Grammar Learning Strategies across Individual Differences and Their Relationship with Grammar Mastery

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Abstract

As studies investigating the role of individual differences in influencing the use of grammar learning strategies were hardly found, the present study was carried out. The purposes of the study were three-fold: (1) to identify a postteriori classification of grammar learning strategies, (2) to investigate how individual differences correlate with grammar learning strategy use, and (3) to figure out the interrelationship among the identified grammar learning strategy categories as well as their correlation with grammar mastery. As such, a correlation research design was employed with 280 English education department students from five universities in East Java, Indonesia as the subjects of the study. They were asked to complete a set of questionnaires to measure their grammar learning strategies, language aptitude,

personality traits, and attitude and motivation in learning English. In addition, a test of grammar was employed to measure their grammar mastery. A factor analysis applied to discern the types of grammar learning strategies resulted in the presence of six factors including directive cognitive strategies, social cognitive strategies, social affective strategies, directive metacognitive strategies, reflective metacognitive strategies, and social metacognitive strategies. Though it was found that the use of these six categories of grammar learning strategies was correlated to one another and that their use was correlated significantly with grammar mastery, only attitudinal and motivational attributes were found to associate with grammar learning strategy use, while language aptitude and personality were not. Implications of these findings were then discussed.

Introduction

Research in the area of second/foreign language learning strategies was initiated by studies on the secret of success of good language learners, resulting in the identification of strategies of good language learners (Naiman, Fröhlich, Stern & Todesco, 1978; Rubin 1975; Stern, 1975). Further studies investigated the strategies of not only good language learners, but also less effective language learners. These studies produced classifications of learning strategies under certain categories, including cognitive, metacognitive, and socio-affective strategies (O'Malley & Chamot, 1990) and memory, cognitive, compensation, metacognitive, affective, and social strategies (Oxford, 1990). Once theoretically and empirically valid classifications of learning strategies were obtained, studies in this field of research began to mushroom, leading Skehan (1991) to characterize the period as one of an explosion activity.

In fact, in terms of the research focus, studies that dealt with language learning strategies may be classified into three general categories. The first are descriptive studies that investigate the use of learning strategies by certain groups of learners. Within this category are studies by Oxford and Ehrman (1995) in the United States, Lengkanawati (1997) and Kosasih (2019) in Indonesia, Lunt (2000) in Australia, and Wharton (2000) in Singapore, all of which reported that the learners were moderate users of learning strategies. In the case of reading strategies, Pascual (2019) reported that prospective ESL teachers in the Philippines used global strategies, problem-solving strategies, and support strategies in reading at a high level. Meanwhile, in a study carried out among Malaysian ESL learners, Supian and Asraf (2019)

reported the presence of three categories of vocabulary learning strategies, including dictionary use, memory rehearsal, and activation strategies.

The second are studies that consider learning strategy as a predictor of other variables such as proficiency, learning achievement, or learning rate. This group of studies employ either correlation design or experimental design. Unfortunately, studies with correlation design resulted in inconclusive findings. Some of the studies brought about significant correlation between the use of learning strategies and English proficiency as reported by Dreyer and Oxford (1996) among African learners, Park (1997) among Korean learners, and Mistar (2001) among Indonesian learners. Other studies, on the contrary, reported that the two variables were not correlated significantly (Lengkanawati, 1997; Oxford & Ehrman, 1995). A more surprising finding was even obtained by Gardner, Tremblay, and Masgoret (1997) who reported that the relationship between learning strategies and learning achievement was significantly negative. Studies with experimental designs, furthermore, suggest that students who receive instructional training in the use learning strategies learn more successfully than those who do not. Within this subcategory are studies by Thomson and Rubin (1996) who studied video comprehension, Song (1998) in reading skill instruction, and Mistar, Zuhairi, Parlindungan (2014) in writing skill instruction.

The third category are studies that treated learning strategies as criterion variables. In this category Oxford and Nyikos (1989) and Mistar (2001) reported that learning motivation was the single most powerful predictor of the use of language learning strategies. Other variables that have also been found to affect the use of learning strategies include cultural background (LoCastro, 1994; Politzer & McGroarty, 1985), target language setting either a foreign language or a second language (Green & Oxford, 1995; Wharton, 2000), learners' learning stage (Huda, 1998), gender (Kaylani, 1996; Mistar & Umamah, 2014), and language aptitude (Oxford & Ehrman, 1995), personality (Ehrman & Oxford, 1990). These studies agree with what Gillette (1987) claimed that learning strategies are symptoms of individual predispositions, which may be motivational, socio-cultural, or cognitive in nature.

Despite the fact that greater attention has been given to the study of foreign language learning strategies in general and of learning foreign language skills in particular since 1990s, studies of how the learners approach their task of learning the grammar of a foreign language have not been carried out much until recently. Pawlak (2009) describes that research of grammar learning strategies is still in its 'budding stage' (p. 45) since not much research has identified their categories as well as their effectiveness. Oxford, Lee and Park (2007) identified grammar learning strategies in relation with the learners' learning mode preferences. Two of

the reported strategies used by the students with explicit-inductive learning preference are *writing down structures on note cards to be thought of how they work* and *trying to apply a grammar rule in a meaningful context soon after it is discovered. Previewing the lesson to identify the key structures* and *paying attention to the rule that the teacher or the book provides* are two examples of strategies used by students with explicit-deductive learning orientation. Meanwhile, learners with meaning orientation reported using such strategies as *noticing structures that cause problems with meaning or communication* and *noticing structures that are repeated often in the text*.

Briewin, Naidu and Embi (2013) identified five most preferred strategies of learning grammar by students coming from China, Mongolia, Yemen, and Cambodia, including (1) using five senses to differentiate abstract and concrete nouns, (2) learning propositions through pictures, (3) writing or speaking out adjectives in the correct order using adjective chart, (4) underlining adverbs according to its usage in a passage, and (5) using formula to memorize conjunction. Chen (2016) proposed a better classification of grammar learning strategies into cognitive strategies such as *remembering grammar by generating recalled images* and *generalizing grammar rules*, metacognitive strategies such as *making plans for learning grammar* and *checking the outcomes of learning grammar*, affective strategies such as *having an active state of mind in grammar learning* and *having a feeling of assurance in grammar learning*, and social strategies such as *applying the learned rules in communication* and *exchanging feedback in a language activities*. Then, Abri, Seyabi, Humaidi and Hasan (2017) studied the intensity of use of metacognitive, cognitive, and socio-affective strategies of learning grammar by Omani EFL learners and they concluded that the three categories of grammar learning strategies are employed considerably with metacognitive strategies being used the most intensively. Less intensive use of cognitive, metacognitive, and social/affective strategies of grammar learning was found among students of English as a foreign language in China (Zhou, 2017). Furthermore, Hashim, Yunus and Hashim (2018) reported their study in Malaysia and they found that to learn grammar students try to listen to other people's conversation on how they use the rules of grammar.

Further studies tried to discover the link between the use of grammar learning strategies and grammar learning achievement. Although Tilfarlioğlu and Yalçin's study (2005) failed to show the difference in the use of grammar learning strategies by successful and less successful learners, Zekrati (2017) reported a coefficient of .867 indicating a very high correlation between grammar learning strategies and grammar learning achievement and this correlation is significant at the 0.01 level. Using an experimental design Ghaemi and Jadidi (2017)

demonstrated the effectiveness of grammar learning strategy training when they reported that the students who received strategy-based grammar instruction performed significantly better than the students who did not receive such kind of grammar instruction.

While, there have been some studies exploring the use of grammar learning strategies, research on individual factors that potentially contribute to the use of grammar learning strategies is hardly found. Moreover, more evidence is still required to show the relationship between grammar learning strategies and grammar achievement. It is for these purposes that the present study was carried out. To be more explicit, the present study was intended to find the answers to the following questions:

1. What strategies do the learners use in learning the grammar of English?
2. What individual differences influence the use of English grammar learning strategies?
3. How is the interrelationship among the types of grammar learning strategies and how are they correlated with grammar mastery?

Research Method

Subjects of the Study

As many as 300 students were targeted to participate in the present study. They were students of English education department from five higher education institutions in East Java, Indonesia. Three of them were universities under the Ministry of Research, Technology and Higher Education, while the other two were universities under the Ministry of Religious Affairs. Two of them are public, while the other three are private. An equal number (n = 20) were selected from students of years 2, 3, and 4 from each institution. However, 20 students were found not to complete all the required instrument so that the analyzed data were from 280 subjects, consisting of 186 females and 94 males. In terms of age, they were between 20 and 23 years old.

Research Instrument

Instrument for Measuring Language Aptitude

Caroll and Sapon (1959) states that four traits are indicators of language aptitude: phonetic coding ability, grammatical sensitivity, inductive language learning ability, and rote learning ability. Based on this theory an instrument called Modern language Aptitude Test was devised to measure such traits. The instrument consists of five parts, including 1) Number Learning to measure "auditory alertness" as well as memory component of foreign language

aptitude, 2) Phonetic Script to assess the "sound-symbol association ability", 3) Spelling Clues to measure phonemic coding ability, 4) Words in Sentences to measure grammatical sensitivity, and 5) Paired Associates to measure ability in memorizing new words of a foreign language.

The test is originally designed and validated for native or near native speakers of English. Thus, it is not applicable to be used for Indonesian learners of English. Therefore, the Indonesian version as translated and validated by Mistar (2001) was used instead of the original one. In this case, only two parts, Words in Sentences and Paired Associates, were used for this study. The reliability coefficient of the instrument was .800 and when an analysis of the reliability index of each part was carried out, indexes .679 and .862 were obtained for Words in Sentences and Paired Associates respectively.

Instrument for Measuring Personality Traits

The Eysenck Personality Inventory (EPI) as devised by Eysenck and Eysenck (1964), was used for measuring personality traits. Originally the instrument measures extroversion denoted as E, emotional stability or neuroticism denoted as N, and lie scale denoted as L. Subjects having high scores on different scales reveal different personality characteristics. It was claimed that high E scorers are described to be extrovert and characterized as being sociable. Moreover, they like attending parties, have many friends, need to have people to talk to, and do not like reading or studying by themselves. Meanwhile, high N scorers are described as 'worriers'. They are anxious, worrying individuals, moody and frequently depressed. They are likely to sleep badly, and to suffer from various psychomatic disorders. Lastly, high L scorers are characterized as having a tendency to behave or speak in a way to hide the real feelings and thought. In this study, however, only scores on E and N scales were considered in the data analysis.

Originally, the instrument contains 57 items in total, comprising 24 items for E, 24 items for N, and 9 items for L. However, as some items of the N scale and L scale were found to be culturally bound, only 50 items were used consisting of 24 items assessing extroversion, 20 items assessing neuroticism, and 6 items assessing lie. However, only the data from E and N scales were analyzed in the present study. Moreover, as the instrument is originally in English, it is translated into Indonesian language to enhance its readability. The reliability estimate of the aggregate scale was found to be .529. When the reliability estimates were assessed separately for E and N scales, indexes .623 for E scale and .619 for N scale were obtained.

Instrument for Attitude/Motivation Attributes

The instrument for measuring the attributes of attitudes/motivation in foreign language learning was the modified version of the Attitude/Motivation Test Battery (Gardner et al., 1997). As it was originally designed for Canadian learners of French, the items were modified in such a way that it was applicable for Indonesian learners of English (Mistar, 2001). This instrument measures nine attitudinal and motivational attributes, including attitude toward native speakers of English (8 items), attitudes toward learning English (10 items), desire to learn English (10 items), English class anxiety (10 items), English use anxiety (10 items), interest in foreign languages (10 items), instrumental orientation (4 items), integrative orientation (4 items), and motivational intensity (10 items), totalling 76 items. Except for the items of instrumental orientation and integrative orientation which are all positively keyed, a half of the items of the other seven attributes are positively keyed and the other half are negatively keyed. The reliability coefficient of the instrument in general was found to be .938. When the coefficient was calculated for each of the nine attributes, .621, .845, .712, .585, .830, .737, .498, .776, and .702 indexes were found respectively.

Instrument for Assessing Grammar Learning Strategies

The questionnaire used for assessing grammar learning strategies in the present study was devised by referring to the available learning strategy questionnaires as developed by Oxford (1990), Sariçoban (n.d.) and Zekrati (2017). The questionnaire was developed based on an a priori classification of learning strategies of cognitive, metacognitive, and socio-affective categories. O'Malley and Chamot (1990) describes that cognitive strategies deal with information processing mechanism that the learners use in their learning such as *taking notes*, *analyzing details*, and *summarizing*. Metacognitive strategies concern with the learners' learning management such as *setting up learning targets*, *planning learning activities*, and *reflecting learning progress*. And, socio-affective strategies deal with affective state management in using the language for social interaction with other people.

The questionnaire consists of 40 strategy items. In its administration, the subjects were required to give a response to each statement by considering whether it was true of them or not. Five options were provided, never or almost never true of me, usually not true of me, sometimes true of me, usually true of me, always or almost always true of me. The reliability estimate of overall strategies was found to be .890.

Instrument for Assessing Grammar Mastery

To assess the students' mastery of English grammar, a test of grammar was used. The test consists of 50 items in the form of incomplete sentences collected from TOEFL preparation guide (Goodman & Ince, 1981). In this test the students were provided with four alternative options and were required to choose the one best answer to complete each sentence. The reliability estimate of the test was found to be .717 suggesting that the data of the student's grammar mastery is highly reliable.

Data Analysis

Two statistical analyses were used in the present study. The first one was Principal Component Analysis (PCA) to discern the factors of grammar learning strategies. Therefore, prior to the factor analysis, the factorability of the collected data was inspected using two criteria. They were (1) the Bartlett's test of sphericity should be significant, and (2) the Kaiser-Meyer-Oklin (KMO) value should be at least .6 (Pallant, 2005). The resulting factors were then treated as learning strategy categories. Next, correlation analyses were utilized to find individual differences that contribute to the intensity of use of grammar learning strategies. Finally, another set of correlation analyses were employed to observe the interrelationship among the resulting strategy categories and their relationship with grammar mastery. These statistical analyses were carried out using SPSS Program Version 20.

Findings and Discussion

Findings

The findings of the present study are presented in the order of the research questions as follows.

RQ1. What strategies do the learners use in learning the grammar of English?

Prior to the factor analysis, an inspection of the data was undertaken to ensure that they could be factor analyzed. The results of KMO and Bartlett's test as presented in Table 1 provided evidence that the data were factor analyzable since the Kaiser-Meyer-Oklin measure of sampling adequacy is .833, which is higher than .6 and Bartlett's test of sphericity is significant ($p < .000$) (Pallant, 2005).

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Oklin Measure of Sampling Adequacy	.833

Bartlett's Test of Sphericity	Approx. Chi Square	3083.655
	df	780
	Sig.	.000

When the forty items of grammar learning strategies were factor analyzed using Principal Component Analysis, six factors were revealed and the distribution of strategy items that provide high loading to each factor is presented in a table of Rotated Component Matrix as appeared in Appendix 1. Factors 1 and 2 are cognitive in nature. Factor 1 get high loadings from twelve cognitive strategy items that relate directly with the learners' thinking processes such as *summarizing grammatical items*, *searching for grammatical patterns*, *thinking of relationship among grammatical items*, *memorizing grammatical items by imagining situations in which they are used*, and *attending to grammar when speaking, reading, and writing*. As such, the first category is named directive cognitive strategy. Factor 2 contains strategy items which are also cognitive in nature, but they are related with involving others in the learning process. Such strategies as *attending to the grammar of others' speeches*, *correcting others' grammar when conversing*, *looking for others to discuss grammatical items are within this category*. Therefore, it is called social cognitive strategy.

Factor 3 receive high loading from five strategy items which are related with affective state of the learners in using grammar. In this category are strategies of *noticing if anxious when using grammar*, *talking with others about feeling, improving confidence by asking others to correct grammar in writing and speaking*. Thus, this category is referred to as social affective strategy.

Table 2. Total Variance Explained by the Resulting Factors

Component/Factor	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1 Directive Cognitive Strategy	5.199	12.998	12.998
2 Social Cognitive Strategy	4.172	10.430	23.428
3 Social Affective Strategy	3.977	9.942	33.370
4 Directive Metacognitive Strategy	2.997	7.492	40.862
5 Reflective Metacognitive Strategy	2.388	5.970	46.832
6 Social Metacognitive Strategy	1.456	3.639	50.472

In addition, factors 4, 5, and 6 are metacognitive. Factor 4 obtain high loadings from strategies that deal with metacognitive awareness of the learners of what to do in learning grammar such as *planning learning schedule, reviewing lessons, self-rewarding, trying to understand grammar by finding similarities*, and *trying to get to meaning by attending to grammar*. Thus, this group strategy items is labelled as directive metacognitive strategy. Factor 5, moreover, obtain high loadings from items dealing with metacognitive awareness of what has been done. Such strategies as *setting up clear target in learning, thinking of the progress in learning grammar, relaxing when afraid of making mistakes*, and *using grammatical items already sure about* are within this category; therefore, they are categorized as reflective metacognitive strategies. Finally, factor 6 receive high loadings from items of metacognitive strategies that are related with practicing and using the grammar, including such strategies as *developing confidence in learning grammar by doing exercises with friends, noticing mistakes when using grammatical items and improving them accordingly*, and *self-convincing that mastery of grammar improves language skills*. This group of strategy items is called social metacognitive strategies.

All of the six strategy categories cumulatively explain 50.472% of variances of grammar learning strategies as depicted in Table 2. In this case, two strategy categories including directive cognitive strategy and social cognitive strategy explain grammar learning strategy variance more than 10% each. On the contrary, the other four strategy categories explain variance of grammar learning strategies less than 10% each with social affective strategy explains the most (9.942%) and social metacognitive strategy explains the least (3.639%).

RQ2. What individual differences influence the use of grammar learning strategies?

The statistical analysis using bivariate correlation analysis resulted in statistical findings as presented in Table 3. As the table shows, out of 13 individual differences, 8 variables contribute significantly to the use of strategies in learning grammar. Those are language aptitude particularly the ability in scrutinizing the function of words in sentence, attitude toward learning English, desire to learn English, English class anxiety, English use anxiety, interest in foreign languages, integrative orientation, and motivational intensity. Meanwhile, five factors were found not to correlate significantly with the overall use of learning strategies. These factors were paired associate ability, attitude toward native speakers of English, instrumental orientation, extroversion, and neuroticism.

Furthermore, when analyzed in terms of the contribution of these individual factors on the use of each type of strategies of learning grammar, the patterns are as follows. Aptitude and personality did not play significant roles in determining the use of grammar learning strategies. For the language aptitude variables, only words in sentence identification ability was found to contribute to the use of strategies 1 (directive metacognitive strategy), 2 (social cognitive strategy), and 6 (social metacognitive strategy), while paired associate ability did not correlate with the use of any type of strategies. Similarly, out of the two personality variables, neuroticism correlated negatively with the use of strategies 2 (social cognitive strategy) and 4 (directive metacognitive strategy). Meanwhile, extroversion did not correlate with any of the six strategy categories.

Table 3. The Correlation between Individual Differences and Grammar Learning Strategies

	GLS	DCS	SCS	SAS	DMS	RMS	SMS
WS	.193**	.203**	.202**	.040	.045	.136	.150*
PA	.056	.058	.088	.000	.040	.031	-.036
ANSE	.065	.155*	-.102	-.011	-.027	.188*	.188*
ALE	.156*	.253**	-.065	.006	.077	.273**	.297**
DLE	.206**	.264**	-.091	.028	.026	.229**	.310**
ECA	.272**	.296**	.279**	.038	.167*	.073	.218**
EUA	.357**	.396**	.213**	.115	.197**	.294**	.416**
IFL	.206**	.255**	-.002	.083	.099	.312**	.348**
InsO	.139	.178*	.011	.042	.096	.167*	.218**
IntO	.152*	.215**	-.038	.036	.077	.276**	.264**
MI	.186*	.226**	.082	.014	.068	.191*	.299**
EXT	.127	.129	.107	.007	.115	.073	.131
NEU	-.140	-.103	-.156*	-.085	-.173*	-.028	-.051

Legend: WS: Words in Sentence, PA: Paired Associate, ANSE: Attitude toward Native Speakers of English, ALE Attitude toward Learning English, ECA: English Class Anxiety, EUA: English Use Anxiety, IFL: Interest in Foreign Languages, InsO: Instrumental Orientation, IntO: Integrative Orientation, MI: Motivational Intensity, EXT: Extraversion, NEU: Neuroticism, GLS: Grammar Learning Strategies, DCS: Directive Cognitive Strategy, SCS: Social Cognitive Strategy, SAS: Social Affective Strategy, DMS: Directive

Metacognitive Strategy, RMS: Reflective Metacognitive Strategy, SMS: Social
Metacognitive Strategy

Among attitudinal and motivational variables, English anxiety which include English
class anxiety and English use anxiety correlated significantly with almost all types of learning
strategies, except strategy 3 (social affective strategies) for English use anxiety and strategies
3 and 5 (reflective metacognitive strategy) for English class anxiety. Attitude toward learning
English and desire to learn English correlated significantly with four categories of strategies,
except strategies 3 (social affective strategy) and 4 (directive metacognitive strategy).
Meanwhile, four factors including instrumental orientation, integrative orientation, attitude
toward native speakers of English, and motivational intensity contributed to the use of
strategies 1 (directive cognitive strategy), 5 (reflective metacognitive strategy), and 6 (social
metacognitive strategy).

In summary, the use of grammar learning strategies was much influenced by attitudinal
and motivational factors, while the contribution of aptitude and personality factors did not seem
to be powerful.

*RQ3. How is the interrelationship among grammar learning strategies and how do they
correlate with grammar mastery?*

Table 4 presents statistical findings related to interrelationship of the use of the six
strategy categories and their relationship with grammar learning achievement. As the table
shows, the coefficients of the inter-correlation among the six categories of grammar learning
strategies are all significant at .01 level with the coefficient of the correlation between strategy
2 (social cognitive strategy) and strategy 5 (reflective metacognitive strategy) being the lowest
(r = .293) and the coefficient of the correlation between strategy 1 (directive cognitive strategy)
and strategy 6 (social practical strategy) being the highest (r = .685).

Table 4. The Interrelationship among GLS and GLA

	OGLS	DCS	SCS	SAS	DMS	RMS	SMS	GM
OGLS	1							
DCS	.230**	1						
SCS	.791**	.577**	1					
SAS	.680**	.459**	.467**	1				
DMS	.757**	.634**	.475**	.537**	1			

RMS	.629**	.548**	.293**	.364**	.491**	1		
SMS	.729**	.685**	.402**	.389**	.526**	.544**	1	
GM	.202**	.230**	.092	.148*	.095	.142	.208**	1

*p < .05

**p < .01

Legend: OGLS: Overall Grammar Learning Strategy, DCS: Directive Cognitive Strategy, SCS: Social Cognitive Strategy, SAS: Social Affective Strategy, DMS: Directive Metacognitive Strategy, RMS: Reflective Metacognitive Strategy, SMS: Social Metacognitive Strategy, GM: Grammar Mastery

Moreover, when the learning strategies were correlated with learning achievement, generally speaking the use of grammar learning strategies contributed significantly to learning achievement (r = .202). However, when analyzed more specifically in terms of the correlation of each strategy types, it was found that only three strategies including strategies 1 (directive cognitive strategy), 3 (social affective strategy), and 6 (social metacognitive strategy) were correlated with grammar mastery with the coefficients being .230, .148, and .208 respectively.

Discussion

The discussion explores the relative position of the findings of the present study compared with the findings of previous ones. In addition, implications of the findings for practical classroom teaching are also provided. As described earlier, the factor analysis revealed the presence of six factors, all of which explain 50.472% of variance of grammar learning strategies. This indicates that a half of variances of strategies in learning grammar has been measured in the present study. The six factors, which are then considered as strategy categories, include directive cognitive strategy, social cognitive strategy, social affective strategy, directive metacognitive strategy, reflective metacognitive strategy, and social metacognitive strategy. Further inspection of these six strategy categories results in three big categories, including cognitive strategies (directive and social), affective strategies, and metacognitive strategies (directive, reflective, and social). This finding is consistent with the traditional a priori classification of learning strategies, in which learning strategies are classified into cognitive, metacognitive, and social/affective strategies (O'Malley & Chamot, 1990; Tilfarlioğlu & Yalçin, 2005).

The present study also reveals that the two cognitive strategies (directive cognitive strategy and social cognitive strategy) account for 23.428% of the grammar learning strategy variance. This implies that Indonesian learners of English rely on cognitive processes in their

learning of grammar. Therefore such strategies as *thinking of the relationship of the already learned grammar with the new one*, *summarizing the learned grammatical items*, *searching for patterns of English grammar*, and *memorizing the learned grammatical items by using them in sentences* are very much employed. This finding is in line with the finding of Zekrati (2017) among Iranian students of English as a foreign language. Therefore, despite the finding that metacognitive strategies training is found to be effective in improving the learners' grammar achievement (Ghaemi & Jadidi, 2017), trainings of the use of cognitive grammar learning strategies should also be pursued.

Moreover, the present study also found that attitudinal and motivational factors contribute significantly to the use of grammar learning strategy use. This finding highlights the role of attitude and motivation in second/foreign language learning as proposed by social psychologists. Gardner (1985, p. 56) states, "attitude and motivation are important because they determine the extent to which individuals will actively involve themselves in learning the language". Likewise, Schulz (1991) has acknowledged that the more motivated the students are, the more input they seek and the more communicative interactions they are willing to engage in.

The present study underscores the relationship of language aptitude and personality types of the learners with the use of grammar learning strategies. These findings are consistent with the findings of previous studies. Bialystok (1981) considered the effect of language aptitude on learning strategy choice is not as significant as that of attitude and learning motivation. Mistar (2001), moreover, reported that language aptitude and personality traits of the learners did not affect the use of overall English learning strategies. The insignificant effect of language aptitude and personality is consistent when analyzed in terms of their contribution to the use of memory, cognitive, compensation, metacognitive, affective, and social strategies. The insignificant relationship between personality types and grammar learning strategies may stand as an explanation of the inconsistent findings of research correlating personality and success in learning a second/foreign language. Whereas Rossier (1975) reported a significant correlation between extroversion and oral proficiency, Naiman et al. (1978) found no significant relationship between degrees of extravorsion and second language proficiency. More surprisingly, Busch (1982) reported that extroversion correlated negatively with second language pronunciation.

Significant interrelationship among the six strategy categories was also revealed in the present study suggesting that an increase in the use of a particular grammar learning strategy tends to be associated with a similar increase in the use of the other five strategy categories.

This finding is consistent with the results of studies carried out by Oxford and Ehrman (1995), Park (1997), and Mistar (2001) and it has significant implication for strategy training. A training program which is designed to improve the use of one particular strategy type may result in the improvement of the use of the other strategy types.

Last but not least, the present study found that generally speaking the overall use of grammar learning strategies correlated positively with grammar achievement (r = .202, $p <$ .01). This means that the more intensively the students employ grammar learning strategies, the better their grammar achievement will tend to be. This finding is consistent with the findings of previous studies that correlated learning strategies and learning success such as Mistar, Zuhairi and Parlindungan (2014) in the case of strategies to learn writing skill and Mistar, Zuhairi and Umamah (2014) in that of strategies to learn speaking skill. This finding also agrees with Zekrati's study (2017) that reported an even much higher coefficient of the correlation between grammar learning strategies and grammar achievement (r = .867, $p < .000$). Contrary to this finding, Gardner et al. (1997) surprisingly found that the correlation between learning strategies and learning achievement was negative. In the case of grammar learning, Pawlak (2009) also observed no significant correlation between grammar learning strategies and two grammar achievement, namely grammar course grades and final exam scores. In a similar vein, Abri et al. (2017) reported that there was no significant differences in the use of grammar learning strategies among proficient, average, and less proficient learners of English in Oman. The fact that the findings of studies that associate the use of grammar learning strategies and grammar achievement are not yet conclusive calls for more research on this area of concern. Thus, research involving different groups of learners with different learning stages should be highly appreciated.

Finally, the findings of the present study also carries out some practical implications for classroom teachers of English, particularly in the teaching of grammar. The finding that personality traits did not correlate significantly with the use of grammar learning strategies implies that it is no need for teachers of grammar to worry about their students' types of personality. Equal attention could be given to students irrespective of the types of their personality. Marginal correlation between language aptitude and grammar learning strategies also suggests that the teachers of grammar do not necessarily worry too much of their students' language aptitude. In terms of language aptitude, they need to consider the students' ability to identify the function of words in sentences, one indicator of language aptitude, as it is correlated significantly with grammar learning strategies. Moreover, the teachers should pay attention to the students' attitude and motivation as these variables are found to correlate significantly with

grammar learning strategies and the grammar learning strategies in turn affects grammar mastery. When the students develop a sense of positive attitude and strong learning motivation, their use of grammar learning strategies tends to increase, resulting in high achievement of grammar mastery. In short, in order to improve students' mastery of English grammar, training programs to increase students' awareness of learning strategies should be incorporated into the teacher's teaching-learning activities. In such training programs, the students' attitudinal and motivational factors should be on top priority of consideration.

Conclusion

This study has demonstrated the presence of six types of grammar learning strategies, including directive cognitive strategies, social cognitive strategies, social affective strategies, directive metacognitive strategies, reflective metacognitive strategies, and social metacognitive strategies. These six strategy categories are inter-correlated, in the sense that an increase in the use of one strategy brings out a similar increase in the use of the other strategies. Moreover, students' attitudinal and motivational attributes could better predict the use of these grammar learning strategies than did language aptitude and personality traits. Lastly, it is also found that good grammar mastery goes together with intensive use of learning strategies.

These findings brings about at least two pedagogical implications. One is that in order to encourage students to use grammar learning strategies intensively, their favorable attitudes and high learning motivation should be fostered in any ways. The other one is that strategy-based instruction of grammar may be implemented to train them to employ learning strategies effectively. As such, improvement in their use of grammar learning strategies can be expected and, in turn, ultimate mastery of grammar can be achieved.

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References

Abri, A. L., Seyabi, F. A., Humaidi, S. A., & Hasan, A. H. (2017). Grammar learning strategies in Omani EFL classes: Type and relation to student proficiency. *Journal of Studies in Education, 7*(2), 151-166.

Bialystok, E. (1981). The role of conscious strategies in second language proficiency. *Modern Language Journal, 65*, 24-35.

Briewin, M., Naidu, B., & Embi, M. A. (2013). Learners of English as a foreign language preference for grammar strategies in learning grammar. *International Journal of English and Literature, 4*(5), 149-253.

Busch, D. (1982). Introversion-extraversion and the EFL proficiency of Japanese students. *Language Learning, 32*(1), 109-132.

Carroll, J. B. & Sapon, S. M. (1959). *Modern language aptitude test*. New York: The Psychological Corporation.

Chen, Z. (2016). Grammar learning strategies applied to ESP teaching. *Theory and Practice in Language Studies, 6*(3), 617-621.

Dreyer, C., & Oxford, R.L. (1996). Learning strategies and other predictors of ESL proficiency among Afrikaans speakers in South Africa. In R. L. Oxford (Ed.), *Language learning strategies around the world: Cross-cultural perspectives* (pp. 61-74). Honolulu: University of Hawaii, Second Language Teaching & Curriculum Center.

Ehrman, M. & Oxford, R. (1990). Adult language learning styles and strategies in an intensive training setting. *The Modern Language Journal, 74*, 311-327.

Eysenck, H. J., & Eysenck, S. B. G. (1964). *Manual of the Eysenck personality inventory*. London: University of London Press.

Gardner, R. C. (1985). *Social psychology and second language learning: The role of attitudes and motivation*. London: Edward Arnold.

Gardner, R. C., Tremblay, P. F., & Masgoret, A. (1997). Towards a full model of second language learning: an empirical investigation. *The Modern Language Journal, 81*, 344-362.

Ghaemi, F., & Jadidi, E. (2017). The effect of strategy-based grammar instruction on Iranian EFL learner's grammar achievement. *Journal of Applied Linguistics and Language Research, 4*(6), 223-233.

Gillette, B. (1987). Two successful language learners: An introspective approach. In C. Faerch & G. Kasper (eds.), *Introspection in second language research*. Philadelphia, Clevedon: Multilingual Matters, 268-279.

Goodman, R. B., & Ince, W. (1981). *How to prepare for the test of English as foreign language*. New York: Trafalgar House Publishing, Inc.

Green, J. M., & Oxford, R. (1995). A closer look at learning strategies, L2 proficiency, and gender. *TESOL Quarterly 29*(2), 261-297.

Hashim, H. U., Yunus, M. M., & Hashim, H. (2018). Language learning strategies used by adult learners of teaching English as a second language (TESL). *TESOL International Journal, 13*(4), 39-48.

Huda, N. (1998). Speaking proficiency, reflectivity-impulsivity, and L2 learning strategies. In W. A. Renandya & G. M. Jacobs (Eds.), *Learners and language learning: RELC anthology series 39* (pp. 40-55). Singapore: SEAMEO Regional Language Centre.

Kaylani, C. (1996). The influence of gender and motivation on EFL learning strategy use in Jordan. In R. L. Oxford (Ed.), *Language learning strategies around the world: Cross-cultural perspectives* (pp. 75-88). Honolulu: University of Hawaii, Second Language Teaching & Curriculum Center.

Kosasih, F. R. (2019). Language learning strategies of EFL students of open and distance higher education in Indonesian context. *Asian EFL Journal, 23*(3.4), 217-227.

Lengkanawati, N. S. (1997). *Kontribusi strategi belajar bahasa terhadap kemahiran berbahasa (Contribution of language learning strategies on language proficiency),* Unpublished Doctoral Dissertation, IKIP BANDUNG, Indonesia.

LoCastro, V. (1994). Learning strategies and learning environments. *TESOL Quarterly, 28*(2), 409-414.

Lunt, E. H. (2000). *The learning strategies of adult immigrant learners of English: Quantitative and qualitative perspectives.* Unpublished Doctoral Thesis, The University of Melbourne, Australia.

Mistar, J. (2001). English learning strategies of Indonesian university students across individual differences. *Asian Journal of English Language Teaching, 11*, 19-44.

Mistar, J., & Umamah, A. (2014). Strategies of learning speaking skill by Indonesian learners of English and their contribution to speaking proficiency. *TEFLIN Journal, 25*(2), 203-216.

Mistar, J., Zuhairi, A., & Parlindungan, F. (2014). Strategies of learning English writing skill by Indonesian senior high school students. *Arab World English Journal, 5*(1), 290-303.

Mistar, J., Zuhairi, A., & Umamah, A. (2014). Strategies of learning speaking skill by senior high school EFL learners in Indonesia. *Asian EFL Journal, 80*, 65-74.

Naiman, N., Fröhlich M., Stern, H. H., & Todesco, A. (1978). *The good language learner.* Toronto: Ontario Institute for Studies in Education.

O'Malley, J. M., & Chamot, A. U. (1990). *Learning strategies in second language acquisition.* Cambridge: Cambridge University Press.

Oxford, R. L. (1990). *Language learning strategies: What every teacher should know.* New York: Newbury House Publishers.

Oxford, R. L., & Ehrman, M. E. (1995). Adults' language learning strategies in an intensive foreign language program in the United States. *System, 23*(3), 359-386.

Oxford, R. & Nyikos, M. (1989). Variables affecting choice of language learning strategies by university students. *The Modern Language Journal, 73*, 291-300.

Oxford, R. L., Lee, K. R., & Park, G. (2007). L2 grammar learning strategies: The second Cinderella and beyond. In A. D. Cohen, & E. Macaro (Eds.), *Language learners strategies: Thirty years of research and practice* (pp. 117-139). Oxford: Oxford University Press.

Pallant, J. F. (2005). *SPSS Survival Manual: A step-by-step guide to data analysis using SPSS.* Crows Nest, NSW: Allen & Unwin.

Park, G. (1997). Language learning strategies and English proficiency in Korean university students. *Foreign Language Annals, 30*(2), 211-221.

Pascual, G. R. (2019). Metacognitive awareness of reading strategies of the prospective ESL teachers. *Asian EFL Journal, 21*(2.5), 160-182.

Pawlak, M. (2009). Grammar learning strategies and language attainment: Seeking a relationship. *Research in Language, 7,* 43-69.

Politzer, R. L., & McGroarty, M. (1985). An exploratory study of learning behaviors and their relationship to gains in linguistic and communicative competence. *TESOL Quarterly, 19*(1), 103-124.

Rossier, R. E. (1975). *Extraversion-introversion as a significant variable in the learning of English as a second language.* Unpublished doctoral dissertation, University of Southern California.

Rubin, J. (1975). What the "good language learner" can teach us. *TESOL Quarterly, 9*, 41-51.

Sariçoban, A. (n.d.). *Learner preferences in the use of strategies in learning grammar (dilbilgisi öğreniminde strateji kullaniminda öğrenci tercihleri).* Retrieved June 30, 2019 from https://dergipark.org.tr/en/download/article-file/31935.

Schulz, R. A. (1991). Second language acquisition theories and teaching practice: how do they fit? *The Modern Language Journal, 75*, 17-26.

Skehan, P. (1991). Individual differences in second language learning. *Studies in Second Language Acquisition, 13*, 275-298.

Song, M. (1998). Teaching reading strategies in an ongoing EFL university reading classroom. *Asian Journal of English Language Teaching, 8,* 41-54.

Stern, H. H. (1975). What can we learn from the good language learner? *Canadian Modern Language Review, 31*, 304-318.

Supian, N., & Asraf, R. M. (2019). A case study on vocabulary learning strategies in Malaysia: Implications for teaching and learning. *Asian ESP Journal, 15*(1.2), 370-403.

Thompson, I., & Rubin, J. (1996). Can strategy instruction improve listening comprehension? *Foreign Language Annals, 29*, 331-342.

Tilfarlioğlu, F. Y., & Yalçin, E. (2005). An analysis of the relationship between the use of grammar learning strategies and student achievement at English preparatory classes. *Journal of Language and Linguistic Studies, 1*(2), 155-169.

Wharton, G. (2000). Language learning strategy use of bilingual foreign language learners in Singapore. *Language Learning, 50*(2), 203-243.

Zekrati, S. (2017). The relationship between grammar learning strategy and language achievement of Iranian high school EFL learners. *Indonesian EFL Journal, 3*(2), 129-138.

Zhou, Z. (2017). The investigation of the English grammar learning strategy of high school students in China. *Theory and Practice in Language Studies, 7*(12), 1243-1248.