

## Effect of Cognitive Styles on Self-Efficacy among University Students

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### Abstract

Cognitive and affective factors are vital for language teaching and learning. Several research studies have focused on and determined cognitive style and self-efficacy as significant predictors of students' academic success. This study explored the impact of cognitive styles on self-efficacy among English as a foreign language university learners of Afghanistan. An assessment was made of 180 university students (105 males and 75 females) age range (19-27 years) studying in public universities of Afghanistan. Jha Parveen Kumar's (2001) 48 item Cognitive Styles Inventory and 10 items from Ralf Schwarzer and Matthias Jerusalem's (1995) generalized Self-Efficacy scales were applied for data collection. The collected data were then analyzed using Statistical Package for the Social Sciences (SPSS) 24.0 Version. The results showed that most of the university students possessed systematic cognitive styles. The regression analysis indicated that cognitive styles have positively influenced the self-efficacy of the university students of Afghanistan. The Findings, educational implications, limitations of the study, and recommendations for future research are discussed.

**Keywords:** Cognitive Styles, Higher Education, Self-Efficacy

### INTRODUCTION

A gradual, but significant movement from teacher to learner-centered teaching in English language learning has gained the important attention of researchers and educators to further ascertain the most prominent factors that support students' academic achievements in language learning (Riazi, 2007). This respective stepwise modification has grown and arise several studies to find out the impact of other variables like cognitive, psychological as well as socio-cultural factors on language learning (Brown, 2000). Research reveals that cognitive styles play a vital role in learning (Mayer et al., 2003). Comparatively, a teacher should thoroughly think about what type of learning environment, instructional strategies, and teaching techniques enable the learners to attain their desired learning outcome (Graham, 2015). Therefore, recent studies focus on

and explore learners' distinctiveness rather than instructional models (Oxford and Anderson, 1995).

Generally, at the very beginning dealing with the word cognitive style as a construct is linked with studies done in several aspects of psychology. For instance, several researchers undertook cognitive style as an organizing perspective of "differential psychology", (Jonassen and Grabowski 1993) but, several other researchers were interested in cognitive psychology and undertook the process and abilities of cognition (Furnham, 1995)

Besides, Self-efficacy refers to one's ability to succeed at assigned tasks is known as self-efficacy. It refers to an individual self-assurance in their abilities to execute the tasks fruitfully and reach the desired goals Bandura (1986). This means that when students' confidence level is increased, it augments their performance level and ultimately increases the chances of accomplishment in a particular task. An individual attitude, cognitive skills, and capabilities form a type of self-system. This respective self-system takes a vital part in how people make sense of a particular situation and then how they react or behave in response to that specific circumstance and self-efficacy is an important part of the mentioned system (Bandura, 1977).

This indicates that self-efficacy reflects confidence in the capability to exercise control over individual behavior, motivation, and social setting. Students' positive feelings and belief in their capabilities to perform the given work successfully are essential for academic attainment (Sankar, 2011). If students feel they cannot succeed in the assigned task, then their motivation and level of focus decrease, and ultimately they fail to perform satisfactorily. Therefore, a language classroom can be compared to a problem-solving atmosphere in which language students face new input and various activities from language teachers. Thus teachers should understand students' various cognitive styles while teaching foreign languages and modify their teaching methodology accordingly (Yunbo, 2018). After a review of related literature, the researcher could not find any study conducted about the concerned variable among EFL university students in Afghanistan. Therefore, the main aim of this study is to investigate the effect of cognitive style on self-efficacy among EFL University students in Afghanistan.

### **Objectives of the Study**

1. To find out the types of cognitive styles that exist among University students in Afghanistan.
2. To investigate the correlation between cognitive styles and self-efficacy among university students in Afghanistan.
3. To assess the impact of cognitive styles on self-efficacy among university students in Afghanistan.

### **Hypotheses**

1. There exists no significant relationship between cognitive styles and self-efficacy among university students in Afghanistan.
2. There exists no significant impact of cognitive on self-efficacy among university students in Afghanistan.

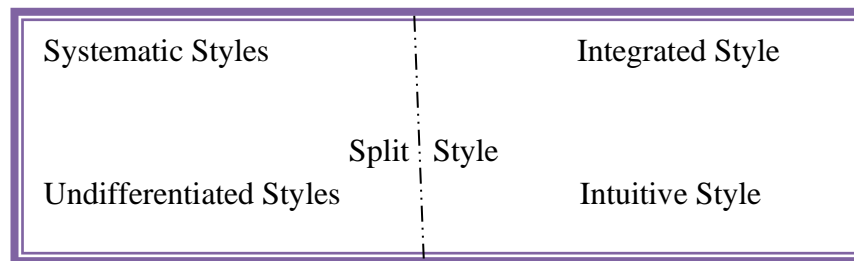
## REVIEW OF RELATED LITERATURE

Generally, at the very beginning dealing with the word cognitive style as a construct is linked with studies done in several aspects of psychology. For instance, several researchers and writers undertook cognitive style as an organizing perspective of “differential psychology”, (Jonassen and Grabowski, 1993) but, several other researchers were interested in cognitive psychology and undertook the process and abilities of cognition (Grigorenko and Stenberg 1995; Furnham 1995, Riding 1997). The history of cognitive style as cited by Riding and Rayner (1998) in the book, “cognitive styles and learning strategies” can be drawn back in the form of a description of personality in the literature of classical Greek (Vernon, 1973). Relatively, Messick (1996) also suggested a similar origin of cognitive style. The study further mentioned that each individual has different personalities that affect their style of cognition and behaviors which might be linked to earlier classification of temperament and physique personalities created by Hippocrates. There were four classifications in the typology: melancholic, Sanguine, phlegmatic, and choleric.

Besides, several attempts were made by researchers in the area of psychology regarding cognitive styles. As cited by (Riding et al., 2000) in the book, *Perspective Differences; Cognitive Styles*, Gordon Allport an American psychologist almost eight decades ago developed the notion of “Life Style” and took the style construct about cognition and probably gained the name of a first psychologist who linked deliberately style construct about cognition and described as a person usual approach for problem-solving, perceiving, people thoughts, remembering and representing information. Relatively a study conducted by Martin (1998) about cognitive styles inventory has fully drawn the antecedents of the two extreme dimensions of cognitive styles as systematic and intuitive cognitive styles. The study indicated various theories which were developed in earlier studies about the Judgment of horizontality or verticality, (Dyk, Patterson, Goodenough, & Karp, 1962). These respective studies concluded and assumed cognitive style as a single dimension (Martin.1998).

In addition, the two types of cognitive styles namely; systematic cognitive style and intuitive cognitive styles were explained by (Keen, 1973) whereas systematic cognitive style is related to rational, logical behaviors which employ the systematic mean step-by-step and chronological method of solving a problem while intuitive cognitive style is linked to holistic, impulsive and imaginary approach. However, these two cognitive styles were not up to the mark to cover the entire range of individual behavior for thinking, retaining information, and specifically about problem-solving. Thus, a multidimensional model was required to cover the abovementioned postulated behaviors (Martin, 1983). The particular model had two continuums namely; (1) high systematic to low systematic and (2) High intuitive to low intuitive. The continuing research as well as consistent

efforts have opened the door for a comprehensive cognitive style model (see Figure 1) which can assess the complete spectrum of people's cognitive behavior.



**Figure 1.** Showing Expanded Cognitive Styles Model

First, people with a systematic cognitive style score high on the systematic scale and low on the intuitive scale. This style is related to rational and logical behaviors that apply well-defined systematic methods of learning, thinking, and mainly problem-solving. Second, the Initiative cognitive style is defined as learners who rates low in systematic and gain high score on the initiative scale. It is a type of style in which individuals use experience patterns, to investigate and find alternative solutions for a problem. Students with this style use the random ordering of analytical procedures when resolving problems. Third, learners with integrated cognitive style score high on both systematic and intuitive coalesce scales. Learners with this type of cognitive style know how to change their style quickly. These types of learners are known as problem solvers. They consistently struggle out to point the problem as well as opportunities for finding better ways of resolving them.

The fourth cognitive style is the undifferentiated cognitive style. Individuals with this type of cognitive style, look for instruction and direction from outside sources while dealing with problems mainly related to his/her learning condition. People with this type of cognitive style are inactive and usually look to other help for problem-solving. The last cognitive style is the split style in which the individual fall in the average or fairly equal range between systematic and intuitive styles. They use one style at a time while dealing with a problem. They actively show an appropriate style of response to problem-solving and are also prepared in an academic environment by choosing the proper cognitive style if needed (Shi, 2011). Hence, teachers need to understand how to incorporate learners' cognitive styles in the classroom for creating a positive learning setting.

On the other hand, Self-efficacy refers to an individual self-assurance in their capabilities to execute the tasks fruitfully and reach the desired goals. This means that when students' confidence level is increased, it augments the performance level and ultimately increases. Self-efficacy is a part of the self-system and Self-system is formed by an individual's attitudes, cognitive talents, and capabilities. Self-efficacy is a crucial component of the self-system, which plays a crucial role in how people interpret a certain condition and then respond or behave in reaction to those particular circumstances (Bandura, 1977). This means that self-efficacy reflects confidence in the capability as well as the ability to exercise control over individual behavior, motivation, and social setting which manipulates the attitudes and manner of the people toward their goals. Sharman and Nasa (2014) found self-efficacy as a strong predictor of education achievements.

The relationship of cognitive styles with self-efficacy is a significant discussion in the field of educational investigation. Likewise, Wang and Kuo (2017) indicated that cognitive style and self-efficacy were significantly correlated explicitly in the learning environment. Sanker and Raju (2011) examined university students' cognitive styles with self-efficacy and concluded that students' self-efficacy was higher when the teaching style matched with students' cognitive styles.

## **METHOD**

Considering the nature of the study, the investigator applied the descriptive survey method in the present study. A descriptive research study is designed to elicit relevant and precise information concerning the current phenomena or status and draw valid as well as accurate conclusions from the facts discovered.

### **Sample**

The study comprised 180 (male 105 and female 75) participants from the English Department of the undergraduate program in the Faculty of Languages and Literature of Public Universities in Afghanistan.

### **Instruments and Procedures**

The instruments applied to measure the respective variables were:

#### ***Cognitive Styles Inventory by Jha, Parveen Kumar (2001)***

It is a self-report assessment of the way of thinking, judging, keeping information, recalling, and decision-making and considering in interpersonal relationships. It contains 40 items from which 20 statements are associated with Systematic Cognitive Style and 20 statements are related to Intuitive Cognitive style and to be answered with a five-point Likert scale ranging from Strongly Agree to Strongly Disagree followed by three middle responses namely; agree, undecided, and disagree. This scale further allows the researcher to assess the five styles namely; systematic, intuitive, integrated, undifferentiated, and split cognitive styles.

#### ***Generalized Self-Efficacy Scale by Ralf Schwarzer and Matthias Jerusalem (1995)***

It is a ten-item scale that is answered with a four-point Likert Scale (1 = not true at all; 4 = exactly true). The total score is calculated by finding the sum of all items. The score ranges between 10 and 40 with higher scores indicating higher self-efficacy. The reliability of the instruments was examined and the results showed that the instruments are reliable to use in the study with coefficient alpha for Cognitive Style Inventory (0.838) and Self-Efficacy Scale alpha (0.765) which is high in both cases. For data collection, the researcher personally approached the respondents and gave brief orientation regarding the importance of this research work. Respondents were assured and guaranteed that the responses given to them will be kept private and will be used for research purposes only. After data collection, it was tabulated and subjected to SPSS 24 version, and mandatory statistical techniques were applied.

## RESULTS

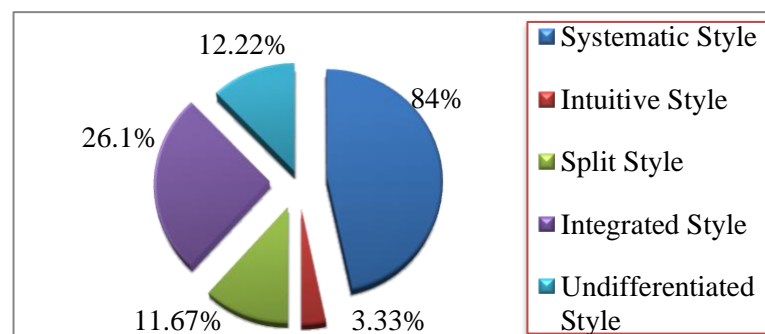
### 1. Objective 1: To find out the types of cognitive styles that exist among University students in Afghanistan.

**Table 1.** Types of Cognitive Styles among University Students

Sr. No	Types of Cognitive Styles	No. of Students	Percentage
1	Systematic Style	84	46.68%
2	Intuitive Style	6	3.33%
3	Split Style	21	11.67%
4	Integrated Style	47	26.1%
5	Undifferentiated Style	22	12.22%

### Inferences

Table 1 shows the distribution of university students in Afghanistan based on their dominant cognitive styles. The score of the respondents was calculated with the help of norms and percentile as mentioned in the manual of the scale. From above table 1, it is evident that 46.68% of university students fall under the systematic cognitive style, 3.33% have an intuitive cognitive style, 11.67% have a split cognitive style, 26.1% have an integrated cognitive style and 12.22% have an undifferentiated cognitive style. Similarly, figure 2 also shows that the maximum number of university students falls in the category of systematic cognitive style. Hence, it can be inferred, that most of the university students of Afghanistan deal with a problem and situations in a planned way meaning hereby that they manage and treat the difficult situation and problems in a well-defined step-by-step approach to find suitable solutions. Sagiv et al. (2013) in their study also found that systematic cognitive style was the frequent style among the respondents of the study. Moreover, the least dominant cognitive style among university students in Afghanistan came out to be the intuitive cognitive style. Thus, it can be interpreted that students with intuitive cognitive style deal with a problem in the unpredictable ordering of analytical processes as well as by remaining being dependent on experience patterns characterized by universalized hints.



**Figure 2.** Different Cognitive Styles among University Students

**Objective 2: To find out the correlation between cognitive styles and self-efficacy among university students in Afghanistan.**

The first objective of the current study was to find out the relationship between Cognitive Styles and General Self-Efficacy among university students in Afghanistan.

**Table 2.** Showing Correlations between Cognitive styles and Self-efficacy

Variables	N	R	P-Value	Remarks
Cognitive Styles				
Self-Efficacy	180	.441**	.000	Moderate Positive

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

### Inferences

Observing the value of correlation in Table 2 between cognitive styles and self-efficacy among university students of Afghanistan came out to be ( $r = .441^{**}$ ) and the p-value is found to be  $p = .000$  which is less than the .05 level of significance. Hence, the hypothesis that there exists no significant relationship between cognitive styles and self-efficacy among university students of Afghanistan is not accepted meaning hereby that there exists a significant relationship between cognitive styles and self-efficacy. Considering the r value i.e. (.441\*\*) it is worth mentioning that there exists a moderate positive relationship between these variables. It means that cognitive styles and self-efficacy are significantly correlated with each other.

### Objective 3: To find out the impact of cognitive styles and self-efficacy among university students in Afghanistan.

The second objective of the present study was to find out the impact of Cognitive Styles on Self-Efficacy among university students in Afghanistan.

**Table 3.** Showing Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	.441 <sup>a</sup>	.194	.190	5.115

a. Predictors: (Constant), Overall Cognitive styles Score

**Table 4.** Showing Model Fit of ANOVA

ANOVA						
Model	Sum of Squares	Df	Mean Square	F	Sig.	
1	Regression	1124.484	1	1124.484	42.977	.000
	Residual	4657.316	178	26.165		
	Total	5781.800	179			

a. Dependent Variable: Self-efficacy

b. Predictors: (Constant), Overall Cognitive styles Score

### Inferences

From the above model summary table 3, it is obvious that the independent variable cognitive styles yielded a coefficient of (R) .441, and R square for the same was found to be .194 which indicates that 19.4% variation in self-efficacy is explained by predictor variable cognitive styles in the model 1. The variance is significant. In Table 4, it can be seen that F-value for model 1 came out to be (42.977) which stands significant as the P value came out to be (P=.000) which is less than a .05 level of significance ( $p < .05$ ) indicating that, independent variable cognitive style is significantly predicting the outcome variable self-efficacy among university students of Afghanistan. Therefore, taking into consideration the above value of cognitive styles as a predictor of self-efficacy it can be concluded that, the null hypothesis "There exists no significant impact of cognitive styles on self-efficacy among university students of Afghanistan" is rejected meaning hereby that there exists significant impact of cognitive styles on self-efficacy among university students of Afghanistan.

**Table 5. Showing Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t-value	Sig
	B	Std. Error	Beta		
1 (Constant)	9.280	3.078		3.015	.003
Overall Cognitive Styles Score	.141	.021	.441	6.556	.000

Dependent Variable: Self-efficacy

## Inferences

From Table 5 of the coefficients, it is evident that the independent variable cognitive style is contributing significantly to the dependent variable self-efficacy with  $t = 6.556$ ,  $p = .000$  for the respective independent variable cognitive styles. The beta value in Table 5 indicates the impact of an independent variable. The  $\beta$  value for the independent variable cognitive styles came out to be .441 and the p-value for the same came out to be  $p = .000$  which is less than the .05 level of significance, which helps to infer that cognitive styles significantly predict the dependent variable self-efficacy. The regression equation formulated for the variable is given below:

$$\text{Self-efficacy} = 9.280 + (0.141 * \text{cognitive styles})$$

## DISCUSSION

In this study, the researcher found adequate evidence to support the hypothesis that cognitive style is significantly associated with self-efficacy of EFL university students. The regression analysis further revealed a significant effect of cognitive styles on self-efficacy. The finding of the present study is also in line with an earlier study conducted by (Hassan, 2016; Shu-Ling & Kuo, 2017; Nemazi et al., 2019) in which they found a significant association between cognitive styles and self-efficacy.

Similarly, the findings of the study are in line with an earlier study conducted by Feride and Salih (2020) where they indicated that cognitive style is a considerable predictor of self-efficacy. The researcher assumes that knowledge of students regarding their



cognitive style may better assist them in selecting a type of learning strategy that matches their cognitive styles and will ultimately augment their self-efficacy which may further enhance their learning achievement. The analysis further asserts that the majority of the student greatly benefit from the use of systematic cognitive styles followed by integrated cognitive styles. Dunn (1990) added that cognitive style is biologically imposed. Understanding which cognitive styles an individual ascribes to may better assist them in preparing the learning approach which is crucial for academic success. Moreover, everyone learns differently and knowing how each individual learns best will provide that person with the best chance of success during learning (Sternberg, 2005; Kozhevnikove, 2007; Bendall et al., 2016).

Second, understanding students' cognitive styles by teachers will allow them to prepare comprehensible learning content and environment for the improvement of EFL learners' self-efficacy. EFL teachers strive to adapt a low-stress, supportive, and friendly environment in language learning classrooms. Moreover, positive reinforcement (using the non-threatening method of error correction, positive rewards upon completion of competitive tasks, words of encouragement, and positive written comments) from teachers make them confident (Sahin & Ates, 2020), resultantly their level of self-efficacy is increased and once self-efficacy is enhanced, students feel more positive and keen toward performing challenging tasks that ultimately influence their learning process. Relatively, one important factor that plays an essential role in the enhancement of self-efficacy is the teacher-student positive rapport (academic interpersonal relationship). This type of relationship can also happen if there is a mutual understanding and similarity of teaching style with students' cognitive styles (Zhang, 2002, as cited in Baker & Ali, 2013). This likeness will adapt to a smooth and fruitful learning environment which is crucial in the process of successful language learning (Martinsen et al., 2011; Angeli, 2013).

## CONCLUSION

The preceding descriptive research study revealed the association between cognitive styles and self-efficacy among university students in Afghanistan. The study found that there exists a significant positive relationship between the respective variables and cognitive styles significantly predict the dependent variable self-efficacy among university students of Afghanistan. Self-efficacy is a considerable factor in English language learning and can be determined as the most dominant construct among students particularly in adult language learning because adult language learners bring high classroom anxiety and this anxiety may work as a disruption to learners' active participation and their motivation in the classroom. These types of discomfort feeling create a wall of inhibition and prevent learners from active participation in the classroom. This can be greatly dependent on a low level of self-efficacy and a lack of cognitive style identification in the classroom. Students who possess a low level of self-efficacy means they have a low level of confidence in their ability and capability which ultimately leads to disengagement, discouragement, and weak performance in the respective classroom.

### **Educational Implication**

Taking into consideration the educational implication of the study; Language learning is a complex task involving a high level of learning anxiety. Students need to memorize dozens of vocabulary and countless grammatical rules. Processing and retaining such kind of information can be easily learned if students are assisted in the identification and understanding of their cognitive style (Fewell, 2010). Knowledge about own cognitive style may help university students in processing and retaining information as well as in scaffolding their self-efficacy which may further assist them to overcome academic problems and achieve their desired goals. Besides, university lecturers should also keep in mind the cognitive styles factor while preparing and developing instructional content and its delivery methods (Sternberg Zhang, 2005).

Moreover, it is vital for university teachers to; (1) identify their cognitive styles and also (2) get to know about their learners' cognitive styles. This determination will positively enhance and enrich the teaching and learning process (Hodges et al., 2008), and will ultimately boost the self-efficacy of the students. Furthermore, it has been found from regression analysis that cognitive styles significantly influenced the self-efficacy of respective EFL students. Hence, teachers should keep in mind the individual differences in the class. Learners with different cognitive styles process and retain information differently (Robertson, 1985). Therefore, teachers need to address and keep in mind cognitive style factors and adapt teaching methods and environment accordingly (teaching through audio, video, visual aids, class discussion, group work, and pair work) may better assist the learning environment in the English Language classes that may result in to better academic attainments. Such attainments may influence and enhance the level of self-efficacy as students feel successful which may further assist them in their academic life.

### **Limitations and Future Study Suggestions**

In fact, in the case of research studies, several limitations can be found. Identifying and clarifying these limitations enable the readers to understand better under which types of situations the result can be interpreted. Therefore, the present study also has some limitations which are listed below.

Though the research has acquired its aims, due to the time limit the study has been carried out on a small size of (180) sample. Second, the data is collected at the end of the semester so; the mindset of students might have influenced the results of the present study. Another considerable limitation might be that the present study was delimited to only public universities in Afghanistan. Future studies can be conducted by taking into consideration the above limitations; Comparative studies can be conducted regarding the same variables by taking samples from public and private universities. The variable of cognitive style can be studied with certain other variables like academic achievement, study habits, and achievement motivation. Moreover, future studies can be conducted exploring online self-efficacy with other variables like online self-regulation, academic achievement, attitude, and student perception towards such experience. In general, further studies should consider investigating casual relationships rather than just

correlational studies which may give better insight regarding the relationship between these two variables.

**Note:** There is no conflict of interest to declare.

There is no funding support.

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