

Study on the Correlation between Perceptual Learning Styles and English Vocabulary Learning Strategies of Senior High School Students

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Abstract

The English Curriculum Standard for Senior High Schools (2017) requires teaching to be student-centered and to focus on individual differences. Perceptual learning style is an important variable of learners' individual differences, which has a significant impact on students' learning and development. Nevertheless, as vocabulary is the foundation of language acquisition, it is crucial for students to develop effective strategies for learning vocabulary. The purpose of this paper is to study the correlation between high school students' perceptual learning styles and English vocabulary learning strategies in order to help students fully understand their perceptual learning styles so that they can use more appropriate learning strategies, and to facilitate teachers' teaching methods to adapt to them, which can improve classroom efficiency. Therefore, this study conducts two questionnaires to 55 senior high school students from L Middle School in J City regarding their preferences for perceptual learning styles and their use of vocabulary strategies, and then uses SPSS26.0 to evaluate the results. The findings indicate that high school students preferred auditory learning styles, which are followed by visual, auditory, tactile, Kinesthetic, group and individual learning styles. They also use resource strategies more frequently than social/effective, meta-cognitive and cognitive strategies, and there is a significant positive correlation between their perceptual learning styles and vocabulary learning strategies.

Keywords

Senior high school students; Perceptual learning styles; Vocabulary learning strategies; Correlation.

1. Introduction

The main content of this thesis is to explore the relationship between perceptual leaning style (PLS) preferences and English vocabulary learning strategies (EVLS) by examining the general preferences of Senior Three students for perceptual learning styles and the current situation of their English vocabulary learning strategies, as well as by analyzing the correlations between their categories. This chapter provides a brief overview of the entire study from three aspects, including its background, purpose and significance.

According to *the English Curriculum Standard for Senior High Schools (2017)*, the focus of foreign language teaching has changed from "teacher-centered" to "student-centered" and teachers should pay attention to students' individual differences. Obviously, individual differences among students directly and indirectly affect students' learning in different forms. Therefore, researchers have gradually shifted their focus to the study of individual differences in language learning.

Among individual differences that belongs to internal factors of learners, learning styles and learning strategies are two important variables of individual differences. Reid (1995) pointed

out that learning styles are tightly associated with learning strategies. Wen (2004, quoted from Gao 2016) discovered that learning styles influence the use of learning strategies. It means that learning styles can have an impact on learning strategies. Therefore, the research on the relationship between learning styles and learning strategies is very important for English teaching and learning. To understand students' tendency of learning styles and the characteristics of using learning strategies is the basis for teachers to teach students in accordance with their aptitude.

A large number of studies have been conducted in recent years to combine perceptual learning styles with English teaching and learning, exploring the relationship between students' different perceptual learning styles and their academic achievement, gender, age, scores and etc. Some scholars have also subdivided English learning on the basis of previous studies to explore its impact on students' English writing performance and reading performance. However, there is little research on the correlation between perceptual learning styles and English vocabulary learning strategies. What's more, most of them are conducted on college students, and little attention is paid to senior high school students.

Vocabulary is a key element of language knowledge and a necessary component of English language skills. According to *the English Curriculum Standards for Senior High Schools* (2017), approximately 3300 words and 400-500 idioms or fixed collocations must be learned by senior high school students. As far as most senior high school students concerned, vocabulary acquisition is still one of the major difficult points in the process of English learning. On the one hand, vocabulary teaching is limited to words from books and the teaching contents focus more on literal meaning. On the other hand, it is also challenging for students to employ English vocabulary scientifically because of the constraints of the linguistic environment and their own non-scientific learning style, which frequently emphasizes word collocation over semantic mastery (Dong 2021:81). Thus, it is crucial to teach students how to appropriately employ English vocabulary learning strategies.

Therefore, in this paper, the author investigates the general characteristics of senior high school students' perceptual learning styles and their vocabulary learning strategies, especially their relationship, so as to promote vocabulary teaching and improve the vocabulary learning effect of senior high school students.

This study aims to comprehend the tendencies of perceptual learning styles, use conditions for learning strategies, and relationships between them in senior high school students.

Firstly, teachers can learn more about each individual student's differences by studying their perceptual learning styles, while students can gain a better understanding of their own perceptual learning preferences and traits. Secondly, the learning strategies can broaden the variety of teaching and learning methods used by both teachers and students, which can also aid in more effective and thorough study. Thirdly, understanding the complex interaction between various perceptual learning styles and learning strategies strives to enlighten educators and learners about the processes of teaching and learning. For a better learning outcome, they can determine which perceptual learning type corresponds to which learning approach. Additionally, the outcomes may encourage teachers to concentrate on the best teaching strategies during actual lessons and encourage students to deliberately employ the best study techniques in accordance with their individual perceptual learning preferences.

To sum up, the purpose of this study is to serve as a guide for teachers to comprehend students' perceptual learning styles and to adapt their teaching approaches to the unique needs of each class or case, as well as for students to recognize their own perceptual learning styles and choose appropriate learning strategies.

2. Researches on the Correlation between PLS and EVLS

Base on the theories of learners' perceptual learning styles and vocabulary learning strategies, the studies of relationship between perceptual learning styles and vocabulary learning strategies have attracted researchers' attention.

Oxford and Ehrman (1990) are the most representative scholars, who focused the research on the correlation between learners' perceptual learning styles and learning strategies. They demonstrated that there is a significant relationship between learners' perceptual learning styles and learning strategies. In their investigation, they found that different perceptual learning styles have different learning strategies. Compared with introverted learners, who use more learning strategies including finding and communicating meanings, extroverted learners utilize more emotional and visual learning strategies. Additionally, tactile students typically use actual teaching aids in the learning environment, while auditory students typically use some strategies with oral stimulation. Visual learners typically use more visual stimulation, such as reading, watching the blackboard, watching movies, or using computer screens.

Baghban and Vahid (2012) explored the relationships between Iranian language learners' preferred language learning strategies and learning styles. The study involved advanced female EFL students at the Iran Language Institute (ILI) as well as English teaching majors at Azad University of Mashhad. The investigator discovered a substantial association between the learners' learning strategies and learning styles by using tools like the Language Learning Style (LLS) questionnaire and the Strategy Inventory for Language Learning (SILL) questionnaire. Based on the findings, it can be said that students who scored higher on the SILL fared better on the LLS, indicating that the SILL has a big influence on the LLS. According to the results of the factor analysis, affective, meta-cognitive, and cognitive strategies all had a strong relationship with the auditory style of learning. Also, a strong association was found between the kinesthetic approach and meta-cognitive, memory, and social tactics.

The impacts of perceptual learning style and gender on vocabulary acquisition strategies were examined by Zokaei et al. (2012). There were 54 EFL learners who were 20 to 22 years old at Tarbiat Moallem University who participated in their study, and there were gender inequalities. Joy Reid's (1987) Perceptual Learning Style Preference (PLSP) questionnaire was employed as the perceptual learning style assessment tool in this study. The results showed that the most common learning method among students is visual (37.5909), followed by kinesthetic (37.0909) and auditory (36.8636), with group style (16.0741) being the least popular. Meta-cognitive learning strategies are most commonly employed (3,1380), whereas social learning strategies are less frequently employed (2,2259). A significant link was also discovered by the investigation. That is, perceptual learning style and learning strategies are related. Social and cognitive techniques are more likely to be used by auditory learners, while group learners favor social tactics. Gender had no impact on perceptual learning style or learning strategies.

Tight (2015) examined the perceptual learning styles and obligatory teaching strategies in the acquisition of Spanish vocabulary and addressed the traits of perceptual learning styles generally as well as their function in the acquisition of notional verbs. The study discovered that any perceptual teaching methods encouraged the acquisition of L2 Spanish Vocabulary.

Afshar et al. (2015) explored the connections between Iranian ESP (English for specific purpose) learners' learning styles, learning strategies, and learning achievements. Here, they applied Oxford's questionnaire (1990) and Kolb's learning style inventory (1985) as their research instruments to conduct a survey on 355 college students from three universities in Iran. According to the research about the relationship between learning strategies and learning styles, learning styles are significantly related to learning strategies, particularly the memory strategy and cognitive strategy.

Comparatively later investigations have been conducted in China regarding the relationship between perceptual learning styles and vocabulary learning strategies. Differ from foreign literature, domestic literature are more about empirical studies on the correlation between perceptual learning styles and vocabulary learning strategies. Some of them are presented below.

In order to probe into the correlation between English vocabulary learning strategies and learning styles, Wu and Dai (2012) conducted a survey on the English vocabulary learning strategies and learning styles among a group of science and technology students in Changsha University of Science and Technology. The following outcomes are obtained: It showed that science and technology college students most preferred individual-based learning styles, followed by visual and kinesthetic learning styles, and disliked auditory, tactile, and group learning styles. It was also discovered that there were close relationships between English vocabulary learning strategies and learning styles; with the exception of independent learning style, which did not correlate with cognitive or meta-cognitive learning strategies, the rest positively correlated with all vocabulary learning strategies.

Huang (2014) investigated by the method of questionnaire, which is used to gather information about 128 English learners in accordance with Reid's classification of perceptual learning style and Schmitt's categories of vocabulary learning strategies. Perceptual learning styles influence the choice of vocabulary strategies, and there are strong correlations between styles and strategies. The results show that individual and visual styles are their major perceptual learning preferences, whereas group style is the minor one. Memory and cognitive strategies are also used the most frequently, while meta-cognitive and social strategies are used the least frequently.

Zhu and Zheng (2016) conducted an empirical study on the teaching of perceptual learning styles in English for high school students. A random sample of 133 students from a university-affiliated high school in the class of 2013 was used to investigate the students' perceptual learning style preference questionnaire developed by Reid, and the test scores were based on the final grades of English in the second semester of senior high school. A quantitative analysis was conducted to compare the perceived learning styles of 133 high school students. The results showed that to a certain extent, some foreign teaching methods can be used to achieve good results in high school English teaching in China. Students at different levels have different perceptual learning styles. The kinesthetic learning styles of high school students at different levels tend to correlate the most with English language learning performance. Students tended to feel the importance of learning English through personal experience rather than through the teacher's cramming education. The study focused on students' overall English learning skills, while in this study, it tended to focus more on students' English vocabulary learning.

Gao (2016) conducted a study involving 200 participants who were senior high school students. Additionally, it was found in the study that preferences for perceptual learning styles and vocabulary learning strategies are connected. In particular, students with a visual learning style prefer to use cognitive strategies, while those with an auditory learning style favor cognitive and meta-cognitive ones, while students with a tactile learning style favor cognitive and social/affective ones, and students with group and kinesthetic learning styles are more likely to use meta-cognitive ones.

Jia (2019) used a combination of quantitative and qualitative analysis to investigate the perceived learning style preferences and the use of English vocabulary learning strategies among 186 non-English major sophomores at Xi'an Polytechnic University. Besides, 15 students among them were randomly selected for interviews to further understand the subjects' perceived learning style preferences and their use of English vocabulary learning strategies. It shows that students favor the tactile learning style, which is followed by the auditory, visual, kinesthetic, and individual learning styles, but least preferred by the group learning style. Non-

English majors employ middle-level frequency of English vocabulary learning techniques overall. The cognitive approach is the one that is applied the most frequently.

In conclusion, learners' perceptual learning styles and vocabulary learning strategies have a substantial link. Different perceptual learning styles have been proven to have different ways of learning. However, studies both at home and abroad are mainly focuses on the theory of perceptual learning style and vocabulary learning strategies, there is relatively little research on the relationship between the two. Besides, most of the studies have been conducted on college students, but rarely on high school students. Since high school is the basic stage of English learning, understanding students' learning styles and helping them to use vocabulary strategies that fit their learning styles can improve their vocabulary learning efficiency and lay the foundation for English learning. Therefore, it is necessary to investigate the relationship between learning styles and vocabulary learning strategies with high school students as the target group. It is hoped that the results of this study can help learners adopt more effective vocabulary learning strategies according to their own perceived learning style, so as to further improve the efficiency of English vocabulary learning.

3. Research Methodology

The following three questions are posed by the author in order to investigate the relationship between senior high school students' perceptual learning styles and vocabulary learning strategies.

Firstly, what are the characteristics of senior high school students' perceptual learning styles and English vocabulary learning strategies? Secondly, what is the correlation between senior high school students' perceptual learning styles and vocabulary learning strategies? Thirdly, what are the implications of this correlation for English teaching and learning in senior high school?

55 three-graders from J middle school in L city were randomly chosen to participate in this study. Since everyone of them has been studying English as a foreign language for at least five years, they have developed relatively stable perceptual learning styles, and are also aware of the need to use vocabulary learning strategies. The most important stage of English learning is currently in the third year of senior high school, so it is necessary to help them develop suitable vocabulary learning strategies to improve the efficiency of learning English. These factors led the author to choose these students as her study subjects. As a result, these subjects are appropriate for this study.

This study is aimed at investigating the correlation between perceptual learning styles and English vocabulary learning strategies of senior high school students by means of literature research and questionnaire.

Literature research is used to make comprehensive research on perceptual learning styles and vocabulary learning strategies, especially their relationship.

In addition, there are two questionnaires. One is the Perceptual Learning Style Preference Questionnaire (PLSPQ) developed by Reid (1987), which includes 30 items. Visual, auditory, kinesthetic, tactile, group learning, and individual learning are the six learning style preferences that are tested in this self-report questionnaire. The respondents were asked to rate their agreement or disagreement on a five point Likert scale, from strongly disagree to strongly agree.

Table 1. Dimensions of PLSPQ

Dimensions	No. of Items	Total
Visual Style	6,10,12,24,29	5
Auditory Style	1,7,9,17,20	5
Tactile Style	11,14,16,22,25	5
Kinesthetic Style	2,8,15,19,26	5
Group Style	3,4,5,21,23	5
Individual Style	13,18,27,28,30	5

The other is the English Vocabulary Learning Strategy Questionnaire (VLSQ), which is adapted from the vocabulary learning strategies questionnaire produced by Gao (2016) and Jia (2019) with reference to basis of O'Malley and Chamot's classification of vocabulary learning strategies. It contains four categories, namely Cognitive, Meta-cognitive, Social/Affective, and resource strategies, as well as 50 items with five-Likert Scale ratings ranging from strongly disagree to strongly agree.

Table 2. Dimensions of VLSQ

Dimensions	No. of Items	Total
Metacognitive Strategy	1,2,3,4,18,19,20,21,35,36,37,38,47	13
Cognitive Strategy	5,6,7,8,9,10,11,12,13,14,22,23,24,25,26,27,28,29,30,31,39,40,41,42,43,44,48,49	28
Social Strategy	15,16,32,33,45	5
Resource Strategy	17,34,46,50	4

3.1. Procedures of Data Collection and Data Analysis

Firstly, before the formal questionnaire is administered, the author conducts a pilot study to test the reliability of the questionnaire, and 20 research objects are randomly determined. Then, the final questionnaire is properly adjusted.

Secondly, with the help of teachers, the two questionnaires are distributed to about 100 senior students of J middle school in L city, who have already formed their own perceptual learning styles and used their own English vocabulary learning strategies. Additionally, it is necessary to explain to the students to make them realize that the questionnaires are for research purposes only and that each test question needs to be selected according to the students' actual situation to ensure the reliability and validity of the questionnaire results.

Finally, the data from the two questionnaires will be itemized and the collated data are imported into SPSS26.0 software, and the data will be analyzed with mean as the main parameters to obtain the general characteristics of the participants' perceptual learning styles and vocabulary learning strategies in the process of English learning. Then, the obtained data obtained will be subjected to Pearson correlation analysis to explore the correlation between perceived learning styles and vocabulary learning strategies based on the results of each r-value. Pearson's correlation coefficient is generally denoted by "r", and its value range from -1 to +1. When $r > 0$ indicates that the two variables are positively correlated; $r < 0$ indicates that the two variables are negatively correlated. If $r=0$, it means that the two variables are not linearly correlated and they exist independently.

4. Results and Discussion

The analysis and discussion outcomes of the thesis are presented in the fifth chapter. There are three sections in this chapter. To begin, it is necessary to ascertain the overall tendencies of participants' perceptual learning styles. The second section discusses the application of

vocabulary learning strategies. The final section discusses the correlation between perceptual learning styles and vocabulary learning strategies. On the basis of above data, the explanations of the research findings are examined.

4.1. Overall Situation of PLS of Senior High School Students

In order to figure out the general situation of perceptual learning styles of senior high school students, descriptive statistics were employed to analyze the data obtained from the Perceptual Learning Styles Preference Questionnaire, the results of which are shown in Table 3.

Table 3. Descriptive Statistics of Senior High School Students' PLS in Six Dimensions

Dimensions	N	Mean
Visual Style	55	19.0909
Auditory Style	55	18.6182
Tactile Style	55	18.4000
Kinesthetic Style	55	18.3636
Group Style	55	18.8363
Individual Style	55	18.7091

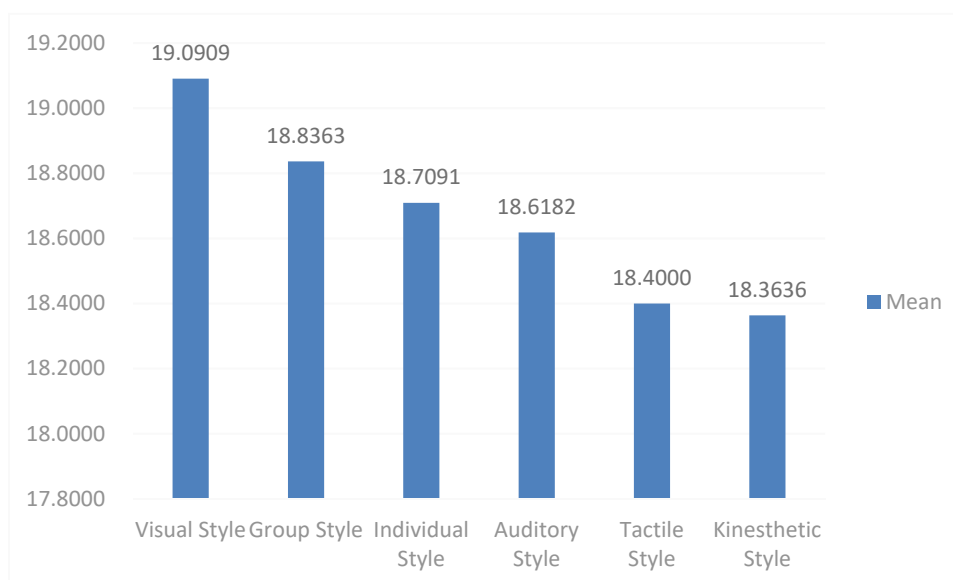


Figure 1. Descending Order of Six Dimensions of PLS

According to the above research data, it can be seen from the chart that the average value of overall perceptual learning styles of senior high school students is greater than 17 and less than 20, which shows that the overall level of perceptual learning styles of senior high school students is high and the students' perceptual style characteristics are significant. Among them, visual style is the most preferred type of perceptual learning style. Students of this type have keen observation power, who mainly use visual channels to obtain, understand and remember information, and complete learning tasks based on this. Following the visual style, it is the group learning style that influences those students on their forms of learning, which suggests that students are inclined to apply group cooperation learning in their learning process. Individual learning style comes third, which means that participants of this kind of style are more likely to learn independently. The mean score of auditory learning style ($M=18.6182$) is at medium level, indicating that students tend to use experiential, participatory, and auditory channel learning styles. With the lowest mean score ($M=18.3636$), there is no doubt that the preference for the Kinesthetic perceptual style is at the lowest level, which reveals that students use less operative

learning styles in the learning process and they do not engage in various forms of activities as well as lack of practical ability.

4.2. Overall Situation of EVLS of Senior High School Students

In order to find out the general situation of English vocabulary learning strategies of senior high school students, descriptive statistics were used to analyze the data collected from the English Vocabulary Learning Strategies Questionnaire. the results of which are shown in Table 4.

Table 4. Descriptive Statistics of Senior High School Students' EVLS in Four Dimensions

Dimensions	N	Mean
Meta-cognitive Strategy	55	3.7050
Cognitive Strategy	55	3.6800
Social/Affective Strategy	55	3.7675
Resource Strategy	55	3.8075

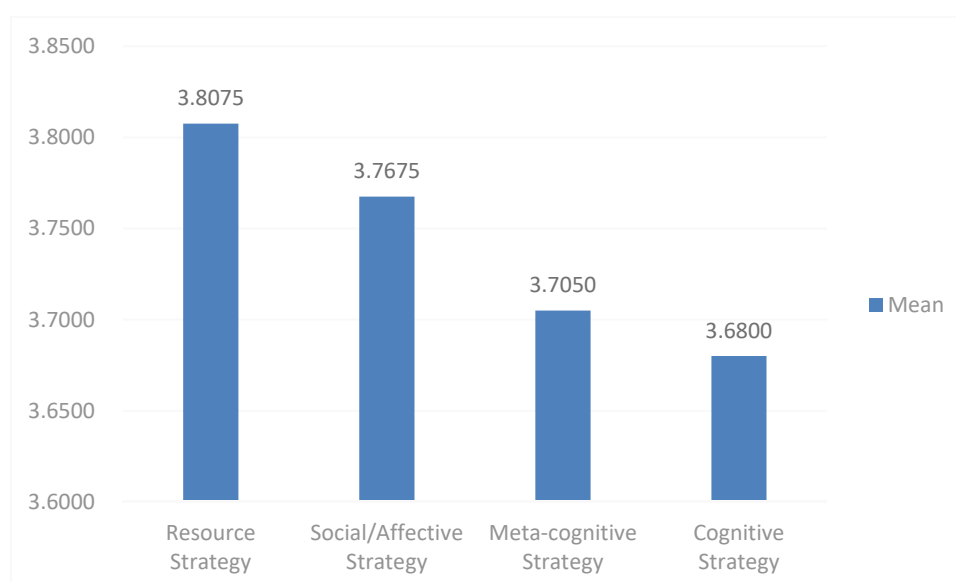


Figure 2. Descending Order of Four Dimensions of EVLS

As is mirrored in the chart, the overall mean of participants' usage of vocabulary learning strategies ranges from 3.7050 to 3.8075. It is obvious that senior high school pupils frequently employ vocabulary learning strategies. Resource strategy (M =3.8075) is the most frequently used strategy by students, followed by social/affective strategy, meta-cognitive strategy and cognitive strategy. The findings of this study differ from those of earlier studies on the use of vocabulary learning strategies. According to the study, resource strategies are used most frequently. As teaching forms are increasingly diversified, multimedia technology and network information technology have grown to be significant learning tools. Social/affective strategy (M =3.7675) is the secondary vocabulary learning strategy preferred by students. In vocabulary learning, learning motivation, anxiety, emotional change and etc. will directly affect the learning effect. Meta-cognitive strategy (M =3.7050) ranking third, suggests that senior high school students use less self-monitoring and autonomous learning strategies and are mostly in a passive learning state. Cognitive strategy (M =3.6800) is used the least frequently by students, who are more open to using a variety of approaches to learn vocabulary because techniques like guessing words, looking up definitions in dictionaries, and taking notes are no longer sufficient to meet their needs.

4.3. The Correlation between Senior High School Students' PLS and EVLS

Additionally, the Pearson correlation analysis was used to analyze the data obtained from the two questionnaires in order to find out the correlation between each sub-category of the subjects' preferred perceptual learning style and their vocabulary learning strategy use. The results are shown in Table 5.

Table 5. Correlation between Senior High School Students' PLS and EVLS

		Meta-cognitive Strategy	Cognitive Strategy	Social Strategy	Resource Strategy
Visual Style	Pearson Correlation	.434**	.327**	.630**	.864**
	Sig.(2-tailed)	.009	.005	.004	.008
Auditory Style	Pearson Correlation	.368**	.379**	.312**	.195**
	Sig.(2-tailed)	.002	.002	.002	.003
Tactile Style	Pearson Correlation	.386**	.420**	.069**	.211**
	Sig.(2-tailed)	.005	.006	.001	.002
Kinesthetic Style	Pearson Correlation	.837*	.641*	.087**	.826
	Sig.(2-tailed)	.013	.010	.001	.174
Group Style	Pearson Correlation	.320**	.213**	.040**	.446**
	Sig.(2-tailed)	.002	.001	.000	.007
Individual Style	Pearson Correlation	.766*	.270	.780*	.297
	Sig.(2-tailed)	.025	.065	.015	.067

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

* . Correlation is significant at the 0.05 level (2-tailed).

It can be inferred from Table 5 that among the six sub-categories of perceptual learning styles, there are four types, namely visual, auditory, tactile and group learning styles, which are all positively connected with all sub-categories of vocabulary learning strategies, since each of their P values is below 0.01. This suggests that those who favor these four perceptual learning styles also frequently employ a variety of vocabulary learning strategies. The author will analyze these data in detail below.

Firstly, as shown in Table 5, the visual style has significant correlation with resource strategy ($r=.864$), indicating that students of this style most often use resource strategy in vocabulary learning, in other words, they are inclined to choose to read foreign books, dictionaries or watch related videos to learn vocabulary. The result is different from that of Gao (2016), who found that visual style is significantly correlated with cognitive strategy.

Secondly, both auditory and tactile styles are significantly related to cognitive strategy, which suggests that students with these two learning styles prefer to use cognitive strategy in vocabulary learning. For auditory style, students prefer to acquire vocabulary by listening to the teachers' explanation or audio, and reading aloud has the positive effect on memorizing words. In terms of tactile style, in the learning process, students prone to highlight key vocabulary and collocations in textbooks or handouts, and like to take down the key words explained by teachers to help them learn vocabulary.

For kinesthetic style, it is related to meta-cognitive strategy ($r=0.837$, $p<0.05$), cognitive strategy ($r=0.641$, $p<0.05$) and social/affective strategy ($r=0.087$, $p<0.05$) with no relation to resource strategy ($r=0.826$, $p>0.05$). This indicates that learners who prefer kinesthetic

learning do not enjoy learning English words through a variety of materials and are instead more likely to choose experiential learning. To put it more specifically, these learners don't want to use resources, like extracurricular English readings, to learn vocabulary in English. They do want to actively participate in acquiring English vocabulary, though. They also frequently take notes and repeat words aloud or in writing to help them recall terminology.

For individual style, it only has relationship with cognitive strategy ($p < 0.05$) and social/affective strategy ($p < 0.05$), while it is unrelated to meta-cognitive strategy ($p > 0.05$) and resource strategy ($p > 0.05$). Compared with the the cognitive strategy ($r = 0.766$), learners belonging to individual style prefer to use social/affective strategy ($r = 0.780$), which means that learners can control their emotions, learning motivation and attitude with the help of this strategy. As we all known, language learning is closely related to emotional attitude. Learners' motivation, attitude, confidence, anxiety and other factors have a great impact on language learning. Using emotion and establishing scenes in teaching can stimulate students' interest and strengthen their understanding and memory of new words.

5. Conclusion

The sixth chapter shows the main conclusions of this study. The researcher then offers some recommendations regarding pedagogical implications, limitations of the study and suggestions for future studies.

5.1. Major Findings of the Research

In this paper, from the perspective of senior high school students' perceived learning style, the author studies English learners' choice of vocabulary learning strategies and whether there are correlations between them. From the above theoretical and data analysis, we can draw the following three major findings:

Firstly, when it comes to perceptual learning styles preference, the relevant results show that the overall level of perceptual learning styles of senior high school students is high and the students' perceptual style characteristics are significant. Among the six sub-categories of perceptual learning styles, the most popular learning style among high school students is visual style, followed by group, individual, auditory, and tactile style, with kinesthetic learning style being least preferred.

Secondly, as far as the usage of vocabulary learning strategies is concerned, the results of the descriptive analysis indicate that the study's participants employ a variety of methods to acquire new words. In other words, senior high school pupils frequently employ vocabulary learning strategies. Resource strategy is the most frequently utilized strategy by students, followed by social/affective strategy and meta-cognitive strategy, whereas the least frequently employed one is the cognitive strategy.

Thirdly, there is a significant positive correlation between senior high school students' perceptual learning style preferences and their English vocabulary learning strategy use. To be more specific, among the six sub-categories of perceptual learning styles, it can be found that the four types, namely visual, auditory, tactile and group learning styles, are positively correlated with all sub-categories of vocabulary learning strategies. Besides, kinesthetic learning style is associated with meta-cognitive strategy, cognitive strategy, and social/affective strategy, but not with resource strategy. Furthermore, individual learning style only has significant correlation with cognitive and social/affective strategies, while it is unrelated to rest sub-categories of vocabulary learning strategies, which are meta-cognitive and resource strategies.

5.2. Pedagogical Implications

In order to help students develop multiple learning styles and fully mobilize their learning motivation, teachers should first understand students' propensity for perceptual learning styles. Then, they should adapt their teaching methods in conjunction with various learning styles to help students develop multiple learning styles and fully mobilize their learning motivation. To meet the needs of tactile students, teachers can, for instance, encourage note-taking and plan activities like creating vocabulary cards. They can also increase the interest of auditory students in learning vocabulary by outlining vocabulary knowledge verbally and playing relevant audio. Additionally, teachers can allow tactile learners to touch objects to make guesses and develop suitable games to help learners practice and learn by doing. The teacher can use blackboard, textbooks and multimedia tools to present vocabulary knowledge to students in a variety of visual ways such as words, pictures, animations, and movies. What's more, when designing classroom tasks, the teacher can organize classroom performances, group discussions, reading exercises, and other activities, which are suitable for those of individual and group learning styles.

In addition, teachers should understand students' use of vocabulary learning strategies and consciously guide them to use multiple learning strategies in the process of vocabulary learning. The growth and training of students' meta-cognitive strategies, for instance, should be a focus of teachers. Teachers are supposed to encourage students to determine how they will manage their own vocabulary acquisition process and provide timely guidance. The utilization of acceptable Internet resources and a variety of extracurricular English readings and movies, as well as the provision of students with a variety of vocabulary teaching materials, will help students learn how to use a variety of resources to boost their language input.

Finally, the research has found that senior high school students with different perceptual learning styles correlate with different vocabulary learning strategies in the vocabulary learning process. Thus, teachers should pay attention to guiding students to develop vocabulary learning strategies that are appropriate for their own learning styles. For example, there is a significant correlation between students with visual learning style and resource strategies. For this type of students, teachers should pay attention to the use of resource strategies when setting classroom tasks, and can provide reading materials and visual materials outside of class to establish the connection between this type of students and the corresponding strategies. On the other hand, teachers should guide students to use more vocabulary learning strategies and expand their learning styles so that they can learn vocabulary efficiently. This study found that only kinesthetic learning style has a significant positive correlation with meta-cognitive strategies, and the use of meta-cognitive strategies by senior high school students is still at a low level. Teachers should let students understand meta-cognitive strategies and their importance, and then develop and train students' awareness and ability to manage their vocabulary learning process as a whole to improve students' learning initiative.

Language learning is a lifelong process that can never be completed in the classroom alone. More importantly, it must be done on the student's own. Since learning styles and learning strategies are correlated, it makes sense from the standpoint of the learner for students to validate their own learning styles, test their own learning techniques, and then decide on the optimum learning approach.

As a result, from the viewpoint of students, the following conclusions follow.

Students should attempt to comprehend the fundamentals of learning styles and learning processes, just like teachers. The first step to better learning is for individuals to recognize their own learning preferences and to have a basic comprehension of their learning methods. Additionally, students should work to broaden their learning styles, deliberately cultivate and develop a variety of learning styles, and adjust their learning strategies based on the

characteristics of learning styles. This will allow them to find the best learning method, fully exploit their strengths in learning styles and learning strategies, and ultimately increase the effectiveness of their learning.

5.3. Limitations of the Research and Future Research Prospects

Although the data of the two questionnaires was accurately calculated by SPSS26.0 software, due to some limitations of objective conditions, there are inevitably some deficiencies in this study. The main limitations and suggestions for future studies are as follows:

Firstly, the subjects of the research are only 55 senior high school students from the third grade of J middle school in L city and no other grade students are considered, which results in a small sample size. Furthermore, they all come from the same school, say, J middle school. The findings of this study may not be representative of all senior high school students. Therefore, more students from other areas, schools and grades should be considered for future study.

In addition, due to limited time, the author studied the relationship between junior high school students' perceived learning style and vocabulary learning strategies, but did not take into account other factors that affect individual students, such as students' learning efficacy, gender differences, anxiety level and learning motivation. As a result, further researches should focus on the relationship between the above factors to become more extensive and representative.

What's more, the research process of this paper is mainly based on quantitative research method, and the research method is not very representative, and it is necessary to combine quantitative and qualitative in order to ensure the reliability of the research results.

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