

Examining the Relationship Between Meta-Cognitive Beliefs and Self-Efficacy in EFL Female Students

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Abstract: The purpose of this research was to examine the relationship between self-efficacy and meta-cognitive beliefs among female EFL students. Participants of this study were selected randomly from the pool of English students at Safir-e-Lian Institute, Shiraz, Iran. The 100 English learners were chosen whose proficiency level was upper intermediate based on the institutes standards and their ages ranged from 20-35. Two validated questionnaires, Meta-Cognition Questionnaire (MCQ-30) and self-efficacy scale have been used as the instruments of the study. This study was a correlational enquiry; pearson and multiple regression statistical measures were employed. The findings showed that there was a positive direct relationship between all components of meta-cognitive beliefs (i.e., attitudes about worry, cognitive confidence, controlling thoughts and cognitive self-consciousness) and self-efficacy in female EFL students. It was also found that among the five meta-cognitive aspects only “cognitive confidence” can be accounted as a predictor for self efficacy. Pedagogical implications are discussed in the conclusion section.

Key words: Meta-cognitive beliefs, self-efficacy, female EFL students, direct relationship, aspects

INTRODUCTION

This is a realm of inquiry in which psychology can make fundamental unique contributions to the bio-psychosocial understanding of human development, adaptation and change. Social cognitive theory subscribes to a model of emergent interactive agency (Bandura, 1986, 1997). Thoughts are not disembodied, immaterial entities that exist apart from neural events.

Cognitive processes are emergent brain activities that exert determinative influence. Emergent properties differ qualitatively from their constituent elements and therefore are not reducible to them. One of the concepts that has been focused in cognitive theories of learning (to be specific, Bandura (2001)’s cognitive-social theory) is the concept of self-regulation. It means production and guidance of thoughts, emotions and behaviors by one to reach her/his goals (Seif, 2008). Bandura proposed that the feeling of self-efficacy could have important role in personal trend to the goals, tasks and challenges. Indeed, those people with high self-efficacy not only believe that their abilities are higher than difficult tasks and positions but also see challenging issues as tasks to learn and competence. Therefore, deal with them with least anxiety and stress and deep interest and feeling of responsibility.

The other concept that is dealt with in this study is meta-cognitive beliefs. Simply, meta-cognition is the “cognition of cognition” or “to know about knowing”. To say it accurately, meta-cognition is the person’s knowledge on her/his way of learning (Seif, 2008). In meta-cognitive psychology, the main focus is on human’s existing awareness from his cognitive system. In other words in meta-cognitive theory, the emphasis is on recognition of cognitive function and its functions (Agazade and Ahadian, 1998).

Meta-cognitive beliefs include knowledge, beliefs, processes and strategies which evaluate or control cognition. Therefore, meta-cognition is knowledge or cognitive process in which there is cognitive assessment or control of deficiency and damage in any of these beliefs leads to anxiety (Biabangard, 2007). Fisher and Wells (2005) pointed that meta-cognitive beliefs relate to the meaning and importance of threatening of disruptive thoughts that are of main factors of anxiety and lowered ineffective meta-cognitive beliefs related to factors which decrease anxiety.

In language context, meta-cognitive processing is expressed through strategies which are procedural, purposeful, effortful, willful, essential and facilitative in nature and the reader must purposefully or intentionally or willfully invoke strategies (Anderson, 2002) and does

so to regulate and enhance learning from text. Through meta-cognitive strategies, a reader allocates significant attention to controlling monitoring and evaluating, e.g., the reading process (Richards, 1990; Khaghaninejad *et al.*, 2015).

This study was an attempt to examine the relationship between meta-cognitive strategies and self-efficacy of female EFL learners that has been less considered in academic context the researchers tried to find a reasonable answer to the following research questions.

Is there any relationship between meta-cognitive aspects (i.e., positive beliefs about worry, negative beliefs about worry, cognitive confidence, thought-control necessity and cognitive self-consciousness) and self-efficacy of Iranian female EFL learners? And which one of the meta-cognitive aspects can be accounted for predicting self-efficacy of the study's participants?

Literature review: Goos (2002) stated that research on students self-efficacy ratings has improved the following success and decreased after experiencing failure and also he indicated that self-efficacy is related to achievement. Among all learning strategies identified, meta-cognition is found to be a strong predictor of academic success among students. According to Mahadi and Subramaniam (2013) meta-cognitive knowledge has a significant role in many cognitive activities concerning language use.

Meta-cognition can help students develop their knowledge for teaching themselves and improve positive learning transfer to new settings and events. This has been demonstrated in numerous studies across multiple disciplines (Muir *et al.*, 2008; Rasekh and Ranjbar, 2003). These studies demonstrated the need for instructional approaches to help students become more meta-cognitive about their learning.

However, more needs to be understood about the mechanisms of meta-cognition, how to effectively encourage students meta-cognition in problem solving and how to promote the development of students meta-cognitive abilities a mechanism that enables one efficiently to organize, monitor and regulate what one knows to reach a goal successfully.

The learning environment, as an external source, supports meta-cognition through classroom activities and through specific problem-solving tasks (Lesh *et al.*, 2003). Each activity or task involves a different focus of problem solving such as analyzing and creating which directly affects the focus of meta-cognition. Problems requiring

different levels in conceptual and cognitive demands of the problem-solving processes can produce differing meta-cognitive functions involving different focuses of meta-cognition within problem-solvers. Task complexity is another important factor in the elicitation of meta-cognition; meta-cognition is triggered more during difficult problems (Lorenz and Jacobse, 2008).

Self-efficacy occupies a pivotal role in the causal structure of social cognitive theory because efficacy beliefs affect adaptation and change not only in their own right but through their impact on other determinants (Bandura, 1997). Such beliefs influence whether people think pessimistically or optimistically and in ways that are self-enhancing or self-hindering.

Efficacy beliefs play a central role in the self-regulation of motivation through goal challenges and outcome expectations. It is partly on the basis of efficacy beliefs that people choose what challenges to undertake how much effort to expend in the endeavor how long to persevere in the face of obstacles and failures and whether failures are motivating or demoralizing. The likelihood that people will act on the outcomes they expect prospective performances to produce depends on their beliefs about whether or not they can produce those performances. A strong sense of coping efficacy reduces vulnerability to stress and depression in taxing situations and strengthens resiliency to adversity.

Efficacy beliefs also play a key role in shaping the courses lives take by influencing the types of activities and environments people choose to get into. Any factor that influences choice behavior can profoundly affect the direction of personal development. This is because the social influences operating in selected environments continue to promote certain competencies values and interests long after the decisional determinant has rendered its inaugurating effect. Thus, by choosing and shaping their environments, people can have a hand in what they become.

The rapid pace of informational, social and technological change is placing a premium on personal efficacy for self-development and self-renewal throughout the life course. In the past, students educational development was largely determined by the schools to which they were assigned.

Nowadays, internet provides vast opportunities for students to control their own learning. They now have the best libraries, museums, laboratories and instructors at their fingertips, unrestricted by time and place. Good self-

regulators expand their knowledge and cognitive competencies poor self-regulators fall behind (Zimmerman, 1990).

Consistent with previous findings, Lee *et al.* (2014) have found that self-efficacy predicted achievement both directly and indirectly via grade goals. Self-efficacy also predicted self-regulation but only when grade goals mediated the relationship.

Study carried out by McGeown *et al.* (2014) showed that self-efficacy and personality (specifically conscientiousness) predicted significant variance in intrinsic motivation while only self-efficacy predicted significant variance in extrinsic motivation; self-efficacy and personality predicted more variance in intrinsic than extrinsic motivation.

Kim illustrated how meta-cognition was elicited, at the environmental level, through problems requiring different problem-solving processes (definition building and operationalizing definitions) and how meta-cognition operated at both the individual level and the social level during complex problem solving.

The results showed problem of providing meta-cognitive feedback can be off-loaded from one individual's mind to another's and therefore, implicated the importance of social sources such as interactions with peers for improving meta-cognitive learning environments.

Social sources enable one to go beyond the individual's knowledge or regulation of cognition which may support only limited meta-cognitive processing, thus increasing opportunities to develop meta-cognition. These findings enriched our understanding of how to design instruction that fosters the development of meta-cognition.

MATERIALS AND METHODS

Participants: Participants of this study were selected randomly from the pool of English students at Safir-e-Lian Institute, an English learning center in private sector, Shiraz, Iran.

The 100 English learners were chosen whose proficiency level was upper intermediate based on the institutes standards. They have passed English Result Upper Intermediate course book by Hancock and McDonald. The students were all female EFL learners and their ages ranged from 20-35. In this research just female students have been chosen so that it was not intended to compare female students results with those of the males.

Materials and instruments: Two validated questionnaires have been used in this study to evaluate the participants meta-cognitive beliefs and self-efficacy. These questionnaires have been widely used in numerous studies of this nature (Ashouri *et al.*, 2009; Mohammadamini, 2007; Flavell, 1979).

Meta-Cognition Questionnaire (MCQ-30) designed by Wells (2000), contains 30 self-reporting statements which evaluates the individuals beliefs about their thoughts. In this scale, responses are calculated upon Likert scale.

This scale has 5 sub-scales, each of which including 6 items; MCQ1: Meta-cognitive beliefs about worry, MCQ2: Cognitive confidence, MCQ3: Controlling thoughts, MCQ4: Ideas about the need to control thoughts, MCQ5: Cognitive self-consciousness. Cronbach's alpha coefficient of overall scale for Iranian sample has been reported 91%. Cronbach's alpha coefficients for subscales have been reported as 87, 86, 91, 80 and 81%, respectively.

Self-efficacy scale this scale has been made by Sperry (1993) in Lickert format with 17 items from "completely agreed" to "completely disagree". The lowest score is 17 and the highest one is 85. This scale could be performed without any age limitation. Azizi (2006) has calculated its validity through Chronbach alpha as 86%.

The procedure of administration of the questionnaires took one session and the students were asked to answer the items carefully without missing any items. Then, the needed data were collected and the process of scoring the questionnaires started. The obtained data were entered into SPSS to be analyzed.

Procedure: At the first stage of the research, along with studying the related, recent and updated sources both the valid and reliable questionnaires were administered, self-efficacy scale with the overall reliability of 0.86 and Meta-Cognition Questionnaire (MCQ-30) with the overall reliability of 91%. The participants who were upper-intermediate female students of English were asked to fill the study's questionnaires out carefully and honestly during an appropriate time span.

After collecting data, the obtained data were analyzed through SPSS with the aid of Pearson correlation coefficient and multiple regression statistical measures. The findings and conclusions were reported and contextualized to see if they are consistent with the findings of previous studies or not.

Table 1: Descriptive statistics for self-efficacy

Variables	N	Mean	Median	SD	Skewness	Kurtosis	Min.	Max.
Self-efficacy	100	37.68	38.00	5.614	-0.243	-0.550	23	48

Table 2: Descriptive statistics for aspects of meta-cognitive beliefs

Variables	N	Mean	Median	SD	Skewness	Kurtosis	Min.	Max.
Positive beliefs about worry	100	14.75	14.50	3.867	0.178	0.943	6	21
Negative beliefs about worry	100	15.02	15.00	3.402	0.024	0.535	8	24
Cognitive confidence	100	14.21	14.00	3.793	0.093	0.1078	7	21
Need to control thoughts	100	14.63	15.00	3.839	0.168	0.276	6	24
Cognitive self-consciousness	100	13.20	13.00	3.235	0.268	0.287	7	22

Table 3: One-sample Kolmogorov-Smirnov test

Variables	N	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
Self-efficacy	100	0.729	0.663
Positive beliefs about worry	100	1.296	0.069
Negative beliefs about worry	100	0.933	0.348
Cognitive confidence	100	1.099	0.178
Need to control thoughts	100	0.815	0.520
Cognitive self-consciousness	100	0.787	0.565

Table 4: Correlation coefficient of meta-cognitive aspects and self-efficacy

Self-efficacy	Positive beliefs about worry	Negative beliefs about worry	Cognitive confidence	Need to control thoughts	Cognitive self-consciousness
Pearson correlation	0.279**	0.325**	0.416**	0.285**	0.261**
Sig. (2-tailed)	0.005	0.001	0.000	0.004	0.009
N	100	100	100	100	100

Table 5: Durbin-Watson test model

Model	R	R ²	Adjusted R ²	SE of the estimate	Durbin-Watson
1	0.451	0.203	0.161	5.143	1.840

Table 6: Analysis of variances

Models	Sum of squares	df	Mean square	F-value	Sig.
Regression	633.804	5	126.761	4.793	0.001
Residual	2485.956	94	26.446		
Total	3119.760	99			

RESULTS AND DISCUSSION

Table 1 depicts the means, standard deviations, medians, minimums and maximums of self-efficacy and Table 2 illustrates the aforementioned parameters for aspects of meta-cognitive (i.e., positive beliefs about worry negative beliefs about worry cognitive confidence, need to control thoughts and cognitive self-consciousness).

To examine the normality of the variables score distribution, Kalmogrov-Smimov test was used. As Table 3 suggests all the variables had had normal distribution. Table 4 presents the correlation coefficients of each and all aspects of meta-cognitive beliefs and self-efficacy for the study's participants.

As Table 4 implies all the aspects of meta-cognitive beliefs were found to possess positive, significant correlations with self-efficacy. Among the meta-cognitive

aspects "cognitive confidence" and "cognitive self-consciousness" had the strongest and the weakest relationships with self-efficacy of the participants in question.

In order to see if any of the meta-cognitive aspects can be accounted for predicting self-efficacy, a multiple regression was employed. A Durbin-Watson test was run to gain certitude that the criterion variable had not self-correlational and errors had been independent as the prerequisite of running a multiple regression analytical procedure. Table 5 justifies that why employing a multiple regression was promising.

For regression model to be significant, there should be liner relationship between criterion and predictor variable. To examine the presence of leaner relationship between criterion and predictor variable, F-test was used. Regarding the level of significance in F-test was 0.001, it was shown that there was leaner relationship between criterion and predictor variable (Table 6).

Table 7 is the summary of the multiple regression used for answering the second research question. As it demonstrates, among the five meta-cognitive aspects only "cognitive confidence" can be accounted as a predictor for self efficacy.

Table 7: Model summary Model

Models	Unstandardized coefficients		Standardized coefficients		Sig.
	B	SE	Beta	t-values	
Constant	25.051	2.938		8.527	0.000
Positive beliefs about worry	0.001	0.173	0.001	0.007	0.995
Negative beliefs about worry	0.259	0.182	0.157	1.424	0.158
Cognitive confidence	0.423	0.185	0.286	2.285	0.025
Need to control thoughts	0.077	0.168	0.053	0.461	0.646
Cognitive self-consciousness	0.120	0.183	0.069	0.656	0.514

Dependent variable: self-efficacy

Through this enquiry it was found that there were positive and statistically significant relationships between each and all meta-cognitive beliefs and self-efficacy. It was also revealed that only “cognitive consciousness” can be accounted for predicting the self-efficacy of the participants which plays a central role in the self-regulation of motivation through goal challenges and outcome expectations.

It is partly the basis of what people choose to undertake how much effort to expend in the endeavor how long to persevere in the face of obstacles and failures and whether failures are motivating or demoralizing.

Overall, it could be mentioned that the results obtained from data analysis are mostly consistent with the previous research, for example what Wells (2005) pointed out, meta-cognitive beliefs relate to the meaning and importance of threatening of disruptive thoughts that are of main factors of anxiety and lowered ineffective meta-cognitive beliefs related to factors which decrease anxiety.

As Yousefzade *et al.* (2012) showed, meta-cognitive skills increases the students’ internal motivation, their concentration on the goal, their skill of problem solving and self-evaluation. Also, Kharazi and Ejeii (2008) indicated in their research that using meta-cognitive strategies is under the influence of self-efficacy beliefs.

CONCLUSION

The findings of the present study showed that there was positive direct relationship between all components of meta-cognitive beliefs and self-efficacy of female EFL students of this study and among the five types of meta-cognitive beliefs this was only “cognitive consciousness” which can be accounted as a predictor of self-efficacy which is known as an undeniable parameter of success in educational contexts (Bandura, 2001).

An outcome of reflection according to Moon (2004) is “meta-cognition that supports learning”. Therefore, it is clear how reflection, meta-cognition and self-regulatory skills are interrelated. All three of these factors achieve joint outcomes and encourage successful learning as the growth of one of these factors results in the development of the other factors.

In education the aim should not only be teaching the curriculum but it should also be “to ensure that the students understand how to learn and to take responsibility for their own learning. Meta-cognition can help students develop their knowledge for teaching themselves and improve positive learning transfer to new settings and events” (Larkin, 2010).

Pedagogical implications: The results of this research could be useful for English teachers in institutes and schools. Interactions with the learning environment are potential sources encouraging students to develop meta-cognitive ability. These interactions help students unpack misconceptions and repair them through meta-cognitive processes operating at both the individual and social levels.

As this research has been done in EFL classes, the results can be useful in EFL context and teachers would increase the quality of their classes considering the results. They could apply meta-cognitive strategies and concept of self-efficacy in their classes to improve students learning and get better gains.

Curriculum developers and course book designers can benefit from the findings of the study and consider the advantages of self-efficacy and meta-cognitive beliefs on students’ education. They can include all the components and strategies for constructing the textbooks (like meta-cognitive self-regulatory instructional activities). Extracurricular programmers also can hold workshops and extra instruction periods on educating self-efficacy and meta-cognitive beliefs by those who are appropriately owned these skills.

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