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# The Effect of Cognitive Style Training on the Improvements of Students' Learning and Social Self-efficacy

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## Abstract

Cognitive style and social self-efficacy are the most important learning tools and are essential components to the success of the students. Considering this, the present study aimed to investigate the effectiveness of the cognitive style training on the improvement of learning and social self-efficacy among the students in Farhangian university of Mazandaran. The present research design was quasi-experimental with pretest-posttest and control group. To do this, 60 students were allocated to experimental and control groups during the years 2018-2019 using a random sampling method (30 for control group and 30 for experimental one) and they were asked to complete Smith and Betz's (2000) 25-item Scale of Perceived Social Self-Efficacy (SPSSE) as the pretest. The experimental group received 10 ninety-minute sessions of cognitive style training. At the end of the training sessions, both groups answered the above questionnaire again. The mean, the standard deviation and the analysis of covariance (ANCOVA) were used to analyze the data. The results indicated that Cognitive style training increased students' learning and social self-efficacy significantly (P≤0/001). Based on the research findings, it is strongly recommended to use this method to improve the students' academic status and to increase their social self-efficacy.

***Keywords***: Cognitive styles, Learning, Social self-efficacy

## Introduction

One of the most important issues related to educational psychology is the students' academic achievement as a pivotal indicator in higher education evaluation, hence the whole effort in this area is to make the students self-sufficient in order to manage their own learning personally. Furthermore, educational psychology leads the students to strengthen their learning responsibility in their learning goals, to control their own behavior confidently and not to be dependent on the teacher. In other words, they are trained to learn actively by themselves(Ghomi, Moslemi & Mohammadi, 2016).

A precise look at the factors affecting academic achievement reveals that different items influence students' learning. In fact, students are successful when they are proficient in their utilizing the styles and also generalizing them. Understanding and transferring the knowledge depends largely on how we learn in the school and subsequently it requires cognitive and metacognitive skills (Soleymannejad& Hoseininasab, 2013). We live in a complex world where we need to acquire a set of skills in order to succeed and tackle the challenges effectively. The main purpose of education is to guide students to have efficient social interaction and communication with others. In this area, social self-efficacy plays a key role. Social self-efficacy is an

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integral part of the cognitive and social approach (Yip, 2007). Social self-efficacy is the individuals' beliefs about their abilities which affect their efforts. Social self-efficacy differs from feeling, thinking and acting of people.

The term "cognitive style" has been introduced to the psychological studies by German psychologists more than a century ago. It can be considered as a domain of observable behaviors and can be defined as human beings' persistent approach towards the organization and processing of information while thinking. It cannot be considered as part of intelligence, but it is related to qualitative differences that exist between individuals' thinking processes (Riding & Sadler-Smith, 1997).

Social self-efficacy is a concept that is integrated in one direction due to the experiences, ability and thinking of people (Stainberg, 2013). Social self-efficacy is based on a person's perceived ability, the difficulty of the task, the amount of effort expended, the amount of external assistance received, the number and patterns of successes and failures. It can be increased when a student receives positive feedback on a task he is completing and also by positive past experiences (Bachem & Casey, 2017). Consequently, social self-efficacy is not only influenced by ones' abilities but also affects ones' abilities and their successes (Driwer, 2012).

Self-regulated learning is a process that helps the learner acquire academic skills including goal setting, selection, adequate use of styles and appropriate control (Parsamehr & Heddat, 2017). Self-regulation refers to the degree to which learners are "meta-cognitively, motivationally, and behaviorally active participants in their own learning process". So, self-regulated learners have such characteristics as self-evaluating, goal-setting and planning, and self-consequating (Yarmohammadian & Sharafirad, 2011). The theory of self-regulated learning was designed by Pintrich and DeGrot, and the cognitive and metacognitive strategies are its foundation. Cognitive styles can be utilized to complete the tasks and to help the learners provide new data to combine with the old ones and then to store them in long-term memory. These strategies are repeating or reviewing. Semantic expansion and organization, which are indeed metacognitive styles, enable the learners to control and understand cognitive processes (Pettus, 2006). Metacognitive strategies include planning, adjusting, and monitoring of which the self-monitoring plays a determinant role in self-regulated learning (Liran & Miller, 2017).

Self-regulated interventions in students increase effective learning, decrease inactivity, and overall lead to get involved in their homework. Principally metacognitive styles can be specified by internal attribution and suitable effort for success while cognitive style is determined by external attribution and less effort in academic achievement. The students whose attributive style of education is focused on uncontrollable factors, lower efficiency, and less proficient effort can largely be attributed to use cognitive strategies (Bandura, 2001). On the other hand, learners who attribute academic achievement to internal efforts are more likely to use meta-cognitive learning styles and process learning issues more precisely (Moran & Megan, 2014).

People with high social self-efficacy have creative design, organization, persistence and commitment to deal with challenge. Self-efficient people share their beliefs with others to organize and succeed their plans. Higher social self-efficacy has a stronger effect on students' academic achievement (Wintre, Gates, Pancer & Pratt, 2011).

When a person with high social self-efficacy encounters a problem, he tries to concentrate on how to deal with that; nevertheless, if his effort does not lead to any success, then he attributes the failure to the lack of knowledge, skills, unsuitable solutions, or inadequate effort (Montague, 2008). Recent studies have been carried out regarding the positive relationship between self-efficacy and academic success. Those studies also indicated that there is a positive significant relationship between self-efficacy, cognitive and meta-cognitive styles and academic achievement. Past research has also shown that cognitive and metacognitive strategies do not play a significant role in improving students' learning and motivation (Joo, Bong & Cho, 2009).

In Bandura's social learning theory, learning is an active process in which the learner knows life skills by participating in learning and teaching. According to Bandura, this type of preventive intervention enhances the sense of social self-efficacy. In fact, success in education and social self-efficacy can be both the effect and also the cause of one another. Recent theories are based on this principle that we should not put the learners in front of the contents; rather, let them get involved actively. Using this method, we can enhance the students' self-efficacy which, in turn, leads to successful learners (Valkyrie, 2006).

Self-regulated learning and social self-efficacy play a determinant role in increasing the well-being of the students and decreasing their psychological problems. Therefore, investigating them is one of the essential issues in this research. On the other hand, to enhance students' well-being we require educating styles. Recent studies suggest that strengthening the students' cognition and metacognition can be effective. Considering the related studies and the importance of strengthening the metacognitive strategies, there is a need to teach the students the cognitive styles and

provide them with a good curriculum. In this area there are a lot of researches which investigated the relationships between these issues, but there are less interventional studies and almost no research assessing the impact of self-regulated, social self-efficacy and learning simultaneously.

Therefore, what leads to the cognition, growth and promotion of social self-efficacy and self-regulation among the learners of every society is an important goal of education and training. Students with high social self-efficacy deal with the events of life effectively and have strong capability of problem solving and interact with outside world more efficiently. Based on these facts, the present study aimed to answer whether cognitive style training affects students' social self-efficacy or not.

## Method

## Participants

The population of this research included all the male students of Educational Sciences, in Farhangian University of Mazandaran Province during the years 2018-2019. Of all the Farhangian Universities, Noshahr Farhangian University was selected using random sampling method. Then 60 participants were randomly assigned into two experimental and control groups (30 students in each group). Additional demographic data collected from their university files showed that the sample aged between 18 to 24; 10 of them were married, 4 engaged, and 46 were single.

## Instruments

## Grade Point Average

A grade point average is in the form of a number that represents the average value the overall final scores obtained in a course within a specific time period. More commonly known as the GPA, it is calculated through adding up the obtained grades and dividing the figure by the number of grades involved. The comparison of semester GPAs, before and after training, can evaluate the learning rate (Heydari, 2017).

## Scale of Perceived Social Self-Efficacy

The Scale of Perceived Social Self-Efficacy of Smith & Betz 2000, measures an individual's degree of perceived social self-efficacy, defined as an individual's degree of social self-efficacy or confidence involving social behavior. The instrument consists of 25 rationally derived items that measure the level of confidence in a variety of social situations. Responses are obtained using a five-point Likert scale ranging from 1 (no confidence at all) to 5 (complete confidence). The reliability of the instrument using internal consistency (Cronbach's alpha) reported 0/94 and test-retest method with three weeks' interval reported 0/68 to 0/86. In Iran, the validity of Cronbach's alpha coefficient was estimated to be 0.92 and the validity of the scale was confirmed by confirmatory factor analysis (Zare, Latifian & Fooladchang, 2014).

## Cognitive Styles Training Protocol

In this study, Pintrich (2004) training package was used and the students in the experimental group were trained. In this training, participants should be active, and group discussion, lecture, problem-solving, homework and also power point software were used. The session began with discussing about homework given in previous session (Included completing forms, and daily notes).

**Table 1.**
*Summary of Cognitive Style Training Sessions*

| session | Educational content |
|---|---|
| **1** | Introduction and expectations of the group, Description of group rules and curriculum, Introduction of the concept of learning, memory types, the Causes of forgetfulness, Repeat and review style training (simple topics). |
| **2** | Repeat and review strategy training (complex topics), key word strategy, abbreviation, Imaging, Using intermediaries and the method of locations |
| **3** | Educating expansion strategies (like taking notes, summarizing, telling things in your own language. |
| **4** | Teaching description and interpretation and analysis of relationships, Using information learned to solve problems, Comparison |
| **5** | Educating Organizing strategy involves categorizing new information by familiar sections, providing a list of titles, Convert lesson text to map, plot tree and chart, concept map and template. |
| **6** | Teaching planning strategies including goal setting, Predicting the time needed for the study, Determining the speed of study and choosing appropriate cognitive styles |

| session | Educational content |
|---|---|
| **7** | Training in monitoring and evaluation strategies including progress evaluation, attention monitoring, and question-asking at study time. The purpose of these strategies is to gain comprehensive insight into how you are progressing and monitoring your goals. |
| **8** | Teaching regularization that refer to consistent metacognitive adaptations and improvements made by the learner. |
| **9** | Training the speed adjustment of study and cognitive style modification if necessary |
| **10** | Training student using planning and goal Setting and how to organize content |

## Procedure

The participants in the experimental group participated in meta-cognitive training programs held in six sessions (one session per week) lasted two months, while the control group did not receive any training. Furthermore, the researcher obtained the consent form of the participants to complete the questionnaires. Then, the Smith and Betz (2000) Scale of Perceived Social Self-Efficacy was administered to the sample group as a pretest. And the GPA of the previous semester was obtained. The cognitive style training package was then administered to the experimental group as mentioned in the following section. The control group was placed on the waiting list for intervention. After educating the experimental group, the scale was again administered as the post-test for both groups and the semester GPA was obtained from the university.

Inclusion criteria: Participants had to participate in group intervention sessions, and did not have to participate in another training program simultaneously. Being absent more than one session meant unwillingness to cooperate and had to be omitted from the project.

## Data Analysis

The data were analyzed using the Analysis of Covariance by Statistical Package for Social Sciences SPSS (version 21) after screening and reforming.

## Findings

## Descriptive Data

First, the mean and standard deviation of the pre-test and post-test scores for the experimental and control groups were obtained and investigated. Then, the same procedure was repeated for the participants' social self-efficacy scores. Later, the Analysis of Covariance and the F-test were applied to make comparisons between the obtained figures.

Table 2 shows the descriptive indicators of subjects' learning and social self-efficacy scores (mean and standard deviation) by stage and group membership.

**Table 2.**
*Descriptive Measures of Learning andSsocial Self-efficacy by Stage and Group Membership*

| group | membership stage | Pre-test | | Post-test | |
|---|---|---|---|---|---|
| | | M | SD | M | SD |
| **Experimental Group** | Learning rate | 16.71 | 2.53 | 29.46 | 3.32 |
| | Social self-efficacy | 47.13 | 8.56 | 66.27 | 9.49 |
| **Control Group** | Learning rate | 17.02 | 2.78 | 17.30 | 2.54 |
| | Social self-efficacy | 46.53 | 8.83 | 47.13 | 8.03 |

As indicated in Table 2, the mean and the standard deviation scores of learning for the experimental group in the pre-test phase respectively were 16.71; 2.53 and in post-test phase are 29.46; 3.32. The mean and the standard deviation scores of learning for the control group in pre-test phase respectively were 17.02; 2.78 and in post-test phase are 17.30; 2.54. The mean and the standard deviation scores of social self-efficacy for experimental group in pre-test phase respectively were 47.13; 8.56 and in post-test phase are 66.27; 9.49. The mean and the standard deviation scores of social self-efficacy for the control group in pre-test phase respectively were 46.53; 8.83 and in post-test phase are 47.13; 8.03. The multivariate analysis of covariance was used for data analysis. Using the F-test as a parametric test requires some statistical assumptions including random sampling, the relative scale of measurement of dependent variables, normal distribution of scores of dependent variables, the homogeneity of the dependent variables, proportionality of sample size, and the homogeneity of regression slope. These assumptions were observed in the present study. In order to

investigate the difference between the mean of the experimental and control groups in terms of dependent variables, the one-way F tests for each dependent variable were performed (Table 3):

**Table 3.**
*Univariate Analysis of Covariance of Post-Test Scores, Learning Rate for Experimental and Control Groups*

| Source | SS | Df | MS | F | Sig | n |
|---|---|---|---|---|---|---|
| **Pre-test of learning** | 1.33 | 1 | 1.33 | 6.90 | 0.01 | 0.20 |
| **Group membership** | 1.48 | 1 | 1.48 | 7.67 | 0.01 | 0.22 |

As indicated in Table 3, the results of the analysis of covariance showed that there was a significant difference between the amount of learning in the experimental and control groups (p = 0.01, F = 7.67).

**Table 4.**
*Univariate Analysis of Covariance of Post-Test Social Self-Efficacy Scores for Experimental and Control Groups*

| Source | SS | Df | MS | F | Sig | n |
|---|---|---|---|---|---|---|
| **Pre-test of social self-efficacy** | 362.66 | 1 | 362.66 | 17.99 | 0.001 | 0.4 |
| **Group membership** | 643.38 | 1 | 643.38 | 31.92 | 0.001 | 0.54 |

As seen in Table 4, the results of the analysis of covariance showed that there was a significant difference between the self-efficacy of the experimental and control groups (p = 0.001, F = 31.92).

**Table 5.**
*Univariate Analysis of Covariance for Post-Test Scores of Learning and Control Groups*

| Source | SS | df | MS | F | Sig | n |
|---|---|---|---|---|---|---|
| **Pre-test of learning** | 549.27 | 1 | 549.27 | 35.02 | 0.001 | 0.57 |
| **Group membership** | 341.81 | 1 | 14.81 | 14.94 | 0.001 | 0.03 |

As can be seen in Table 5, the results of the analysis of covariance showed that there was a significant difference between the amount of learning in the experimental and control groups (p = 0.001, F = 14.94).

## Discussion

The present study aimed to investigate the effect of cognitive style training on the improvement of learning and social self-efficacy among students of Farhangian University of Mazandaran province. The result of analysis indicated that cognitive style training had significant effect on the development of learning among the students of Farhangian University of Mazandaran.

The findings of the present study are the in line with those researches that showed significant positive relationship between cognitive styles and self-efficacy (Ghomi, Moslemi & Mohammadi, 2016; Medina, Castleberry & Persky, 2018). Educating the cognitive styles cause people to find appropriate methods to learn better and be able to handle the given tasks. Consequently, people who have these skills are usually hard working which makes them high achievers in academic works. On the other hand, cognitive styles are derived from the theory of self-regulation which is based on the constructivist approach emphasizing on the student as an active part of learning process. Then, this active role and having freedom in works will lead to an improvement in both social self-efficacy and learning process.

## Conclusions

We may reasonably argue that when students use cognitive styles, they find suitable methods in learning process which in turn lead to the improvement of motivational beliefs, better learning, high self-efficacy, and also evaluating the importance of academic assignments. Learners' lacking learning skills do not often rely on their own abilities, and even when they study successfully, they have a state of uncertainty about their abilities. By training social self-efficacy and learning styles, people's beliefs about their abilities will be organized and their motivations, cognitive resources, and controlling states will be improved. One of the essential aspects of social self-efficacy is the belief that

one can control and also influence the outcome of one's own life. Especially when dealing with stressors, having a sense of control over situations is an important factor in adjusting to different conditions.

The result of the study also indicated that cognitive styles training have a positive significant effect on social self-efficacy of the students. Other researchers have also confirmed this result (Montague, 2008), and showed a positive significant causal relationship between self-efficacy, cognitive and meta-cognitive strategies, and academic achievements which are the same as the present study. To explain these findings, it can be pointed out that social self-efficacy refers to individual's judgments about their abilities in different situation. On the other hand, social self-efficacy can affect the performance of people only when they have high skills in particular tasks and also be aroused emotionally. The social self-efficacy is increased when the students are educated by learning styles. Bandura believes that cognitive processes and intelligence also play a determinant role in human social self-efficacy (Joo, Bong & Cho, 2009), since self-efficacy is believed to be our ability for organizing and managing different situations. It is argued that individuals with higher cognitive and meta-cognitive abilities have developed levels of motivation in social areas and also because of the reinforcement received by external environment have higher level of social self-efficacy. Social self-efficacy beliefs are influenced by cognitive and process skills, hence we should explain cognitive and metacognitive styles. This method of education is a combination of behavioral and cognitive styles that helps people when faced with stressors and difficulties. In other words, this method, by evaluating learning process, (cognition and metacognition) can distort the concentration of individual from negative beliefs toward the positive and effective beliefs; therefore, can decrease the negative self-image (Safari & Meshkini, 2015).

The current study faced with a number of limitations. The research sample was limited to only male students of Mazandaran Farhangian University, so the findings cannot be generalized to female students. In addition, further research is recommended, especially in other communities. There was also no follow-up period to evaluate the long-term efficacy of the therapeutic effect. In this regard, it is suggested that researchers replicate this study on different individuals and groups of students in different cities in order to make findings more generalizable. It can be suggested to the psychologists to use this approach to reduce social maladjustments and increase social self-efficacy in psychological service centers so that they can reduce their concern about issues such as classroom instruction, participation in social activities etc.

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