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RESEARCH ARTICLE

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Strategic Vocabulary Learning: Patterns, Preferences, and Implications

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Abstract: In Pakistan, English is used as a medium of instruction, an official administrative language and a key to academic knowledge network. Although the strategic behavior and second language vocabulary learning relationship has been a topic of interest for researchers, very few systematic empirical studies have profiled the use of Vocabulary Learning Strategies (VLS) with respect to learner variables in the Pakistani undergraduate context. In the present study, this gap is filled in by using a quantitative, correlational, cross sectional research method with a sample of 117 undergraduate ESL learners from four universities (2 public and 2 private) of Karachi. The 10-item version of the Vocabulary Learning Strategies Questionnaire (VLSQ) was administered in 3 subscales (Memory, Cognitive, Metacognitive), and a self-rated proficiency measure. Four research questions were addressed exploring VLS frequency, coherence of subscales, variation in proficiency level and gender and institutional differences in moderation. Results showed a uniform moderate level of VLS on all items ($M = 2.83$ – 3.60) with Cognitive strategies slightly higher and Metacognitive strategies slightly lower with the highest variability and lowest mean score. The overall VLS use was significantly predicted by proficiency level, $F(4, 112) = 2.72$, $p = .033$; with a theoretical decrement in the Cognitive-Metacognitive gap between proficiency levels, from 0.39 for Beginners to -0.05 for Advanced learners. However, the results showed that there was no difference between the two genders and item type, indicating that the instructional culture for exams is the same for the sample. Nearly 40% revealed global strategic disengagement through a tertile classification type of analysis. The results have direct implications for reform of the strategy-based vocabulary instruction in the universities of Pakistan.

Keywords: Vocabulary Learning Strategies, ESL, Pakistani Undergraduates, Metacognitive Strategies, Strategy User Profiles, Proficiency

Introduction

Vocabulary learning is one of the most important building blocks for the development of second language skills and the prerequisite for the other skills. If learners do not possess enough lexical knowledge, they are unable to access academic texts, to join in professional discourse, or to become communicatively competent in their target language (Ali & Zaki, 2019). In Pakistan, even though there are hundreds of higher education institutions, the English language impacts all of them because it is one of the main mediums of instruction, one of the main mediums of administration, and one of the main mediums to access global knowledge networks (Ali, 2018; Mankash et al., 2023). Pakistani university students have a large gap in their vocabulary knowledge (Ali & Siraj et al., 2024). Understanding and knowing about the methods of strategically mastering word knowledge and how it relates to word knowledge mastery is a pedagogical and theoretical concern.

In lexical research, Vocabulary Learning Strategies (VLS), are described as the deliberate cognitive and metacognitive processes associated with the learning, consolidation, and retrieval of lexis. In this research

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domain, Schmitt (1997) was one of the first to distinguish VLS along discovery- and consolidation-based lines. The VLS research domain was subsequently enriched by other researchers, some of whom explored the intricate connections between VLS, self-regulated learning, motivation, and technology-related settings, as well as the vocabulary learning outcomes of the learners under investigation (Chen et al., 2025; Li et al., 2024).

Research on strategy use and L2 vocabulary learning in SLA (Second Language Acquisition) is extensive (Ali & Zaki, 2019). In Pakistani ESL research (Mankash et al., 2023; Majeed et al., 2024; Jamil et al., 2025; Younas, et al., 2025), this relationship has yet to be fully explored (Ali & Masroor, et al., 2024; Ali & Siraj, et al., 2024). Some South Asian Learner studies suggest that learners have a limited range of strategies and rarely undertake metacognitive and metalinguistic activities when learning vocabulary (Dubravac et al., 2024; Li & Wang, 2024; Chen, et al., 2025; Wang et al., 2025). This strategic shallowness has been attributed to an exam-focused instructional culture and a lack of formal strategy training, combined with many years of English study and a large gap between English studied and English used for real-world, communicative and academic purposes (Ali, 2018; Ali & Ali, 2026).

Recent research has shown metacognitive strategy use to be a major factor in vocabulary success. Even when the data were statistically controlled for general L2 language proficiency, Teng and Mizumoto (2024) concluded that metacognitive knowledge played an important role in incidental vocabulary acquisition from reading. The results obtained are consistent with the findings of Septiani et al. (2024), who showed that students who used comprehension monitoring and strategic planning obtained better lexical retention. Despite this evidence, the application of metacognitive vocabulary strategies is not consistent in Pakistani higher education in terms of explicit instruction to learners about planning or monitoring vocabulary learning (Ali & Zaki, 2019; Mankash et al., 2023).

The relationship between strategy use and vocabulary proficiency is mediated by self-regulation (Chung & Wan, 2025; Li & Wang, 2024). Chen et al. (2025) have pointed out that the field has turned its focus toward measuring the achievement impact of strategy-based learning and the self-regulated learning process, calling for research that quantifies the relationship between strategy deployment and vocabulary attainment. This study addresses the call for further research by posing four associated research questions: (RQ1) How do Pakistani undergraduate students typically use VLS? (RQ2) What is the internal structure and cohesion of the subscales of VLS? (RQ3) How is VLS utilized at different levels of self-reported English proficiency? (RQ4) Do gender and type of institution influence VLS use? The results provide empirical evidence for research on strategies and vocabulary assessment in the context of ESL in South Asia and provide a basis for vocabulary teaching strategies at Pakistani universities (Mankash et al., 2023; Younas et al., 2025).

Literature Review

Since Schmitt's (1997) distinction of discovery and consolidation strategies, VLS has gained considerably more complexity and now includes self, motivational, and technological components. The content and bibliometric analysis conducted by Chen et al. (2025) on strategy instruction literature (1994-2024) shows how the literature expanded in scope from the description of strategy preference to a measurement of the outcome of strategy use, and the relation of strategy frequency and context to other variables. The current review addresses the following 4 related areas: theoretical frameworks and models of SVL, empirical studies of VLS and vocabulary proficiency in the L2 setting, empirical studies of VLS and vocabulary proficiency in L2 settings which include Pakistani and South Asian populations (2024-2026), and the limitations and challenges of vocabulary learning strategies (VLS) research. This literature review focuses specifically on studies from 2024-2026.

One of the most important theoretical advances has been the incorporation of self-regulation into the VLS frameworks. In their study on Chinese as a second language learners, Chen et al., (2025) and Chung and Wan (2025) found that self-regulation had direct and indirect effects on vocabulary proficiency, which occurred through strategic behavior. Li et al. (2024) expanded upon this model, showing that motivational

beliefs (self-efficacy and intrinsic goal orientation) partially mediated the relationship between self-regulation and vocabulary proficiency, and that gender moderated the mediation. The results indicate that VLS is not a discrete set of behaviours, but is situated within a wider field of cognitive and motivational processes of learners.

The use of metacognitive strategies has been the focus of more and more theories and studies. Teng and Mizumoto (2024) have confirmed the validity of a domain-specific metacognitive knowledge measure and revealed that metacognitive awareness was a significant predictor of incidental vocabulary acquisition from reading. In an EFL undergraduate context, Septiani et al. (2024) confirmed this finding by concluding that the EFL learners who used comprehension monitoring and strategic planning showed more and longer retention of vocabulary than the others who used less reflective strategies.

Empirical evidence shows that ESL learners from the Global South have major gaps in the frequency bands needed to understand academic texts independently (Wang et al. 2024; Chen & Wang, 2025). Dubravac et al. (2024) indicated that while under-resourced learners performed well on the 2,000 most frequent word families, they lacked structural advantage and were structurally disadvantaged in academic reading due to their lack of knowledge at the AWL, 3,000-word, and 5,000-word levels. In Pakistan, Ali and Masroor et al. (2024) also found that BS English students in Pakistani universities had low strategic diversity, where they showed basic levels of consolidation of vocabulary learning behaviors even with higher-order demands in their academic work.

These relationships suggest that VLS (Vocabulary Learning Strategies) has a positive effect on vocabulary learning during this period. Wang et al. (2024) argued that the use of self-regulated strategies was a better predictor of vocabulary learning than general strategy use. Li et al. (2024) argued that the use of cognitively demanding strategies led to gains in vocabulary learning, but that the use of strategies was moderated by motivational beliefs. Finally, out of the strategies studied, technology-facilitated strategy use yielded the best results. Teymouri (2024) found that digital vocabulary flashcards combined with spaced repetition and gamification enhanced vocabulary learning.

Technology-oriented and mobile-assisted learning supports strategic vocabulary engagement and activities that promote learner autonomy (Ali & Siraj et al., Jia et al., 2024; Martina & Afifi, 2024; Nugrono & Sulaiman, 2024; Teymouri, 2024; Zhang & Huang, 2024). Zhang and Huang (2024) suggest that in the case of chatbots, interactivity is the main mechanism for vocabulary acquisition. Also, Zeng et al. (2025) suggest that, within the context of technological tools and learning strategies, the teaching of learning strategies has the most positive impact of all tools on vocabulary learning.

A main limitation in the 2024-2026 literature is almost exclusively relying on self-report tools to determine the frequency and type of VLS used. As Chen et al. (2025) suggest, self-report tools are prone to socially desirable responses and can also be misaligned with strategy knowledge and execution. Future studies ought to include vocabulary learning diaries, think-alouds, and mobile-assisted learning logs, along with the surveys completed by the participants.

Methodology

The present study uses a quantitative, correlational, cross-sectional design to examine the relationship between the use of VLS and the patterns of vocabulary learning among undergraduate ESL learners in Pakistan. The present study adopted a correlational design to explore the relationship between variables in an exploratory way, without manipulation of independent variables. The cross-sectional approach is also appropriate for survey research in applied linguistics (Chung & Wan, 2025).

This study was carried out in four universities of Karachi (two public and two private), among which students were pursuing undergraduate courses in the social sciences, humanities, and education faculties in English medium programmes. The selection of Karachi was made because it has a diverse set of institutions

with respect to instructional resources and socioeconomic backgrounds of students, thus increasing the representativeness of results in the Pakistani context of undergraduate education in an urban setting (Mankash et al., 2023; Ali & Siraj et al., 2024). The students included were from the first to fourth semesters of the study, representing the shift from secondary to university academic English requirements.

Purposive stratified random sampling was used, and there was proportional representation in terms of gender and type of institution. The original target sample size (N = 200) was determined using a medium effect (r = .30) correlational study power analysis (alpha = .05, power = .80). There were some questionnaires that were not returned (N = 117) due to institutional access and incomplete questionnaires. The smaller sample size does not compromise the power of the primary analyses, but smaller cells at the proficiency level do, and this is noted throughout the discussion.

The primary tool employed was the Vocabulary Learning Strategies Questionnaire (VLSQ), a 35-item, self-report tool developed by Schmitt (1997). For the current study, ten items were selected to represent the three subscales: Memory Strategies (6 items), Cognitive Strategies (2 items), and Metacognitive Strategies (2 items). Each item was placed on a five-point Likert scale (1 = Never to 5 = Always). The VLSQ has shown good psychometric properties in similar English as a Second Language (ESL) contexts in South Asia and Pakistan (Mankash et Al. 2023). Based on the absence of a reliable benchmark vocabulary test, self-reported English proficiency levels of Beginner to Advanced were the criteria used to evaluate the degree of competence. All participants provided written informed consent, and participation was voluntary, confidential, and had no effect on academic standing.

Results

The results are presented in response to four research questions to provide a complete description of VLS use by Pakistani ESL learners at the undergraduate level. In total, 117 undergraduate ESL learners participated, of which 82 (70.1%) were female, and 35 (29.9%) were male. Sixty-four percent of the participants attended private institutions, and the remaining 35.9% of the participants were at public universities. The mean age of the participants was 24.1 years (SD = 6.60, range 14–49). Out of the 117 participants, age was reported by 107 (91.5%), of which 18-21 years (n = 35, 29.9% of total participants), 22-24 years (n = 44, 37.6%), and 25+ years (n = 28, 23.9%) were reported. English proficiency level, as self-reported by participants, was: Beginner (n = 9, 7.7%), Elementary (n = 10, 8.5%), Intermediate (n = 40, 35.9%), Upper Intermediate (n = 36, 30.8%), and Advanced (n = 18, 17.1%). Further information is presented in Table 1.

Table 1
Participant Demographic Characteristics (N = 117)

Variable	Category	n (%)
Gender	Female	82 (70.1%)
	Male	35 (29.9%)
University Type	Private	75 (64.1%)
	Public	42 (35.9%)
Age Group	18–21 years	35 (29.9%)
	22–24 years	44 (37.6%)
	25 years and above	28 (23.9%)
	Not reported	10 (8.5%)
Self-rated Proficiency	Beginner	9 (7.7%)
	Elementary	10 (8.5%)
	Intermediate	42 (35.9%)
	Upper-Intermediate	36 (30.8%)
	Advanced	20 (17.1%)
Total	—	117

Note. Age data missing for n = 10 participants (8.5%). All participants completed English-medium secondary education (Matric/O-Level).

Research Question 1: Overall Frequency and Pattern of VLS Use

Item-level descriptive statistics for all ten VLSQ items are presented in Table 2. All items fell in the moderate use range ($M = 2.83$ to 3.60) with no item reaching the Often/Always threshold ($M \geq 4.00$) or the Never/Rarely range ($M < 2.00$). In the moderate and uneven use of VLS reported by Mankash et al. (2023) and Ali and Masroor et al. (2024) for Pakistani ESL undergraduates, this shows that to some degree, the strategies reported were employed situationally, as opposed to being used as habits. Moreover, seven of the ten items had negative skewness, showing a bias toward use, while Spaced Review was skewed exactly 0.00, which, of course, reflects a truly equal distribution of use, with 29.1 percent reporting spaced review as an Always/Often strategy, and 33.3 percent reporting it as a Never/Rarely used strategy.

Cognitive strategies were the most utilized, with a mean score of 3.21 ($SD = 0.91$, 95% CI [3.05, 3.38]). Participants' mean scores were Memory strategies at 3.10 ($SD = 0.69$, 95% CI [2.98, 3.22]) and Metacognitive strategies at 3.00 ($SD = 0.99$, 95% CI [2.83, 3.18]). The overall VLS composite mean was 3.10 ($SD = 0.65$) with Cronbach's $\alpha = .752$. Subscale-level reliabilities were Memory: $\alpha = .636$, Metacognitive: $\alpha = .523$, Cognitive: $\alpha = .403$, and reflect limited item counts per subscale rather than item incoherence. The very low alpha for the Cognitive subscale is attributed to a 0.77-point gap between Sentence Practice ($M = 3.60$) and Write Repeatedly ($M = 2.83$). Given the dichotomy in these two items, generative production and rote memorization, respectively, the data indicate learners have decided between the two. Therefore, the Cognitive subscale composite should not be interpreted as a unified construct.

When analyzing within-person strategy dominance, participants were classified into one of three categories: Memory-dominant ($n = 50$, 42.7%), Cognitive-dominant ($n = 46$, 39.3%), or Metacognitive-dominant ($n = 21$, 17.9%). Participants in this study ($n = 23$, 19.7%) had dominant subscales that were tied and hence were classified as a single category. The within-person Cognitive–Metacognitive gap was $M = 0.21$ ($SD = 0.93$), with 43% of participants Cognitively dominant, 28% Metacognitively dominant, and 29% having approximate balance. Group-level means alone would not capture this distributional difference.

Table 2
Item-level Descriptive Statistics for the VLSQ Ranked by Mean Frequency ($N = 117$)

Rank	VLS Item	Category	M	SD	Often/ Always (%)	Never/ Rarely (%)	Skew
1	Sentence Practice	Cognitive	3.60	1.02	54.7	14.5	−0.27
2	Mental Imagery	Memory	3.21	1.13	43.6	24.8	−0.34
3	Word Association	Memory	3.15	0.89	32.5	19.7	−0.08
3	Grouping by Topic	Memory	3.15	1.13	41.0	29.9	−0.13
5	Physical Actions	Memory	3.14	1.25	40.2	29.9	−0.16
6	Word Parts (Morphology)	Metacognitive	3.09	1.25	37.6	27.4	−0.21
7	Keyword Technique	Memory	3.03	1.14	29.1	32.5	0.22
8	Spaced Review	Metacognitive	2.91	1.15	29.1	33.3	0.00
8	Rhymes/Rhythm	Memory	2.91	1.32	35.9	41.0	0.07
10	Write Repeatedly	Cognitive	2.83	1.28	30.8	41.0	0.12
	Memory (6-item subscale)	Memory	3.10	0.69	—	—	—
	Cognitive (2-item subscale)	Cognitive	3.21	0.91	—	—	—
	Metacognitive (2-item subscale)	Metacognitive	3.00	0.99	—	—	—
	Overall VLS (10-item composite)	All	3.10	0.65	—	—	—

Note. VLS items rated on a 5-point Likert scale (1 = Never, 5 = Always). Often/Always = proportion selecting 4 or 5. Never/Rarely = proportion selecting 1 or 2. Skew = Pearson skewness coefficient; negative values indicate left skew. Subscale categories follow Schmitt's (1997) taxonomy.

Research Question 2: Internal Structure and Coherence of VLS Subscales

Table 3 contains the subscale intercorrelation matrix along with descriptive stats and reliability data. All three subscale pairs correlated in a significant positive way ($ps < .001$). This suggests a single cohesive family of orientations rather than independent categories of behaviors. The highest correlation was between Cognitive and Metacognitive strategies ($r = .519$). Many research studies support the position that production-based vocabulary activities are related to self-regulatory planning and monitoring. The lowest correlation was found between the Memory and Metacognitive strategies ($r = .401$). This may suggest that the habitual use of some mnemonic techniques is separate from self-regulatory metacognitive control, a separation that is relevant to instructional design. This is due to learners with an extensive repertoire of mnemonic techniques having no control to evaluate the effectiveness of these techniques (Septiani et al., 2024; Teng & Mizumoto, 2024).

The highest correlations across items in the dataset were found to be between items that crossed subscale groupings. This may demonstrate that behavioral groupings may cross divisional boundaries. The strongest item correlation was found between Physical Actions and the Keyword Technique ($r = .433$). Both involve either Engagement or Phonological Encoding. The second highest correlation was found between Write Repeatedly and Spaced Review ($r = .425$). Here, the groupings may involve regular and controlled repetition of spaced techniques. These groupings suggest that empirically formed strategy groupings in Pakistan should take precedence over theoretical frameworks.

Table 3
VLS Subscale Intercorrelation Matrix with Descriptive Statistics and Reliability Estimates ($N = 117$)

Subscale	1. Memory	2. Cognitive	3. Metacognitive	4. Overall VLS
1. Memory	—			
2. Cognitive	.487**	—		
3. Metacognitive	.401**	.519**	—	
4. Overall VLS	.897**	.751**	.708**	—
M	3.10	3.21	3.00	3.10
SD	0.69	0.91	0.99	0.65
Cronbach's α	.636	.403	.523	.752
95% CI	[2.98, 3.22]	[3.05, 3.38]	[2.83, 3.18]	[2.99, 3.22]

Note. All intercorrelations significant at ** $p < .001$ **. 95% CI for subscale means. α = Cronbach's alpha. Low alpha for the Cognitive subscale reflects its two-item structure rather than item incoherence.

Research Question 3: VLS Use Across Self-rated Proficiency Levels

Table 4 displays the mean VLS subscale metrics for each proficiency level with ANOVA results. Until more data is available, participants appeared to use VLS differentiators at various proficiency levels, $F(4,112) = 2.72$, $p = .033$. Based on Bonferroni-adjusted pairwise comparisons, the advanced group ($M = 3.43$, $SD = 0.68$) strategy mean was greater than the beginner group ($M = 2.77$, $SD = 0.78$), $p = 0.029$. At the subscale level, we could not identify a significant ANOVA (Memory $p = .093$; Cognitive $p = .381$; Metacognitive $p = .077$). Still, the mean subscale profiles reflect an important pattern: There was a decline in the Cognitive–Metacognitive gap from beginner (0.39) to advanced (-0.05), with an intermediate (0.29) level pattern of slight increase. In the advanced group, 45.0% of the members used metacognitive strategies and surpassed cognitive strategies. This was in contrast to 22.2% and 23.8% of the beginner and intermediate groups. This correlates with Septiani et al. (2024), who claim that the use of comprehension monitoring and strategic planning enhances lexical retention.

Table 4

VLS Subscale Means by Self-rated Proficiency Level with Cognitive–Metacognitive Gap and One-way ANOVA Results (N = 117)

Proficiency Level	n	Memory M (SD)	Cognitive M (SD)	Metacognitive M (SD)	Overall VLS M (SD)	Cog – Meta Gap
Beginner	9	2.81 (0.60)	2.89 (0.85)	2.50 (0.85)	2.77 (0.78)	0.39
Elementary	10	2.92 (0.73)	2.95 (0.82)	2.70 (0.90)	2.88 (0.76)	0.25
Intermediate	42	3.15 (0.67)	3.33 (0.83)	3.05 (0.96)	3.17 (0.56)	0.29
Upper-Intermediate	36	2.98 (0.64)	3.11 (0.89)	2.90 (1.00)	2.99 (0.59)	0.21
Advanced	20	3.42 (0.68)	3.42 (0.90)	3.48 (1.00)	3.43 (0.68)	–0.05
F(4, 112)	—	2.04	1.06	2.17	2.72*	—
p	—	.093	.381	.077	.033	—

Note. M = subscale mean on 5-point Likert scale. SD in parentheses. Cognitive–Metacognitive Gap = Cognitive minus Metacognitive subscale mean; negative values indicate Metacognitive > Cognitive. *p < .05. Bonferroni-corrected pairwise: Advanced > Beginner (p = .029).

Research Question 4: Gender, Institutional Type, and Strategy User Profiles

4a. Gender Differences

Results of independent samples t-tests for VLS subscales by gender are shown in Table 5. Gender was found to have negligible effects for all subscales and the composite score (all ps > .15; Cohen's d ≤ .29). No statistically significant results provided evidence for differences in the use of VLS. The only borderline trend found was a higher score for females for Keyword Technique (M = 3.16) compared to males (M = 2.74), $t(115) = 1.83$, $p = .070$, $d = .37$. This finding is in the same direction as Martina and Afifi (2024) and therefore the gender-differentiated findings, however, are unable to be confirmed at this time.

Table 5

Gender Differences in VLS Subscale Scores: Independent Samples t-test Results (N = 117)

VLS Subscale	Female M (SD) n=82	Male M (SD) n=35	t(115)	p	95% CI	d
Memory	3.12 (0.60)	3.06 (0.86)	0.39	.699	[–0.26, 0.39]	.08
Cognitive	3.29 (0.89)	3.03 (0.95)	1.44	.153	[–0.10, 0.62]	.29
Metacognitive	2.97 (0.95)	3.09 (1.08)	–0.58	.562	[–0.53, 0.29]	–.12
Overall VLS	3.12 (0.58)	3.06 (0.79)	0.47	.637	[–0.20, 0.33]	.10

Note. Female n = 82; Male n = 35. Cohen's d computed using the pooled-variance formula. No comparisons reached $p < .05$.

4b. Institutional Type Differences

Comparing private (n = 75) and public (n = 42) university students did not show any notable differences on any subscale or the overall scale (all ps > .59). Mean VLS were nearly identical for both groups: private (M = 3.10, SD = 0.63) and public (M = 3.10, SD = 0.68), $t(115) = -0.02$, $p = .987$. This suggests that exam-focused instructional culture is the same across Karachi-based universities, as described by Mankash et al (2023). This exam-focused culture was seen in the Memory (private (M = 3.11) vs public (M = 3.08)), Cognitive (3.18 vs 3.27), and Metacognitive (2.99 vs 3.02) subscales as well.

4c. Strategy User Profiles

The low strategies (VLS ≤ 2.90; n = 46), moderate strategies (2.91–3.30; n = 33), and high strategies (VLS > 3.30; n = 38) were the three types of strategy users. Very significant differences were observed for all subscales (all ps < .001). Uniformly low and undifferentiated subscales were shown by the low strategists (Memory M = 2.53, Cognitive M = 2.58, Metacognitive M = 2.38), indicating global strategic disengagement rather than avoidance of specific strategies. Less than one tenth rated themselves as advanced. High

strategists ($M = 2.58$, $M = 2.58$, $M = 2.69$) scored near the often range, and 28.9% rated themselves as advanced, which indicates that balance in the use of various strategies is associated with advanced strategies. The full profile results are in Table 6.

Table 6
VLS Subscale Profiles of Low, Moderate, and High Strategy User Groups with ANOVA Results (N = 117)

Profile	n	Memory M (SD)	Cognitive M (SD)	Metacognitive M (SD)	Overall VLS M (SD)	% Advanced
Low Strategists (VLS ≤ 2.90)	46	2.53 (0.51)	2.58 (0.70)	2.38 (0.82)	2.62 (0.22)	4.3%
Moderate Strategists (2.91–3.30)	33	3.10 (0.31)	3.30 (0.68)	3.02 (0.82)	3.14 (0.11)	21.2%
High Strategists (VLS > 3.30)	38	3.79 (0.44)	3.91 (0.78)	3.75 (0.76)	3.82 (0.28)	28.9%
F(2, 114)	—	85.12**	35.78**	30.19**	145.46**	—

Note. Profile classification based on tertile splits of Overall VLS composite: Low ≤ 2.90, Moderate 2.91–3.30, High > 3.30. % Advanced = percentage of each group self-rating as Advanced proficiency. ** $p < .001$ for all subscale ANOVAs across profiles.

Discussion

The aim of this study is to build an empirical reference point for the use of VLS amongst Pakistani undergraduate ESL learners across four dimensions. Overall, the findings suggest the learner group studied does not fall into a strategically disadvantaged or a well-resourced position and is therefore moderately balanced, as described by Mankash et al. (2023) and Ali and Masroor et al. (2024).

The general tendency of all VLSQ items to fall between Sometimes and Often, with no items reaching either the lower or upper extremes, is indicative of a moderate level of strategic engagement of a pragmatic nature, and is best described as a case of moderate, but not extreme, strategic commitment or avoidance. This finding is in line with what Mankash et al. (2023) describe as Pakistani university students being somewhat strategy-aware, but more inclined to use surface-level strategies, as opposed to a wide range of strategies.

The elevated importance placed on Sentence Practice ($M = 3.60$; 54.7% Often/Always) is theoretical. Among the vocabulary learning strategies, Sentence Practice is identified as a generative processing strategy that requires the creation of lexical units. This strategy has been documented as one of the most complex strategies in the vocabulary learning strategies literature that results in high retention (Zeng et al., 2025). This finding indicates that Pakistani undergraduates within the sample have voluntarily or involuntarily focused on a more effective consolidation strategy. The co-resident Cognitive subscale item Write Repeatedly has the lowest mean in the dataset ($M = 2.83$). This resulted in a within-subscale gap of 0.77, thereby inhibiting the Cognitive subscale from being construed as a single unified construct. The two items represent qualitatively different processes, and the data clearly differentiates between the two. Ali and Masroor et al. (2024) note that in Pakistani universities, BS English students are noted to selectively focus on lexical engagement. From the results of this study, this selective focus is noted to be present in formally consolidated subscale categories.

Item variability within the Memory subscale indicates a mean of moderate strength ($M = 3.10$). The least correlated items ($r_s = .500$ and $.485$, respectively) were the strategies Mental Imagery and Word Association, respectively, which were used more than any other memory strategies. Yet, based on the coherence of the subscale, the least used strategies were Physical Actions ($r = .662$) and Keyword Technique ($r = .647$).

The results of performance on Metacognitive strategies ($M = 3.00$, $SD = 0.99$) were the most significant in terms of teaching and learning. The scoring of Metacognitive strategies was the lowest (mean) and the highest (SD) of the three subscales. Ali and Masroor et al. (2024) and Mankash et al. (2023) also indicated that planning, monitoring, and evaluating strategies used in learning vocabulary are the main factors in whether Pakistani ESL undergraduates are able to integrate newly learned vocabulary.

The most interesting case amongst the survey items is the Spaced Review item. The responses show that the item has perfect skewness of 0.00 and has an uneven (bimodal) distribution, with 33.3% of participants reporting Never/Rarely use and 29.1% reporting Often/Always use. The implication is that fostering awareness of spaced repetition will produce differential results: one-third of the sample is likely to be using the technique, while another third does not have the necessary tools, time, and organizational skills, and may not have the support of the required technology that would facilitate spaced repetition practices. As documented by Teymouri (2024), technology-based systems that use digital flashcards and spaced repetition are such facilitators.

Overall, an ANOVA shows a significant result for the self-rating of proficiency on VLS use ($F(4,112) = 2.72$, $p = .033$). It shows that higher self-rated proficiency correlated with a greater use of strategies. This finding is in line with Ali and Masroor et al. (2024), who indicated that Pakistani BS English students remained in the basic consolidation strategy level, despite the advanced level of some of their academic demands. In general, a decrease in the Cognitive-Metacognitive gap was found across the proficiency groups. An important indicator was the shift in the Advanced group, from 45% of the participants who were metacognitively dominant to a negative value, which shows a qualitative shift in the strategy used and is in line with Septiani et al. (2024), who found a relationship between lexical retention and the control of comprehension monitoring and strategic planning.

Contrary to the international literature, which shows a greater use of language learning strategies by females (Martina & Afifi, 2024), no gender differences were found in the use of VLS in the present study. In an instructional setting where the main focus is preparing learners for an exam, participants in this study showed strategies that, while less differentiated than females, are nonetheless gender-based. The only significant gender difference ($d = .37$, $p = .070$), where females scored higher on Keyword Technique, was in the expected direction of the female students in the English as a foreign language (EFL) context, with a preference for elaboration (Martina & Afifi, 2024) and lexis.

The p-value for VLS use between private and public institutions is .987. This represents a practically significant finding. It indicates that in Karachi, exam-focused instructional culture exists within both private and public institutions. VLS intervention programs do not need to be tailored for private and public institutions separately since neither institutional type shows meaningful additional support for learning strategic vocabulary.

The tertile-based typology produces the most actionable finding in the study. Nearly 40% of the sample were classified as Low Strategists, characterised by globally suppressed and undifferentiated strategy use (Metacognitive $M = 2.38$) and very limited representation among Advanced-proficiency learners (4.3%). This group does not avoid particular categories of strategies but shows overall strategic disengagement, suggesting that the prerequisite for effective strategy-based instruction, a strategic learning orientation, has not yet developed. As noted by Mankash et al. (2023) and Ali & Masroor et al. (2024), many Pakistani undergraduates do not have the metacognitive disposition to self-regard vocabulary learning as an active process. In this case, Jamil et al.'s (2025) mobile-assisted learning framework shows appropriateness, as mobile technologies develop both learner autonomy and strategic behavior.

The Moderate Strategist profile (28.2% of the sample) mirrors the overall sample's Cognitive > Memory > Metacognitive hierarchy. This group requires planning instruction and practice with morphological

analysis, and is better facilitated through assessment tasks that prioritize and reward long-term retention, in contrast to short-term recall (Zeng et al., 2025; Simonnet et al., 2025). The High Strategist profile displays almost equal scores across the three subscales and has an overrepresentation of Advanced learners (28.9%). This strengthens the study's principle that balance of strategic proficiency and competence develop together, despite the lack of evidence of cause and effect in the current study's cross-sectional design.

Limitations and Future Directions

Restrictions that come with the small sample size ($N = 117$) versus the target sample ($N = 200$) decrease statistical power. Due to this restriction, the survey focuses more on the smaller, less populated proficiency-level cells. The 10-item VLSQ used in this study lacks items for the Determination and Social Strategy types of Schmitt's (1997) complete taxonomy. It is likely that future studies will use the complete taxonomy. The Cognitive scale consists of two items ($\alpha = .403$). The caveat in interpreting the subscale is the lack of item equivalence. Perhaps more important is the restraint on using self-rated proficiency as the proficiency variable, which prohibits a wide range of interpretations when considering strategies and their contribution to achievement. It is recommended that future studies incorporate standardized assessments of vocabulary level, such as the Vocabulary Levels Test (Schmitt et al., 2001), in tandem with VLS instruments. In addition, there is the social desirability bias and the problem of inaccurate recall in self-report VLS instruments (Chen et al., 2025). Novel methods such as behavioral supplements, think-alouds, and logging (Jamil et al., 2025) should be employed to collect more valid data on actual strategy deployment.

Due to the absence of longitudinal research, the cross-sectional design also provides no rationale for causality regarding the relationship between proficiency and VLS use. The question of whether advanced proficiency leads to more strategic breadth or higher levels of strategic depth and vice versa remains unanswered. Longitudinal designs should be employed to resolve the question, as recommended by Chen et al. (2025). A greater degree of English-medium secondary schooling in the urban sample of Karachi constrains generalizability. National sampling should be conducted across provinces to improve generalizability of research.

Conclusion

This study offers an empirical profile of VLS utilization of Pakistani undergraduate ESL learners. The profile answers four research questions using a quantitative, cross-sectional analysis. The main findings are significant and synergistic. This population of learners used sentence practice as a cognitive strategy and, as a result, underserved spaced review as a metacognitive strategy. The approach to strategic activities became more diverse as the level of proficiency became more comprehensive. Advanced learners displayed a type of metacognitive balance that is not observable to learners who are at a lower level of proficiency. The results showed similar trends for gender and institution types. Based on the findings of exam-oriented teaching within the sample schools, there is likely a uniform culture. A tertile-based typology identified almost 40% of the sample as Low Strategists. The most important finding for the purposes of instruction is that learners in this group needed a strategic orientation in order to make use of instruction that is based on strategies. The results have direct implications for the reform of strategy-based vocabulary instruction in universities in Pakistan. They highlight the need to reconsider existing instructional approaches and strengthen the integration of effective vocabulary learning strategies within university-level English language teaching. Such reforms may contribute to improving students' vocabulary development and their ability to use vocabulary learning strategies more independently and effectively.

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