure 13 shows the mean for help-seeking. Both items “When I cannot understand the material in a course, I ask another student in the class for help” and “try to identify students in the classes whom I can ask for help if necessary” share the same mean of 4.2.

## Findings for Relationship for Individual Characteristics and Behaviour

This section presents data to answer research question 4: What is the relationship between individual characteristics and behaviour? To determine if there is a significant association in the mean scores between individual characteristics and behaviour, data is analysed using SPSS for correlations. Results are presented separately in table 3 below.

Table 3

*Correlation between Individual Characteristics and Behaviour*

		TOTALINDIV CHAR	TOTALBEHA V
TOTALINDIVCHAR	Pearson Correlation	1	.776**
	Sig. (2-tailed)		.000
	N	122	122
TOTALBEHAV	Pearson Correlation	.776**	1
	Sig. (2-tailed)	.000	
	N	122	122

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows there is an association between individual characteristics and behaviour. Correlation analysis shows that there is a high significant association between individual characteristics and behaviour ( $r=.776^{**}$ ) and ( $p=.000$ ). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between individual characteristics and behaviour.

## Findings for Relationship between Individual Characteristics and Environment

This section presents data to answer research question 5: What is the relationship between individual characteristics and the environment? To determine if there is a significant association in the mean scores between individual characteristics and environment, data is analysed using SPSS for correlations. Results are presented separately in table 4 below.



Table 4

*Correlation between Individual Characteristics and Environment***Correlations**

		TOTALINDIV CHAR	TOTALENVT
TOTALINDIVCHAR	Pearson Correlation	1	.690**
	Sig. (2-tailed)		.000
	N	122	122
TOTALENVT	Pearson Correlation	.690**	1
	Sig. (2-tailed)	.000	
	N	122	122

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 4 shows there is an association between individual characteristics and environment. Correlation analysis shows that there is a high significant association between individual characteristics and environment. ( $r=.690^{**}$ ) and ( $p=.000$ ). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between individual characteristics and environment.

**Findings for Relationship between Behaviour and Environment**

This section presents data to answer research question 6: What is the relationship between behaviour and environment? To determine if there is a significant association in the mean scores between behaviour and environment, data is analysed using SPSS for correlations. Results are presented separately in table 5 below.

Table 5

*Correlation for Behaviour and Environment***Correlations**

		TOTALBEHA V	TOTALENVT
TOTALBEHAV	Pearson Correlation	1	.671**
	Sig. (2-tailed)		.000
	N	122	122
TOTALENVT	Pearson Correlation	.671**	1
	Sig. (2-tailed)	.000	
	N	122	122

\*\*. Correlation is significant at the 0.01 level (2-tailed).

Table 5 shows there is an association between behaviour and environment. Correlation analysis shows that there is a high significant association between behaviour and environment. ( $r=.671^{**}$ ) and ( $p=.000$ ). According to Jackson (2015), coefficient is significant at the .05 level and positive correlation is measured on a 0.1 to 1.0 scale. Weak positive correlation would be in the range of 0.1 to 0.3, moderate positive correlation from 0.3 to 0.5, and strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between behaviour and environment.

## **Conclusion**

### *Summary of Findings and Discussions*

The findings revealed that the three variables: individual characteristics, behaviour and environment have positively impacted undergraduates in their learning. First, the individual characteristics are measured through the cognitive components which are rehearsal, organisation, elaboration and critical thinking. Learners mention that they memorise important keywords to understand the learning concepts introduced in class during rehearsal. Sinhaneti & Kyaw (2012) supported this view, in which they agree that rote memorisation of content should not be considered meaningless repetition but an effective tool to help learners understand knowledge deeply and accurately. In contrast, Campos et al (2014) reported that learners using the mnemonic keyword method showed significant achievement as compared to those using rote learning memorisation. Organisation, on the other hand, allows learners to create learning outlines and go over learning materials in order to better understand knowledge. Furthermore, learners learn to connect new knowledge with the existing information they have through elaboration. To put it simply, through elaboration, learners are able to connect the dots effectively. Critical thinking, however, explains the learners' potential to verify the validity of the information obtained. The process of verifying information is considered critical because learners must perceive information correctly and, hence, classify the information as reliable or not. The ability of a learner to memorise keywords, organise learning materials, relate information, and verify valid information is a strong indicator mirroring the success of learning. As a result, effective learning can occur when all four components of individual characteristics are met.

Secondly, behaviour also plays an important role in determining the success of learning. Behaviour, which is measured through metacognitive self-regulation, explains the learners' needs to check their understanding of the subject matter. Unlike critical thinking, learners need to revise the parts they find confusing in the information that they obtain. Here, learners will evaluate their understanding by determining if they got the information correct or wrong. This will not only make learning free from misunderstandings but also help develop a sense of responsibility among learners. To elaborate, learners are accountable for the knowledge they have. To share the information with others, they first need to be sure of its reliability. Moreover, the environment also shows a positive impact on learning. Environment management, effort management, and help-seeking are the three components of the environment. To explain further, learners make efforts to attend class, work hard to achieve good results, and seek assistance from friends through the environment. For example, Ahmed et al (2008); Clifton et al (2004) elaborated that friends' support has a positive impact on learning achievement and agreed that learners find it an easy means to help handle misunderstandings. Learners' commitments demonstrated through behaviour and environment are thus strong evidence that promote effective learning.

Thirdly, this study also reveals a significant relationship between individual characteristics and behaviour. Many past studies have proposed that there is a positive relationship between these two variables, for example, ability self-concept and learning behaviour in completing mathematics tasks (Trautwein & Lüdtke, 2007; Ashcraft & Krause, 2007). This, however, is also applied to other academic subjects, as Hilz et al (2023) demonstrated that the interconnection between the two is universal, in addition to confirming that individual characteristics are not the only aspect that influences learning behaviour or vice versa, but cognitive, motivational, and affective circumstances have a direct impact on learning. In addition, there is also a strong association between individual characteristics and environment, as disclosed in this study. The interaction between individual characteristics and the environment helps promote learning success (Ziegler, 2005). As much as environmental factors are known to have a significant impact on individual characteristics, this study has demonstrated that the latter component also has a direct impact on the environment. Lastly, this study also found that there is a positive relationship between behaviour and environment. The environment is known to be an effective tool for influencing behaviour. Furthermore, positive learning environments have long been associated with improved learner behaviour. Through this study, it can be concluded that the relationship between the three variables is proven to be positive.

#### *(Pedagogical) Implications and Suggestions for Future Research*

Several recommendations have been identified to help future studies discover other important issues related to this topic. This study focused on three major variables which are individual characteristics, behaviour and environment, and their impacts on learning. Future studies may look at other learning strategies used by learners to investigate their influence on learning. A comparative analysis can be done to identify the most effective learning strategy preferred by learners. The findings may benefit future learners to familiarise themselves with the strategy mentioned. Besides, a small sample was used in this study. Future researchers are advised to do it on a large scale by increasing the number of respondents and varying the options of the faculties involved. This study also did not provide an explanation of the respondents' academic performances and their relations to the three variables used in this study. Future study has to consider examining the respondents' academic performances and how it affects the way they react to the three variables used in this study. Lastly, as this study adapted questionnaires from past research, future practitioners could revise the questions to suit the research questions. An additional or deletion of the existing questions in the questionnaire may result in a more reliable finding.

#### **References**

- Abu Radwan, A. (2011). Effects of L2 Proficiency and Gender on Choice of Language Learning Strategies by University Students Majoring in English. *Asian EFL Journal*, 13, 115-163.
- Affandi, A., Muhalim, M., & Aeni, N. (2023). To What Extent Are Learning Strategies related to Successful Learners in Writing IELTS in Indonesia. *European Journal of Education and Pedagogy*, 4(1), 9–14. <https://doi.org/10.24018/ejedu.2023.4.1.538>
- Ahmed, W., Minnaert, A., van der Werf, G., & Kuyper, H. (2008). Perceived social support and early adolescents' achievement: The mediational roles of motivational beliefs and emotions. *Journal of Youth and Adolescence*, 39(1), 36–46. <https://www.researchgate.net/deref/https%3A%2F%2Fdoi.org%2F10.1007%2Fs10964-008-9367-7>

- Ashcraft, M. H., & Krause, J. A. (2007). Working memory, math performance, and math anxiety. *Psychonomic Bulletin & Review*, 14(2), 243–248. <https://doi.org/10.3758/BF03194059>
- Aziz, S. N. S. M., & Shah, P. M. (2020). Language learning strategy (LLS) for English Language Learners in Polytechnic. *Journal of Personalized Learning*, 3(1), 71-78. <https://spaj.ukm.my/jplearning/index.php/jplearning/article/view/121>
- Bandura, A. (1978). The self-system in reciprocal determinism. *American Psychologist*, 33(4), 344–358. <https://doi.org/10.1037/0003-066X.33.4.344>
- Campos, A., Rodriguez-Pinal, M., & Perez-Fabello, M. (2014). eceptive and productive recall with the keyword mnemonics in bilingual students. *Springer*, 33, 64-72.
- Clifton, R. A., Perry, R. P., Stubbs, C. A., & Roberts, L. W. (2004). Faculty environments, psychosocial dispositions, and the academic achievement of college students. *Research in Higher Education*, 45(8), 801–828. <https://www.researchgate.net/deref/https%3A%2F%2Fdoi.org%2F10.1007%2Fs11162-004-5950-2>
- Nejad, E. M., Izadpanah, S., Namaziandost, E., & Rahbar, B. (2022). The Mediating Role of Critical Thinking Abilities in the Relationship Between English as a Foreign Language Learners' Writing Performance and Their Language Learning Strategies. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.746445>
- Garcia-Sanchez, J., & Garcia-Martin, J. (2021). Cognitive strategies and textual genres in the teaching and evaluation of Advanced reading comprehension (ARC). *Frontiers in Psychology*, 12. doi:10.3389/fpsyg.2021.723281
- Hilz, A., Guill, K., Roloff, J., Aldrup, K., & Koller, O. (2023). The relationship between individual characteristics and practice behaviour within an adaptive arithmetic learning program. *Journal of Computer Assisted Learning*, 1– 14. <https://doi.org/10.1111/jcal.12780>
- Jackson, S. L. (2015) *Research methods and Statistics-A Critical Thinking Approach* (5<sup>th</sup> Edition). Boston, USA: Cengage Learning.
- Jones, R. (1998). Two faces of AIDS in Hong Kong: Culture and the construction of the AIDS celebrity. *Discourse and Society*, 9(3), 353-382.
- Machimana, P. N. N., and Genis, G. (2022). Language Learning Strategies of High and Low Performing Second Language Learners: A Socio-Cultural Perspective. *i-manager's Journal on English Language Teaching*, 12(1), 56-69. <https://doi.org/10.26634/jelt.12.1.18343>
- O'Malley, J. M. A. U. Chamot. (1990). *Learning strategies in Second Language Acquisition* Cambridge: Cambridge University Press.
- Oxford, R. (1990). *Language Learning Strategies: What Every Teacher Should Know*. Rowley, Mass: Newbury House, 284-297.
- Pagalilauan, J. B. (2023). Language Learning Strategies and Learning Styles Among BSED Students of SJCB. *American Journal of Education and Technology*, 1(4), 37–45. <https://doi.org/10.54536/ajet.v1i4.1108>
- Pradhan, S., & Das, P. (2021). Influence of metacognition on academic achievement and learning style of undergraduate students in Tezpur University. *European Journal of Educational Research*, 10(1), 381-391. doi:10.12973/eu-jer.10.1.381
- Rahimi, M., Riazi, A., & Saif, S. (2008). An Investigation into The Factors Affecting the Use of Language Learning Strategies by Persian EFL Learners. *Canadian Journal of Applied Linguistics*, 11(2), 31–60. Retrieved from <https://journals.lib.unb.ca/index.php/CJAL/article/view/19915>

- Rahmat, N. H., Arepin, M., Yunos, D. R. M., & Rahman, S. A. S. A. (2017) Analyzing Perceived Writing Difficulties through the Social Cognitive Theory. *PEOPLE: International Journal of Social Sciences*, Vol 3(2) pp 1487-1499.  
<https://dx.doi.org/10.20319/pijss.2017.32.14871499>
- Sani, S., & Ismail, H. H. (2021). Assessing the use of learning strategies among young Malaysian English as Second language learners. *Creative Education*, 12(09), 21242145. doi:10.4236/ce.2021.129163
- Shen, B., Wang, Y., Yang, Y., & Yu, X. (2023). Relationships between Chinese university EFL learners' academic emotions and self-regulated learning strategies: A structural equation model. *Language Teaching Research*, 1–27.
- Sinhaneti, K., & Kyaw, E. K. (2012). A study of role of rote learning in vocabulary learning strategies of Burmese students. *US-China Education Review*, 12, 987-1005.
- Teng, M. F., Wang, C., & Wu. (2021). Metacognitive Strategies, Language Learning Motivation, Self-Efficacy Belief, and English Achievement During Remote Learning: A Structural Equation Modelling Approach. *RELC Journal*, 1-19
- Teng, M. F., & Huang, J. (2019). Predictive Effects of Writing Strategies for Self-regulated Learning on Secondary School Learners' EFL Writing Proficiency. *TESOL Quarterly* 53: 232–47
- Tran, T. Q., & Tran, T. N. (2021). Vietnamese EFL high school students' use of self-regulated language learning strategies for Project-Based Learning. *International Journal of Instruction*, 14(1), 459-474. doi:10.29333/iji.2021.14127a
- Trautwein, U., & Ludtke, O. (2007). Students' self-reported effort and time on homework in six school subjects: Between-students differences and within-student variation. *Journal of Educational Psychology*, 99(2), 432–444.  
<https://doi.org/10.1037/00220663.99.2.432>
- Wenden, A., and Rubin, J. (1987) *Learner Strategies in Language Learning*. New Jersey: Prentice Hall.
- Wen, J. (2022). A Case Study on Learning Strategies of an English Normal Student in Applied Universities under the Background of Professional Certification. *International Journal of Education and Humanities*, 6(2), 177–180.  
<https://doi.org/10.54097/ijeh.v6i2.3703>
- Zarrinabadi, N., Rezazadeh, M., & Chehrizi, A. (2021). The links between grammar learning strategies and language mindsets among L2 and L3 learners: Examining the role of gender. *International Journal of Multilingualism*, 1-18. doi:10.1080/14790718.2020.1871356
- Zheng, Y., & Richard, L. (2021). A correlational study of motivation and language anxiety for learning Chinese as a foreign language with Chinese academic achievement of Thai grade 6 students. *AU Virtual International Conference Entrepreneurship and Sustainability in the Digital Era 2*, 347–355.
- Ziegler, A. (2005). "The actiotope model of giftedness" in *Conceptions of giftedness*. 2nd Edn. eds. Sternberg, R. J., and Davidson, J. E. (New York, NY: Cambridge University Press), 411–436.