

RESEARCH ARTICLE

Social cognitive theory-assisted learning of Arabic: A study of self-regulated learning strategies, social media usage, and motivation

Xuan Di¹, Wail Muin Ismail², Muhammad Azhar Zailani³, Ruihua Li^{1*}

¹ Department of Oriental Languages, Anhui International Studies University, Hefei 231201, China

² Department of Educational Foundations and Humanities Faculty of Education, University of Malaya, Kuala Lumpur 50603, Malaysia

³ Department of Language and Literacy Education Faculty of Education, University of Malaya, Kuala Lumpur 50603, Malaysia

Abstract: Social cognitive theory (SCT) has widely been used in second or foreign language learning. Multiple studies have also verified its importance in language learning. This present study examines the role that SCT plays in assisting the learning of Arabic by analysing the relationships among self-regulated learning strategies (SRLS), social media usage (SMU), and motivations of Arabic learners. A total of 317 university-grade Arabic learners participated in the present study. The self-regulated online learning questionnaire (SOL-Q), a social media usage questionnaire, and the motivated strategies for learning questionnaire (MSLQ) were used to understand the current issues that Arabic learners face. A quantitative analysis of the data revealed that most of the Arabic learners had medium levels of SRLS and SMU and high levels of motivation. Furthermore, SRLS and motivation significantly affected the Grade Point Average (GPA)-based academic achievements of these Arabic learners. The findings of this study verify that SRLS, SMU, and motivation have a triadic reciprocal correlation with SCT in the context of learning the Arabic language.

Keywords: social cognitive theory; self-regulated learning strategies; social media usage; motivation; academic achievement

*Corresponding author: Ruihua Li, Department of Oriental Languages, Anhui International Studies University, Hefei 231201, China; aisulrh@163.com

Received: February 20, 2023; **Accepted:** May 12, 2023; **Available online:** June 14, 2023

Citation: Di X, Ismail WM, Zailani MA, Li R. Social cognitive theory-assisted learning of Arabic: A study of self-regulated learning strategies, social media usage, and motivation. *Environment and Social Psychology* 2023; 8(1): 1543. doi: 10.18063/esp.v8.i1.1543.

1. Introduction

Social cognitive theory (SCT) posits that learning occurs via both observation and modelling and that targeted behaviour is the product of correlations between personal, behavioural, and environmental factors. Bandura^[1] states that the observation or modelling process comprises four aspects; the attention, retention, and production processes as well as motivation. Multiple studies have confirmed that SCT can be used to successfully assist second or foreign language learning^[2,3]. Accord-

ing to Atkinson^[2], language and language learning are social and cognitive phenomena and language learning is not simply an external process of “input-output” but an internal process of involving “cognitive knowledge”.

The language learning process in second language acquisition (SLA) theories and SCT can be summarised in four main stages: input, attention, retention, and output. In the first input stage, effective input captures the attention of the learner. The sources of this input may be the valuation activities of teachers, advanced peers, the social environment, social media tools, books, and/or other resources that the learner encounters. In the second attention stage, the learner encounters words and accurately perceives the significant features of the modelled words^[1]. At this stage, motivation is the central factor that drives or forces the attention of the learner. According to Pessoa^[4], while attention drives a learner’s interest in a target language, motivation increases detection sensitivity in both endogenous attention and exogenous attention tasks, enhances stimulus coding, and influences the filtering of task-irrelevant stimuli. Both the first and second stages of language learning are retained in short-term memory. In the third retention stage, the learned words are transferred to long-term memory and stored. Learners can use learning strategies to reinforce the process of storing words in long-term memory^[5]. This includes self-regulated learning strategies (SLRS) such as metacognitive skills, seeking help, time management, environment, and persistence as well as social media usage (SMU) for formal and informal learning by creating a language learning environment. In the final output stage, the learner converts the stored words into memory by observing or modelling the words into identifiable actions, such as speaking or writing (**Figure 1**).

Arabic was first introduced to Malaysia by Yemeni merchants who arrived in the city of Malacca back in the 13th century. The teaching and learning of Arabic began immediately after the arrival of Islam in Malaysia and the only purpose for this beginning period of the teaching and learning of Arabic in Malaya was to know about^[6]. Meanwhile, Malaysia language (Bahasa) was influenced by Arabic language.

As Arabic is a foreign or third language in Malaysia, non-native learners speak it poorly^[7-10].

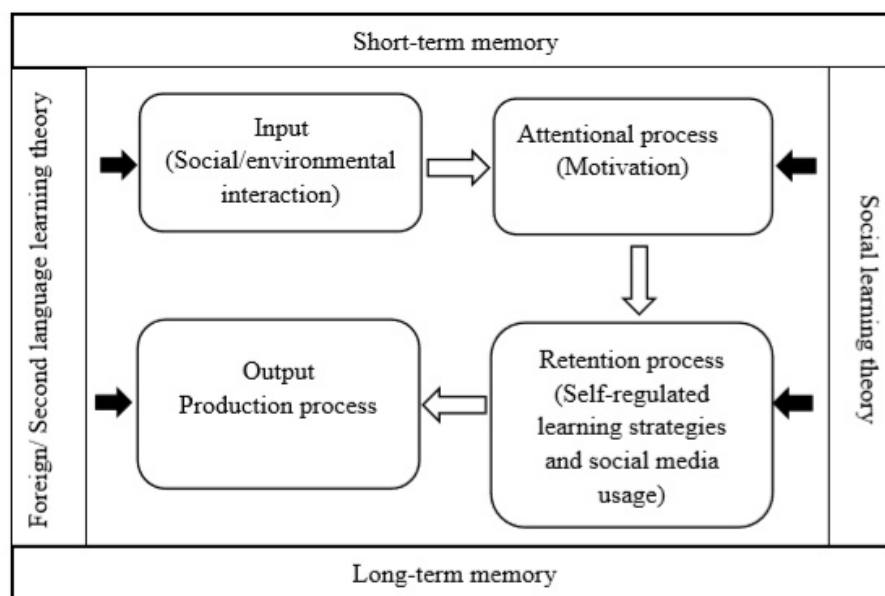


Figure 1. Language learning processes in SLA theories and SCT.

However, according to Suhid *et al.*^[11], it is essential to learn Arabic for religious reasons. Malaysian Muslims learn Arabic from primary school, where the objective of teaching and learning Arabic is to build their interest in learning the language and communicating with others. A number of past studies have concluded that the main objectives of learning Arabic are not achieved at this stage^[12]. Furthermore, empirical studies have concluded that Malay university-level learners of the Arabic language have poor ability to communicate in Arabic^[8–10,13]. Although many factors may cause learners to speak Arabic poorly, this present study used SCT to examine the SRLS, SMU, and motivational factors that affect the grade point average (GPA)-based academic performance of university-level Arabic learners in Malaysia as rationalised in the subsequent sections.

2. Literature review

2.1. Self-regulated learning strategies (SRLS)

Social learning psychologists view the structure of self-regulatory processes as three cyclical phases in SCT; namely, forethought, performance, and self-reflection. According to Zimmerman^[14], students are metacognitively, motivationally, and behaviourally active in their own learning processes. Self-regulated learners are different as they are aware of the strategic correlations between regulatory processes or responses and learning outcomes and are able to the apply these strategies to achieve their academic goals. As such, most self-regulated learners systematically use metacognitive, motivational, and behavioural strategies. Zimmerman^[15] as well as Zimmerman and Pons^[16] interviewed high school students about the self-reported strategies that they used in a variety of common learning contexts and summarised the 14 SRLS that the students most frequently used (**Figure 2**).

2.2. Social media usage (SMU)

According to Kaplan and Haenlein^[17], social media is a group of Internet-based applications built on the ideological and technological foundations of Web 2.0 that facilitate the creation and exchange of user-generated content. Smith and Caruso^[18] report that undergraduate students formally and informally integrate social media in their academic experience. Formal learning is the use of

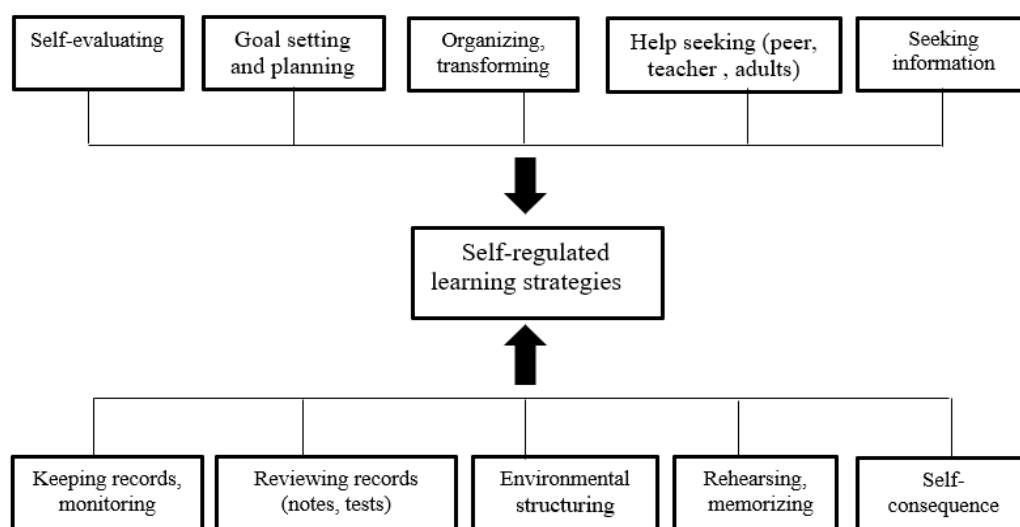


Figure 2. Summary of the 14 SRLS that students most frequently use according to Zimmerman and Pons^[16].

social media by an institution to provide education according to a specific curriculum. Meanwhile, informal learning is a lifelong process that comprises the skills, knowledge, and attitudes that learners gain mostly via social interactions with mass media^[19].

2.3. Motivation

Motivation is an internal drive that encourages a learner to pursue targeted learning. In language learning, it is responsible for initiating the learning process and, later, sustaining self-regulated learning over many years. It is believed that without sufficient motivation, no other factors on their own can ensure student achievement such as self-efficacy, task value, goal orientations^[20].

2.4. Grade point average (GPA)-based academic achievement

In this present study, academic achievement was taken to be the GPA of non-native Arabic learners in the first semester of an Arabic course for the 2017/2018 semester. The GPA is an internationally recognised grading system that is used to determine the average result of all the grades achieved in a course. This present study used the GPA as a metric to determine if the strategies that the Arabic learners adopted were effective. According to Albert Bandura's theory of reciprocal determinism, the personal processes of the learners; such as their motivations to strategically regulate their behaviours and self-regulate their learning; could be used to improve or predict the output; which is their GPA in the Arabic language course.

2.5. The correlation between SCT, SRLS, SMU, and motivation

Social cognitive theory (SCT) posits that individuals acquire knowledge by observing other individuals via social interactions, external media sources, and past experiences. Bandura's schematic of triadic reciprocal causation explains the core precepts of SCT as learning by observing other individuals, the environment, behaviour, and cognitive or personal experiences; all of which are major personal determinants in the causal structure^[1]. Bandura's schematic also depicts how correlations between the following three determinants affect the reproduction of an observed behaviour:

Personal: Whether an individual has high or low self-efficacy towards a target behaviour.

Behavioural: The response that an individual receives after performing a behaviour; i.e., opportunities for the learner to experience successful learning by performing a behaviour correctly.

Environmental: Environmental factors that affect an individual's ability to successfully complete a behaviour; i.e., creating a conducive and supportive environment that increases their self-efficacy and affects their achievement in the target behaviour^[1].

Models on the development of SRLS are typically based on the core precepts of SCT; namely, personal experiences, behaviours, and the environment^[21]. Motivation, as a personal factor, and SMU, as an environmental factor, reflect the triadic reciprocal determinism. For instance, according to Matzat and Vrieling^[22], SMU and SRLS are the "natural allies" of education. Zimmerman^[23] reports that students who are motivated to learn will often spend more time learning and use more SRLS. For instance, once a learner is motivated to learn a language, they are more likely to devote more attention and time learning the language as well as use social media to study the language. These learners often achieve higher performance^[24,25].

As such, the aims of this present study included:

- 1) What are the SRLS, SMU, and motivation levels of university-grade Arabic learners?
- 2) Is there a significant correlation between SRLS, SMU, and the motivations of Arabic learners?
- 3) To what extent do SRLS, SMU, and motivation affect the GPA of Arabic learners?

2.6. Research hypothesis

Hypothesis 1a: There is a significantly positive correlation between the SRLS and motivations of Arabic learners.

Hypothesis 1b: There is a significantly positive correlation between the SRLS and SMU of Arabic learners.

Hypothesis 2a: The SRLS of Arabic learners has a significantly positive effect on their GPA.

Hypothesis 2b: The SMU of Arabic learners has a significantly positive effect on their GPA.

Hypothesis 2c: The motivations of Arabic learners have a significantly positive effect on their GPA.

3. Materials and methods

3.1. Participants

A total of 1,743 students participated in this present study. According to Krejcie and Morgan's table^[26], this present study required a minimum of 317 students to achieve a confidence interval of 95%. In this way, the questionnaires were randomly distributed to 317 participants.

The participants were 317 Malay bachelor's degree students from six public universities. 14.2% were male, 85.8% were female, and 50.9% were second-year university students.

3.2. Instruments

The questionnaire, which served as the survey instrument of this present study, comprised three sections. Section 1 collected the demographic and personal information of the participants; such as gender, years of study, and academic achievement; while Section 2 used the self-regulated online learning questionnaire (SOL-Q) to measure their SRLS^[27]. Section 3 comprised motivation-related items that had been adapted from the motivated strategies for learning questionnaire (MSLQ). Lastly, Section 4 included SMU-related items that had been adapted from Monachesi *et al.*^[28].

3.3. Pilot study

A pilot study involving 35 students was conducted to review the survey instrument and examine if modifications were required. A Cronbach's alpha (α) of >0.60 indicates reliability^[29]. The Cronbach's alpha for the SRLS dimensions were in the range between 0.611 and 0.921. SMU dimensions were in the range of 0.759 to 0.846, and the motivation dimensions were in the range of 0.736 and 0.859, respectively, which can be demonstrated. The survey instrument had good internal consistency.

cy and reliability.

3.4. Data analysis

SmartPLS version 3 and IBM® Statistical Package for the Social Sciences (SPSS) version 22 were used to analyse the data and investigate the correlations between SRLS, SMU, and motivation. Spearman’s rho (r_s) was used to examine the correlation between three variables while structural equation modelling (SEM) was used to investigate the effect of SRLS, SMU, and motivation on the GPA of the Arabic learners.

The average variance extracted (AVE) and Cronbach’s α were used to validate and investigate the reliability of the SRLS, motivation, and SMU instruments.

Validity is achieved when all the collapsed items in a measurement model are statistically significant with a factor loading of ≥ 0.50 for an indicator^[30]. The SRLS, motivation, and SMU instruments achieved convergent validity as their AVEs exceeded 0.5 after 5, 1, and 2 items were deleted, respectively.

As seen in **Table 2**, all the SRLS, SMU, and motivation items were reliable as the Cronbach’s α ranged between 0.91 to 0.61 and they all exceeded 0.6—the minimum acceptance level^[29].

Table 1. The AVE of the three variables

Variables	Latent	AVE	AVE post-deletion
SRLS	Metacognitive skills	0.67	0.67
	Environment	0.45	0.60
	Time management	0.71	0.71
	Persistence	0.54	0.70
	Seeking help	0.68	0.68
Motivation	Self-efficiency	0.66	0.66
	Task value	0.74	0.74
	Goal orientation	0.54	0.57
SMU	Formal learning	0.65	0.65
	Informal learning	0.55	0.59

Note: SRLS = self-regulated learning strategies; SMU = social media usage; AVE = average variance extracted

Table 2. The Cronbach’s α of the three variables

Variables	Latent	Cronbach’s α
SRLS	Metacognitive skills	0.91
	Environment	0.61
	Time management	0.64
	Persistence	0.70
	Seeking help	0.74
Motivation	Self-efficiency	0.87
	Task value	0.88
	Goal orientation	0.81
SMU	Formal learning	0.78
	Informal learning	0.70

Note: SRLS = self-regulated learning strategies; SMU = social media usage

4. Results

4.1. The level of SRLS, SMU, and motivation

Table 3 depicts the mean (M) and standard deviations (SD) of the descriptive data of the SRLS, SMU, and motivations of the learners.

As seen in **Table 3**, the overall M and SD of the SRLS, SMU, and motivation dimensions were $M = 3.65$, $SD = 0.39$; $M = 3.69$, $SD = 0.54$; and $M = 4.08$, $SD = 0.41$; respectively. Therefore, the participants practiced a medium degree of SRLS and SMU and had been highly motivated to learn Arabic.

4.2. Hypotheses testing

4.2.1. The correlation between SRLS, SMU, and motivation

As seen in **Table 4**, there is a statistically and significantly positive correlation between SRLS and SMU ($n = 317$, $r_s = 0.44$, $p < 0.01$). An r_s of 0.44 indicates a weak correlation between SRLS and SMU^[29]. A statistically and significantly positive correlation was also observed between SRLS and motivation ($n = 317$, $r_s = 0.66$, $p < 0.01$). An r_s of 0.66 indicates a moderate correlation between SRLS and motivation^[29]. Therefore, H1a and H1b were supported.

4.2.2. The correlation between SRLS and motivation

The correlation between the SRLS dimensions and motivation dimensions were examined.

Table 3. The mean and standard deviations of the variables

SRLS dimensions	M	SD
Metacognitive skills	3.92	0.49
Environment	3.58	0.52
Time management	2.72	0.86
Persistence	3.88	0.70
Seeking help	4.12	0.52
Total SRLS	3.65	0.39
SMU dimensions		
Formal learning	3.90	0.53
Informal learning	3.48	0.73
Total SMU	3.69	0.54
Motivation dimensions		
Self-efficiency	3.94	0.53
Task value	4.18	0.48
Goal orientation	4.14	0.44
Total motivation	4.08	0.41

Note: SRLS = Self-regulated learning strategies; SMU = Social media usage; M = Mean; SD = Standard deviation

Table 4. The r_s of the SRLS, SMU, and motivation

Variable		SMU	Motivation
SRLS	r_s	0.44	0.66
	Sig. (2-tailed)	0.00	0.00

Note: SRLS = Self-regulated learning strategies; SMU = Social media usage; r_s = Spearman's rho

Table 5. The r_s of SRLS and motivation

SRLS dimensions	Motivation dimensions			Sig.		
	Self-efficacy	Task value	Goal orientation			
Metacognitive skills	0.63	0.49	0.46	0.00	0.00	0.00
Time management	-0.12	-0.11	-0.09	0.09	0.11	0.21
Environment	0.47	0.44	0.42	0.00	0.00	0.00
Persistence	0.30	0.36	0.41	0.00	0.00	0.00
Seeking help	0.48	0.55	0.44	0.00	0.00	0.00

Note: SRLS = Self-regulated learning strategies; r_s = Spearman's rho

As seen in **Table 5**, there is a statistically and significantly positive correlation ($p < 0.01$) between the four SRLS dimensions: metacognitive skills, environment, persistence, and seeking help; and the three motivation dimensions: self-efficacy, task value, and goal orientation.

Moreover, metacognitive skills and self-efficiency ($r_s = 0.63, p = 0.00$), seeking help, and task value ($r_s = 0.55, p = 0.00$) had a moderately significant positive correlation. The r_s of metacognitive skills with task value and goal orientation was 0.49 and 0.46, respectively, with $p = 0.00$ for all dimensions. The r_s of environment with self-efficiency, task value, and goal orientation was 0.42, 0.44, and 0.42 respectively, with $p = 0.00$ for all dimensions. Additionally, the r_s of persistence with self-efficiency ($r_s = 0.30, p = 0.00$), task value ($r_s = 0.35, p = 0.00$), and goal orientation ($r_s = 0.41, p = 0.00$) as well as the r_s of seeking help with self-efficiency ($r_s = 0.48, p = 0.00$) and goal orientation ($r_s = 0.44, p = 0.00$) indicated a weak but statistically significant correlation with $p < 0.01$.

Therefore, as seen in **Table 5**, there is a statistically and significantly positive correlation between the SRLS dimensions of metacognitive skills, environment, persistence, and seeking help and the motivation dimensions of self-efficiency, task value, and goal orientation. However, there is a very weak and negative correlation between the SRLS dimension of time management and the motivation dimensions of self-efficiency, task value, and goal orientation.

4.2.3. The correlation between SRLS and SMU

As seen in **Table 6**, there is a significant correlation between formal learning and metacognitive skills ($n = 317, r_s = 0.39, p < 0.01$), environment ($n = 317, r_s = 0.27, p < 0.01$), and persistence ($n = 317, r_s = 0.23, p < 0.01$). A significant correlation was also noted between informal learning and metacognitive skills ($n = 317, r_s = 0.54, p < 0.01$), environment ($n = 317, r_s = 0.36, p < 0.01$), persistence ($n = 317, r_s = 0.24, p < 0.01$), and seeking help ($n = 317, r_s = 0.35, p < 0.01$).

However, the results of the r_s analysis indicate no significant correlation between time management and both formal ($n = 317, r_s = -0.05, p > 0.01$) and informal ($n = 317, r_s = -0.13, p > 0.01$) learning.

Table 6. The r_s of SRLS and SMU

SRLS dimensions	SMU Dimensions		Sig.	
	Informal	Formal		
Metacognitive skills	0.54	0.39	0.00	0.00
Time management	-0.13	-0.05	0.06	0.49
Environment	0.36	0.27	0.00	0.00
Persistence	0.24	0.23	0.00	0.00
Seeking help	0.35	0.13	0.00	0.07

Note: SRLS = Self-regulated learning strategies; SMU = Social media usage

4.2.4. The effect of SRLS on GPA

As seen in **Table 7**, the t-statistic value of the partial least squares structural equation model (PLS-SEM) indicates that SRLS has a significantly positive effect on GPA ($\beta = 0.20, t = 2.78, p < 0.05$). Therefore, a learner’s GPA will increase if their SRLS increases. Hence, H2a was supported.

4.2.5. The effect of motivation on GPA

As seen in **Table 8**, the t-statistic value of the PLS-SEM indicates that motivation has a significantly positive effect on GPA ($\beta = 0.15, t = 2.26, p < 0.05$). Therefore, a learner’s GPA will increase if their motivation increases. Consequently, H2b was supported.

Table 7. The t-statistic value of the effect of SRLS on academic achievement (GPA)

Regression		Estimate (β)	T	P	R ²
Dependent variable	Independent variables				
Academic achievement (GPA)	<--- SRLS	0.20	2.78	0.01	0.04

Note: SRLS = Self-regulated learning strategies

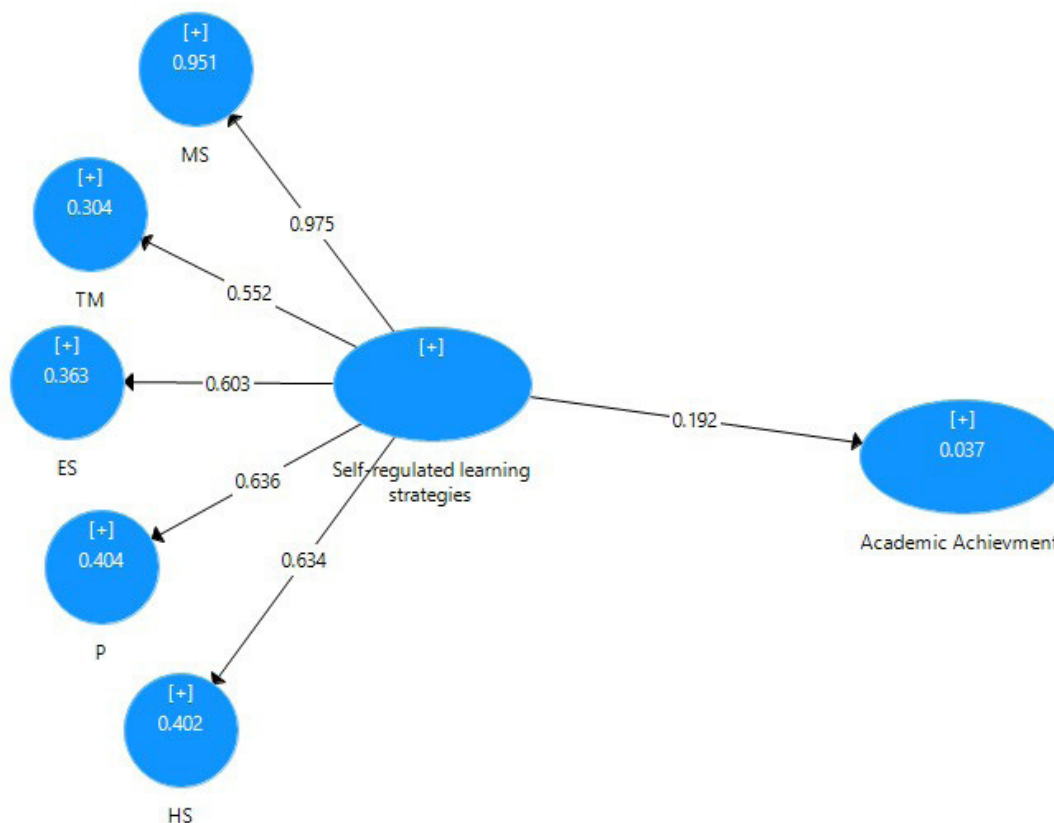


Figure 3. The SEM of the influence of SRLS on academic achievement.

Table 8. The t-statistic value of the effect of motivation on GPA

Regression		Estimate (β)	T	P	R ²
Dependent variable	Independent variables				
Academic achievement (GPA)	<--- Motivation	0.15	2.26	0.025	0.02

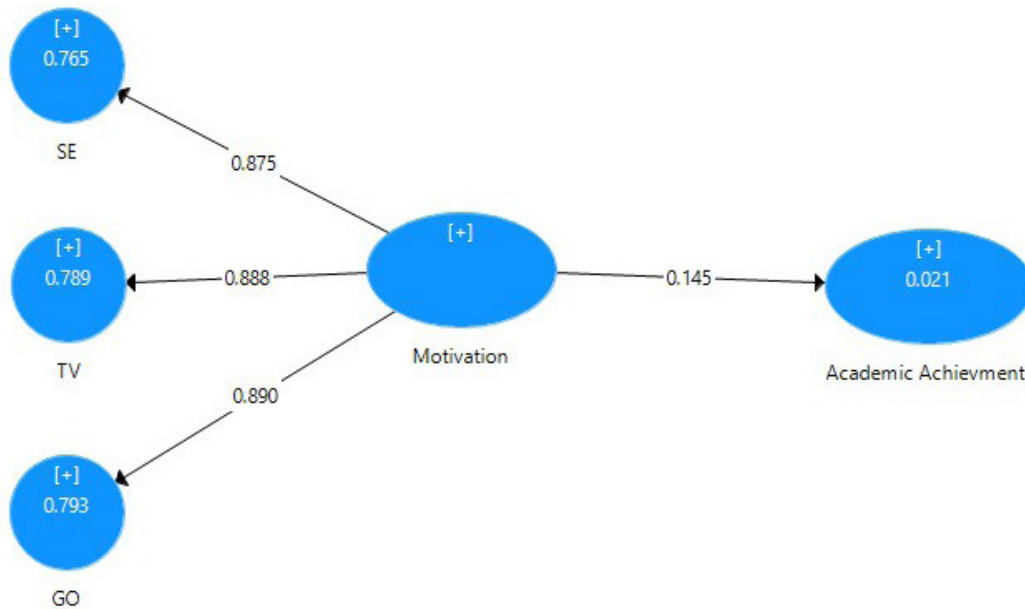


Figure 4. The SEM of the influence of motivation on academic achievement.

4.2.6. The effect of SMU on academic achievement (GPA)

As seen in **Table 9**, the t-statistic value of the PLS-SEM indicates that SMU does not have a statistically significant effect on GPA ($\beta = 0.10$, $t = 1.63$, $p > 0.05$). Therefore, a learner's GPA is not affected by their SMU. Hence, H2c was rejected.

Table 9. The t-statistic value of the effect of SMU on GPA

Regression		Estimate (β)	T	P
Dependent variable	Independent variables			
Academic achievement (GPA)	<--- SMU	0.10	1.63	0.10

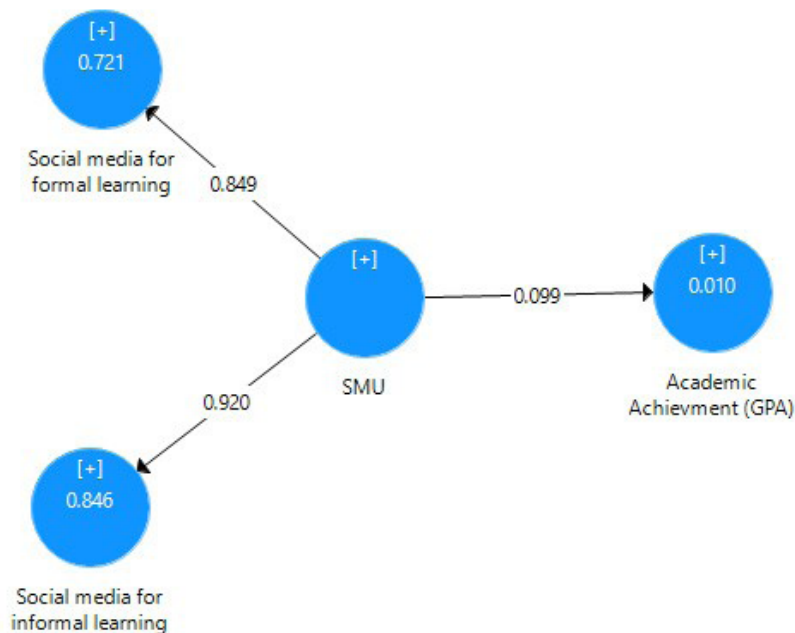


Figure 5. The SEM of the influence of SMU on academic achievement.

5. Discussion and conclusions

Social cognitive theory (SCT) can be used to target language learning behaviour and observe or model the procedures of input, attention, retention, and output. Motivation is crucial to drive the attention of learners towards inputting words from a target language while SRLS and SMU help learners retain these inputted words by storing and outputting them. As a pedagogical shift has occurred at institutions of higher learning, from teacher-centred to learner-centred, SRLS, SMU, and motivation are anticipated to play an essential role in language learning, especially in the process of converting words from storage in short-term memory to long-term memory.

Multiple studies have proven the effect of SRLS on the academic achievements of language learners^[31,32]. This present study found that Malay university-level learners of the Arabic language practice a medium degree of SRLS. Hashemyolia *et al.*^[33] and Seker^[34] similarly reported that the populations of their studies practiced a medium degree of SRLS. This present study also found that while university-level Arabic learners frequently rely on their metacognitive skills and seek help, they rarely practise time management and persistence.

The qualitative data that this present study collected also revealed what motivates university-level Arabic learners to learn Arabic as well as the sources of these motivations. The findings of this present study indicate that university-level Arabic learners are highly motivated to learn Arabic. Extant studies that have examined the role of motivation in foreign language learning have similarly concluded that motivation enhances foreign language acquisition^[35]. It is noteworthy that university-level Arabic learners exhibit high task value and goal orientation. More interestingly, their primary motivation to learn Arabic was to exhibit their grasp of the Arabic language to their family, friends, employers, and acquaintances. This was followed by, in descending order, to obtain good grades in the Arabic language course; to appreciate Islamic art, Islamic hymns (*nasheed*), and Arabic literature; and to gain in-depth knowledge and a better understanding of the *Holy Quran* and the religious law and moral guidance of the *hadiths* as well as Islamic knowledge. This present study also found that self-efficacy was the only effective source of motivation for attaining better GPAs among university-level Arabic learners.

According to Väljataga *et al.*^[36], learners can manage and maintain a learning space that facilitates their learning activities as well as connections to their peers and social network across time and place. The finding of this present study indicate that university-level Arabic learners practise a medium level of SMU and use social media for formal learning more than informal learning. However, their use of social media for both informal and formal learning does not affect their GPA. Conversely, Dabbagh and Kitsantas^[37] found that social media can, potentially, support informal learning.

Multiple extant studies have found that SRLS influences the academic achievements of language learners and that, when SRLS is used effectively and frequently, it leads to better language learning and skills^[7,31,32]. This present study, similarly, found that SRLS has a positive influence on the GPA of university-level Arabic learners. Motivation was also found to significantly affect their GPA as well. This was consistent with the findings of Varasteh *et al.*^[38] that motivation enhances foreign language acquisition.

Social media is widely regarded as the most popular method of communicating and learning a foreign language as students very easily accept the integration of social media in educational prac-

tice^[39]. However, this present study found that SMU did not significantly affect the GPA of university-level Arabic learners. Although this contradicts the findings of Van't *et al.*^[39], it corroborates the findings of Michikyan *et al.*^[40] and Tariq *et al.*^[41]. The findings of this present study may vary with that of some extant studies as university-level Arabic learners may rarely use social media for learning. More specifically, although they frequently use social media, they do not use it to learn. The effect of social media on learning strongly depends on the way that students use it and interference from educators^[42,43]. According to Karpinski and Duberstein^[44], social media users devote less time to their studies than non-social media users and, consequently, have lower GPAs. Nalwa and Anand^[45] state that social media addicts prefer to use the Internet to execute their personal and professional responsibilities, which ultimately leads to poor academic performance. This may be attributed to poor self-control. Both Karpinski and Duberstein^[44] as well as Tariq *et al.*^[18] report a negative correlation between the SMU, SRLS, and academic achievements of students due to a lack of self-control and time management.

The findings of this present study verified the SCT that environmental, behavioural, and personal SRLS factors, environmental SMU factors, and personal motivation factors have a triadic reciprocal correlation in the learning of the Arabic language. Social media-enriched learning that is designed to enhance the SRLS and motivations of students increase their academic performance and positive attitudes towards learning^[13,46,47]. Therefore, the extent to which learners practise SLRS and SMU for learning are determined by their motivations and sources of motivation to learn Arabic. Once learners are motivated to learn a language, they are more likely to devote more attention, time, and energy to the target language as well as apply the appropriate SRLS and SMU, which will enable them to attain better academic achievements.

The findings of this present study indicate that SRLS, SMU, and motivation are primary factors that significantly affect the learning of the Arabic language among university-level students. The limitations of this present study include the restricted geographic region, population, demographics, and the survey instruments used.

Abbreviation

SRLS, self-regulated learning strategies; SMU, social media usage; SCT, social cognitive theory; GPA, grade point average; AVE, average variance extracted; r_s , Spearman's rho; M, mean; SD, standard deviation.

Acknowledgment

We would like to acknowledge Anhui International Studies University for funding this study.

Author contributions

These authors contributed equally. XD and WMI designed the research study. MAZ performed the research. RHL provided help and advice on the whole logical and landscape of the paper. RHL analyzed the data. WMI, XD and MAZ wrote the manuscript. All authors contributed to editorial changes in the manuscript. All authors read and approved the final manuscript.

Conflict of interest

The authors declare that there is no conflict of interest.

Ethics approval and consent to participate

Not applicable.

Funding

This research was funded by Anhui International Studies University through grant No. (Awbsjj2021002) and (SK2021B019).

References

1. Bandura A, Walters RH. Social learning theory. Hoboken, New Jersey: Prentice Hall; 1977.
2. Atkinson D. Toward a sociocognitive approach to second language acquisition. *The Modern Language Journal* 2002; 86(4): 525–545. doi: 10.1111/1540-4781.00159.
3. Matsuoka R, Evans DR, Ozawa M, *et al.* Socio-cognitive approach in second language acquisition research. *The Journal of Nursing Studies: National College of Nursing, Japan* 2004; 3(1): 3.
4. Pessoa L. Attention, motivation, and emotion. In: *The Oxford handbook of attention*. Oxford: Oxford University Press; 2014.
5. Nemati A. Memory vocabulary learning strategies and long-term retention. *International Journal of Vocational and Technical Education* 2009; 1(2): 14–24. doi: 10.4314/marang.v20i1.56821.
6. Ismail ARBH. The teaching of Arabic in the Faculty of Islamic Studies in the National University of Malaysia [PhD thesis]. Salford: University of Salford; 1993.
7. Andrade MS, Bunker EL. A model for self-regulated distance language learning. *Distance Education* 2009; 30(1): 47–61. doi: 10.1080/01587910902845956.
8. Latif KM. Pencapaian pelajar kelas aliran agama dalam aspek pertuturan Bahasa Arab: Satu kajian kes (Indonesian) [Speaking skill achievements of religious streamed students: A case study] [Unpublished Master's thesis]. Kuala Lumpur: University of Malaya; 2004.
9. Ismail Z, Othman MS, Abdullah AR, *et al.* Masalah penguasaan kemahiran mendengar dan bertutur Bahasa Arab dan Jepun: Satu kajian perbandingan (Indonesian) [Problems of Arabic and Japanese speaking skills: A comparative study]. In: Ariffin K (editor). *Pendidikan bahasa di Malaysia: Isu, amalan dan cabaran*. Shah Alam: Pusat Penerbitan Universiti (UPENA); 2005. p. 131–149.
10. Sheikh Salleh SI. Masalah penguasaan pertuturan Bahasa Arab di kalangan pelajar Sekolah Menengah Agama di Selangor (Indonesian) [The problem of Arabic speaking skill among the students of religious secondary schools in Selangor]. In: Ismail MR, Pa MT (editors). *Pengajaran dan pembelajaran Bahasa Arab di Malaysia*. Kuala Lumpur: University Malaya Publications; 2006.
11. Suhid A, Mutalib LA, Ahmad AM. Application of Arabic language communication model in teaching and learning of Islamic Education. *World Journal of Islamic History and Civilization* 2012; 2(2): 95–101. doi: 9574/1/00003336_88607.
12. Ainon M, Abdullah H. Guru sebagai pendorong dalam darjah (Indonesian) [Teachers as motivators in classroom]. Bentong: PTS Profesional PUBLISHING Sdn. Bhd.; 2005.
13. Mohamad N, Abdullah N, Salleh S, *et al.* Kajian penilaian modul BA UiTM (2002) peringkat ijazah (Indo-

- nesian) [UiTM BA module assessment study (2002) diploma rating]. Selangor, Malaysia: Institut Penyelidikan, Pembangunan & Pengkormesialan UiTM; 2004.
14. Zimmerman BJ. Becoming a self-regulated learner: Which are the key subprocesses? *Contemporary Educational Psychology* 1986; 11(4): 307–313. doi: 10.1016/0361-476X(86)90027-5.
 15. Zimmerman BJ. A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology* 2005; 81: 329–339. doi: 10.1037/0022-0663.81.3.329.
 16. Zimmerman BJ, Pons MM. Development of a structured interview for assessing student use of self-regulated learning strategies. *American Educational Research Journal* 1986; 23(4): 614–628. doi: 10.3102/00028312023004614.
 17. Kaplan AM, Haenlein M. Users of the world, unite! The challenges and opportunities of Social Media. *Business Horizons* 2010; 53(1): 59–68. doi: 10.1016/j.bushor.2009.09.003.
 18. Smith SD, Caruso JB. The ECAR study of undergraduate students and information technology, 2010 [Internet]. *Educause*; 2011. Available from: https://www.ship.edu/globalassets/pcde/ecar_study_highlights.pdf.
 19. Conner JO. Youth organizers as young adults: Their commitments and contributions. *Journal of Research on Adolescence* 2011; 21(4): 923–942. doi: 10.1111/j.1532-7795.2011.00766.x.
 20. Dörnyei Z. *Motivation strategies in the language classroom*. Cambridge, England: Cambridge University Press; 2001.
 21. Zimmerman BJ, Kitsantas A. The hidden dimension of personal competence: Self-regulated learning and practice. In: Elliot A, Dweck CS (editors). *Handbook of competence and motivation*. New York: Guilford Press; 2005. p. 509–526.
 22. Matzat U, Vrieling EM. Self-regulated learning and social media—A ‘natural alliance’? Evidence on students’ self-regulation of learning, social media use, and student–teacher relationship. *Learning, Media and Technology* 2016; 41(1): 73–99. doi: 10.1080/17439884.2015.1064953.
 23. Zimmerman BJ. Attaining self-regulation: A social cognitive perspective. In: *Handbook of self-regulation*. Cambridge, MA: Academic Press; 2000. p. 13–39.
 24. Mahmoodi MH, Kalantari B, Ghaslani R. Self-regulated learning (SRL), motivation and language achievement of Iranian EFL learners. *Procedia-Social and Behavioral Sciences* 2014; 98: 1062–1068. doi: 10.1016/j.sbspro.2014.03.517.
 25. Winne PH, Hadwin AF. The weave of motivation and self-regulated learning. In: *Motivation and self-regulated learning: Theory, research, and applications*. Mahwah, New Jersey: Lawrence Erlbaum Associates; 2008. p. 297–314.
 26. Krejcie M, Morgan DW. Determining sample size of the research activities. *Educational and Psychological Measurement* 1970; 30(3): 607–610. doi: 10.1177/001316447003000308.
 27. Jansen RS, Van Leeuwen A, Janssen J, *et al.* Validation of the self-regulated online learning questionnaire. *Journal of Computing in Higher Education* 2017; 29(1): 6–27. doi: 10.1007/s12528-016-9125-x.
 28. Monachesi P, Mossel E, Posea V, *et al.* LTfLL-D6. 1: Social and informal learning support design [Internet]. The Netherlands: Open University of the Netherlands; 2008. Available from: https://www.academia.edu/30695297/LTfLL_D6_1_Social_and_informal_learning_support_design.
 29. Piaw CY. *Mastering research statistics*. New York, United States: McGraw Hill; 2013.
 30. Hair JF, Ringle CM, Sarstedt M. PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice* 2011; 19(2): 139–152. doi: 10.2753/MTP1069-6679190202.
 31. Ma R, Oxford RL. A diary study focusing on listening and speaking: The evolving interaction of learning styles and learning strategies in a motivated, advanced ESL learner. *System* 2014; 43: 101–113. doi: 10.1016/j.system.2013.12.010.
 32. Andrade MS, Evans NW. *Principles and practices for response in second language writing: Developing*

- self-regulated learners. Oxfordshire: Routledge; 2012.
33. Hashemyolia S, Asmuni A, Ayub AFM, *et al.* Motivation to use self-regulated learning strategies in learning management system amongst science and social science undergraduates. *Asian Social Science* 2015; 11(3): 49–56. doi: 10.5539/ass.v11n3p49.
 34. Seker M. The use of self-regulation strategies by foreign language learners and its role in language achievement. *Language Teaching Research* 2016; 20(5): 600–618. doi: 10.1177/1362168815578550.
 35. Dörnyei Z, Ushioda E. *Teaching and researching: Motivation*. 2nd ed. Harlow: Longman Pearson; 2011.
 36. Väljataga T, Pata K, Tammets K. Considering students' perspectives on personal and distributed learning environments in course design. In: *Web 2.0-Based E-Learning: Applying social informatics for tertiary teaching*. Hershey, Pennsylvania: IGI Global; 2011. p. 85–108.
 37. Dabbagh N, Kitsantas A. Personal learning environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning. *The Internet and Higher Education* 2012; 15(1): 3–8. doi: 10.1016/j.iheduc.2011.06.002.
 38. Varasteh H, Ghanizadeh A, Akbari O. The role of task value, effort-regulation, and ambiguity tolerance in predicting EFL learners' test anxiety, learning strategies, and language achievement. *Psychological Studies* 2016; 61(1): 2–12. doi: 10.1007/s12646-015-0351-5.
 39. Van't Klooster JWJR, Janssen M. Ervaringen met het gebruik van sociale media in het Voortgezet Onderwijs (Dutch) [Experiences of using social media in Secondary Education]. In: *Proceedings NIOC 2011*; 2011 Apr 7–8; Heerlen, Netherlands. Heerlen: Open Universiteit; 2011.
 40. Michikyan M, Dennis J, Subrahmanyam K. Can you guess who I am? Real, ideal, and false self-presentation on Facebook among emerging adults. *Emerging Adulthood* 2015; 3(1): 55–64. doi: 10.1177/2167696814532.
 41. Tariq W, Mehboob M, Khan MA, *et al.* The impact of social media and social networks on education and students of Pakistan. *International Journal of Computer Science Issues (IJCSI)* 2012; 9(4): 407–411.
 42. Junco R. Too much face and not enough books: The relationship between multiple indices of Facebook use and academic performance. *Computers in Human Behavior* 2012; 28: 187–198. doi: 10.1016/j.chb.2011.08.026.
 43. Junco R, Elavsky CM, Heiberger G. Putting twitter to the test: Assessing outcomes for student collaboration, engagement and success. *British Journal of Educational Technology* 2013; 44: 273–287. doi: 10.1111/j.1467-8535.2012.01284.x.
 44. Karpinski AC, Duberstein A. A description of Facebook use and academic performance among undergraduate and graduate students. San Diego: Annual Meeting of the American Educational Research Association; 2009. p. 5–10.
 45. Nalwa K, Anand AP. Internet addiction in students: A cause of concern. *Cyberpsychology & Behavior* 2003; 6(6): 653–656. doi: 10.1089/109493103322725441.
 46. Lopez-Morteo G, López G. Computer support for learning mathematics: A learning environment based on recreational learning objects. *Computers & Education* 2007; 48(4): 618–641. doi: 10.1016/j.compedu.2005.04.014.
 47. Perry NE, Winne PH. Learning from learning kits: gStudy traces of students' self-regulated engagements with computerized content. *Educational Psychology Review* 2006; 18(3): 211–228. doi: 10.1007/s10648-006-9014-3.