

The role of critical thinking dispositions and depressive symptoms in predicting teacher candidates' perceptions of 'teacher self-efficacy'

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Accepted 5 July, 2023

ABSTRACT

The purpose of this study was to examine the relationships among pre-service teachers' perceptions of teacher self-efficacy (TSE), critical thinking dispositions (CTD), and depressive symptoms. Correlational survey, one of the quantitative research designs, was used as the research design of this study. The participants of the study consisted of 450 pre-service teachers studying at the Faculty of Education of a state university in Turkey. The California Critical Thinking Disposition Scale, Beck Depression Inventory, Teacher Self-Efficacy Scale, and a researcher-developed demographic information form were used to collect data. The collected data was analyzed using the Pearson Moment Correlation Coefficient and multiple regression analysis techniques. The results of the study revealed that the subdimensions of critical thinking disposition and depressive symptoms had significant positive correlations with all dimensions of teacher self-efficacy. Another important finding was that CTD and depressive symptoms are important variables in predicting preservice teachers' self-efficacy beliefs. The present study also addressed the implications for teacher education and provided insights for future research directions.

Keywords: Teacher self-efficacy, critical thinking dispositions, depressive symptoms.

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INTRODUCTION

The development of effective and confident teachers is paramount to ensuring quality education. Understanding the factors that influence preservice teachers' development and well-being is critical to promoting their effectiveness and success in the teaching profession. Teacher self-efficacy reflects individuals' beliefs in their ability to effectively perform teaching tasks and positively impact student outcomes. Critical thinking dispositions encompass the dispositional traits and tendencies that shape individuals' inclination and ability to think critically. Meanwhile, depressive symptoms may influence pre-service teachers' emotional well-being and potentially impact their self-efficacy beliefs. By examining these relationships, the research aims to contribute to the existing understanding of teacher development and provide insights for designing targeted interventions and

support systems to enhance preservice teachers' efficacy, critical thinking skills, and emotional well-being. Through a comprehensive analysis, this study sheds light on the complex relationship between these factors and provides valuable guidance for teacher education programs and future research efforts in this area.

Self-efficacy, a psychological construct founded on Bandura's (1977, 1997) social cognitive theory, refers to an individual's belief in his/her capability to organize and execute the necessary activities to achieve a certain performance. In other words, self-efficacy is an individual's perception and belief about their ability and capacity to cope with different situations and accomplish a particular activity (Senemoğlu, 2004). Ozer and Bandura (1990) stated that self-efficacy is "concerned with the motivation, cognitive resources, and courses of action needed to

exercise control over given events" (p. 472). The concept has been extensively studied and has been found to have a significant impact on various domains of human behavior, including education. When applied to the field of education, a teacher's sense of self-efficacy is their judgment of their skills in producing the desired outcomes of student participation and learning, even among individuals who may be difficult or unwilling to learn, and is considered an essential determinant of teaching effectiveness.

TSE belief has powerful effects not only on the behaviors of teachers in the classroom but also on student outcomes. According to Tschannen-Moran and Woolfolk Hoy (2001), teachers' sense of efficacy is related to students' achievements, motivation, and their own sense of competence. Additionally, the authors added that there is a strong association between TSE beliefs, their behaviors in the classroom, the contributions they make to teaching, and the goals and aspirations they set for themselves and their students, which in turn influence their own and their students' level of motivation.

The construct of TSE is a motivational factor that has a direct impact on classroom outcomes. Studies have linked it to, improved planning and organizational skills (Allinder, 1994), increased job satisfaction (Caprara, Barbarnelli, Borgogni and Steca, 2003), stronger commitment towards teaching' (Coladarci, 1992), student achievement (Moore and Esselman, 1992; Muijs and Reynolds, 2002) and a willingness to invest more time in helping struggling students (Gibson and Dembo, 1984). It is obvious that developing strong efficacy beliefs is a crucial aspect of a teacher's growth, teacher preparation programs can play a significant role in this process. According to Tschannen-Moran, Hoy, and Hoy (1998), teacher preparation programs have a vital role in nurturing the efficacy of pre-service teachers since such beliefs can have a profound impact on their future professional practices.

Another issue that has been emphasized in education in recent years is critical thinking. It is now widely accepted that a developed society is only possible where critical thinking is dominant. Developing critical thinking in students is an important educational goal that is accepted by educators. Cotton (1991) notes that in today's information society, careful, reflective thinking is seen as one of the important characteristics of an educated individual, a necessity for being a responsible citizen in a democratic society, and, more recently, as an employability skill in many jobs. A review of the literature reveals many definitions of critical thinking. Ennis (1985, 1989) defines critical thinking as "reasonable and reflective thinking focused on deciding what to believe or do". According to Beyer (1985), critical thinking is the process of determining the authenticity, accuracy, and value of information. In order for individuals to think critically, they must possess critical thinking skills. However, a number of affective dispositions are required to put critical thinking skills into practice. These requirements are called CTD.

While critical thinking skills are a set of higher-level thinking skills, these dispositions are related to the motivation and characteristics of the critical thinker. In other words, CTD can be considered as the willingness to use critical thinking skills (Kalelioğlu and Deryakulu, 2014).

Developing early efficacy beliefs for pre-service teachers is a complex process, according to Bandura (1997), who identified four sources of efficacy: mastery experiences, vicarious experiences, physiological and emotional states, and verbal persuasion. Although many teacher education programs focus on providing mastery experiences, vicarious experiences, and verbal persuasion through student teaching experience, practicums, course work and mentorships, they pay less attention to the emotional well-being or states of pre-service teachers (DeMauro and Jennings, 2016). Because one's degree of emotional arousal, mood, and feelings of stress, anxiety, and depression, can have a significant impact on one's dedication and persistence, this source of efficacy shouldn't be disregarded (Bandura, 1993, 1997). Bandura (1993) suggested that a reciprocal relationship exists between self-efficacy and depression. Individuals with high levels of self-efficacy may seek out social relationships in order to cope with difficult situations and overcome chronic stressors. Therefore, low self-efficacy may be a strong contributor to depression (Bandura, 1993).

A study by Maciejewski, Prigerson, and Mazure (2000) found a dynamic relationship between self-efficacy and symptoms of depression, with higher self-efficacy predicting less severe depressive symptoms and more severe depressive symptoms predicting lower self-efficacy. Although there are few studies revealing a direct relationship between teachers' self-efficacy and depressive symptoms, Kim and Kim (2010) showed in their study with preschool teachers that depressive symptoms predicted lower levels of teacher self-efficacy. DeMauro and Jennings (2016) found that depressive symptoms negatively predicted teachers' self-efficacy beliefs in their study of teacher candidates. Generally, participants who reported higher levels of depressive symptoms tended to have lower levels of teaching efficacy. An individual's psychological state during an activity has an impact on their perceived self-efficacy. When a person feels good both physically and emotionally, it increases the probability of that person successfully completing a specific task or desired behavior (Bikmaz, 2004).

In the review of relevant literature, various studies have been encountered that have analyzed teacher candidates' TSE from different variables such as attitudes toward teaching (Arslan, 2019), burnout (Fives et al., 2007), commitment to the completion of a teaching degree (Pfzner-Eden, 2016), problem-solving skills (Cansoy and Türkoglu, 2017), and professional commitment (Chesnut and Burley, 2015; Klassen et al., 2013; Klassen and Chiu, 2011). However, any study that examines teacher self-efficacy, critical thinking, and depressive symptoms

together has not been encountered. Therefore, it is thought that the findings of this study may be used for restructuring the education process of teacher candidates.

Identifying the predictive power of teacher candidates' critical thinking tendencies and mental states on TSE can help determine effective policies to improve their CTD and support them in coping with difficult situations and overcoming chronic stressors. The current study is aiming to explain the importance of CTD and depressive symptoms in predicting TSE. In line with this goal, these questions are studied: (1) Are CTD and depressive symptoms associated with TSE? (2) How do CTD and depressive symptoms predict preservice teachers' perceptions of TSE?

METHODS

Research design

The research was designed in the correlational survey research method, which is one of the quantitative research designs. In studies designed with correlational survey research methods, the aim is to understand whether there is a change between two or more variables, and if so, how the change occurs (Karasar, 2011). The correlational survey research method was used in this research since the aim was to understand the relationship between teacher candidates' levels of critical thinking disposition, depressive symptoms, and their efficacy in three sub-dimensions of TSE: efficacy for student engagement, efficacy for instructional strategies, and efficacy for classroom management.

Participants

The sample of the study is selected by convenience sampling and the participants are 450 teacher candidates (321 female, 71.3%; 129 male, 28.7%) who are senior-year students at the Hasan Ali Yücel Faculty of Education at Istanbul University-Cerrahpasa. The ages of the participating teacher candidates range from 18 to 31, and their average age is 20.78. All the participants provided their consent voluntarily.

Instruments

In the study, the Teacher Self-Efficacy Scale (TSES) was used to measure teacher candidates' self-efficacy beliefs in teaching, the California Critical Thinking Disposition Scale (CCTDS) was used to measure their critical thinking tendencies, and the Beck Depression Inventory (BDI) was used to detect depressive symptoms. In addition, a "Personal Information Form" was prepared and administered by the researchers to access the

demographic information of teacher candidates. These scales are preferred in this study since they are widely used in studies conducted in Turkey with similar variables (Bakır, 2015; Cansoy, Parlar and Kılınç, 2017; Temel, Bahar, and Çuhadar, 2007) and hence considered highly valid, reliable and culturally compatible.

TSES (Tschannen-Moran and Woolfolk Hoy, 2001) is a self-report instrument consisting of 24 items and was developed to predict the teacher candidates' self-efficacy perceptions. There are three sub-dimensions in the scale: "efficacy for student engagement (8 items)" is related to the degree to which teachers believe they can persuade their students to perform school activities well; "efficacy for classroom management" consists of 8 items related to how much teachers can control unwanted behaviors in the classroom "efficacy for instructional strategies" includes 8 items related to how well teachers can use different teaching and evaluation strategies. TSES is a 9 point Likert-type scale scored between 1 "insufficient" to 9 "very adequate". The scores range between 24 and 216. The scale's low scores indicate a low perception of competence, while high scores suggest a high perception of competence. In the adaptation study, confirmatory factor analysis and the Rasch measurement model were used in the validity studies. In the reliability studies, the internal consistency coefficients of the scale were calculated. The Rasch analysis revealed that all items had acceptable fit values. In a previous study by Çapa, Çakıroğlu, and Sarıkaya (2005), Cronbach's Alpha values were .82, .86, .84, and .93 for efficacy for student engagement, instructional strategies, classroom management, and the overall scale, respectively. In this study, Cronbach alpha values were for "efficacy for student engagement" .83 "efficacy for classroom management" .84, and "efficacy for instructional strategies" .81.

CCTDS (Facione and Facione Giancarlo, 1998) is another self-report instrument consisting of 51 items used to measure the critical thinking tendencies of teacher candidates. The adapted Turkish version of the scale, created by Kökdemir (2003), consists of six subscales: analyticity, open-mindedness, inquisitiveness, self-confidence, truth-seeking, and systematicity. Responses are measured on a six-point Likert scale ranging from "strongly agree" to "strongly disagree," and the internal consistency coefficients of the sub-dimensions of the scale range from .61 to .78. The scale's overall reliability coefficient was found to be .88, and it explains 36.13% of the total variance (Kökdemir, 2003). In this study, the overall Cronbach Alfa value of CCTDS was .84.

The subscales and the description of each described by Facione (1992) are as follows: (a) The Inquisitiveness subscale measures an individual's intellectual curiosity and desire to learn, even in situations where the immediate application of knowledge may not be apparent. (b) The Open-mindedness subscale focuses on being tolerant of

diverse perspectives and being aware of one's own potential biases. (c) The Systematicity subscale assesses one's level of organization, focus, and diligence in the process of inquiry. (d) The Analyticity subscale emphasizes the value placed on reasoning and using evidence in problem-solving, as well as the ability to anticipate potential difficulties and intervene when necessary. (e) The Truth-seeking subscale examines one's willingness to seek out the best knowledge in a given context, to have the courage to ask questions, and to pursue inquiry honestly and objectively, even if it challenges personal interests or preconceived opinions. (f) The Self-Confidence subscale measures the level of trust an individual has in their reasoning processes. It reflects the confidence to rely on one's well-reasoned judgments and to guide others toward rational problem-solving.

BDI (Beck, Ward, Mendelson, Mock and Erbaugh, 1961) is a self-report instrument consisting of 21 items used to measure the depressive symptoms

of teacher candidates. Each item determines a behavioral pattern specific to depression and contains self-evaluation sentences with four options ranging from 0 to 3. A total score of 0 to 63 can be obtained from the scale, and a cut-off score of 17 is accepted for the Turkish population (Savaşır and Sahin, 1997). It is one of the most commonly used tools worldwide for evaluating the severity of depressive symptoms in both psychiatric patients and normal samples. In Turkey, the BDI, which has undergone reliability and validity studies by Hisli (1988, 1989) and Tegin (1987), is utilized in various research studies and clinical applications. In Hisli's study, the Cronbach alpha coefficient of the scale was 0.80 (Hisli, 1988, 1989). In this study, it was 0.86.

Demographic information form (DIF; authors)

Participant demographics included age, gender and grade.

Procedures

The data were obtained from fourth-grade teacher candidate students randomly selected by the researchers. Prior to administering the data collection tools, the students were informed about the research purpose and scope, and only those who volunteered participated. The data collection process took place in the classroom, where the young adults were given enough time and a suitable environment to answer the questions in groups. The application was completed in approximately 25 min.

SPSS 25 package program was used for the analysis of the data, and Pearson's Moment Correlation Coefficient was calculated to determine the relationships between the variables. In addition, multiple regression analysis was applied to determine the role of critical thinking tendencies and depressive symptoms in predicting pre-service teachers' perceptions of teaching self-efficacy, and the margin of error in the study was accepted as 0.05.

Table 1. Correlations of teacher self-efficacy, critical thinking and depression.

	Age	Analyt.	OpMind	Inquisiti.	Confide.	Tru.Seek	Systema	Stu.Eng.	Ins.Strat	Clas.Ma.	Depe
Age	1										
Analyticity	-.078	1									
OpenMindedness	.098*	.286**	1								
Inquisitiveness	.042	.538**	.256**	1							
Confidence	.081	.456**	.082	.501**	1						
Truth Seeking	.029	.093	.390**	.141**	.045	1					
Systematicity	.119*	.398**	.467**	.325**	.377**	.322**	1				
Stu.Engag.	-.049	.413**	.281**	.519**	.314**	.169**	.318**	1			
Instr. Stra.	.017	.288**	.215**	.348**	.317**	.106*	.297**	.752**	1		
Class. Manag.	-.049	.307**	.177**	.394**	.326**	.059	.327**	.723**	.739**	1	
Depression	-.066	-.187**	-.192**	-.189**	-.222**	-.173**	-.402**	-.271**	-.260**	-.284**	1

*p < .05, **p > .01 (N = 450)

RESULTS

To examine the relationships between pre-service teachers' self-efficacy perceptions, age, CTD, and depressive symptoms, Pearson's Moment Correlation coefficients were first calculated (Table 1).

The correlation coefficients in Table 1 illustrate that there is a positive and moderate relationship between teacher self-efficacy dimensions, depression and dimensions of critical thinking disposition. It was observed that there is positive relationship between efficacy student engagement and analyticity ($r = .413$, $p < .01$), openmindedness ($r = .281$, $p < .01$), inquisitiveness ($r = .519$, $p < .01$), confidence ($r = .314$, $p < .01$), truth seeking ($r = .169$, $p < .01$), systematicity ($r = .318$, $p < .01$) and negative relationship between depression ($r = -.271$, $p < .01$). It was also observed positive relationship between efficacy instructional strategies and analyticity ($r = .288$, $p < .01$), openmindedness ($r = .215$, $p < .01$), inquisitiveness ($r = .348$, $p < .01$), confidence ($r = .317$, $p < .01$), truth seeking ($r = .106$, $p < .05$), systematicity ($r = .297$, $p < .01$) and negative relationship between depression ($r = -.260$, $p < .01$). The similar correlation coefficients was observed between efficacy classroom management and analyticity ($r = .307$, $p < .01$), openmindedness ($r = .177$, $p < .01$), inquisitiveness ($r = .394$, $p < .01$), confidence ($r = .326$, $p < .01$), systematicity ($r = .327$, $p < .01$) and negative relationship between depression ($r = -.284$, $p < .01$).

Table 2. Regression analysis summary for efficacy student engagement.

Variable	B	Stan. Er.	β	t	p
Costant	20.276	4.629		4.380	.000
Analyticity	.295	.089	.205	3.317	.001
OpenMindedness	.091	.058	.092	1.566	.119
Inquisitiveness	.459	.086	.343	5.330	.000
Confidence	-.122	.104	-.074	-1.164	.246
Truth Seeking	.014	.087	.009	.162	.871
Systematicity	.035	.128	.018	.273	.785
Depression	-.166	.051	-.180	-3.269	.001

$n = 450$, $R = .573$, $R^2 = .328$, $F = 19.373$, $p < .01$, $p < .05$.

Multiple linear regression was used to test if critical thinking disposition dimensions and depression significantly predicted *Efficacy Student Engagement*. The standard model's degree of predicting was found to be $R = .573$. The model's degree of explaining the variance was

$R^2 = .328$. The findings showed that inquisitiveness made the biggest contribution with the value of ($\beta = .343$), which is followed by Analyticity ($\beta = .205$), and depression ($\beta = -.180$) (Table 3).

Table 3. Regression analysis summary for efficacy instructional strategies.

Variable	B	Stan. Er.	β	t	p
Costant	25.165	5.475		4.596	.000
Analyticity	.129	.106	.082	.000	.225
OpenMindedness	.130	.069	.123	1.217	.060
Inquisitiveness	.256	.101	.176	.225	.012
Confidence	.183	.123	.102	1.889	.138
Truth Seeking	-.129	.102	-.076	.060	.206
Systematicity	.187	.152	.089	2.528	.020
Depression	-.123	.060	-.123	.012	.042

$n = 450$, $R = .450$, $R^2 = .202$, $F = 9.968$, $p < .01$, $p < .05$.

The standard model's degree of predicting *Efficacy Instructional Strategies* was found to be $R = .450$. The model's degree of explaining the variance was $R^2 = .202$. The findings showed that inquisitiveness made the biggest contribution with the value of ($\beta = .176$), which is followed by openmindedness ($\beta = .123$) and depression ($\beta = -.123$).

The standard model's degree of predicting *Efficacy Classroom Management* was found to be $R = .471$. The model's degree of explaining the variance was $R^2 = .222$. The findings showed that inquisitiveness made the biggest contribution with the value of ($\beta = .278$), which is followed by depression ($\beta = -.159$) (Table 4).

Table 4. Regression analysis summary for efficacy classroom management.

Variable	B	Stan. Er.	β	t	p
Costant	30.646	5.105		6.003	.000
Analyticity	.124	.099	.083	1.251	.212
OpenMindedness	-.001	.064	-.001	-.013	.990
Inquisitiveness	.382	.095	.278	4.040	.000
Confidence	.029	.116	.017	.249	.804
Truth Seeking	-.173	.096	-.105	-1.801	.073
Systematicity	.253	.141	.126	1.798	.073
Depression	-.153	.056	-.159	-2.708	.007

n = 450, R = .471, R² = .222, F = 11,415, p < .01, p < .05.

DISCUSSION

The present study examined the role of CTD and depressive symptoms in the prediction of preservice teachers' perceived teaching self-efficacy. The results confirm that CTD and depressive symptoms are important variables in predicting teachers' self-efficacy beliefs.

The study revealed significant and positive correlations between the pre-service teachers' TSE beliefs and CTD. Similar findings have been reported in the literature (Cansoy and Türkoğlu, 2017; Dehghani, Pakmehr and Malekzadeh, 2011). In conclusion, preservice teachers who tend to have CTD are more likely to engage students more, utilize classroom management strategies positively, and employ instructional strategies to achieve higher levels of student learning. Accordingly, it can be argued that CTD is an important variable in the increase of teacher self-efficacy beliefs.

At the same time, negative correlations were found between the pre-service teachers' TSE beliefs and depressive symptoms. A limited number of studies examining the relationship between the emotional states of pre-service teachers and their beliefs about their TSE have been found and similar results have been obtained (DeMauro and Jennings, 2016; Ripski, LoCasale-Crouch and Decker, 2011).

An important finding of the current study is that critical thinking dispositions and depressive symptoms are important variables in predicting preservice teachers' self-efficacy beliefs. DeMauro et al. (2016) investigated how feelings of depression, anxiety, and stress contributed to efficacy beliefs among a sample of 297 pre-service teachers in the United States. Based on the results of the regression analysis, they found that depressive symptoms negatively predicted teachers' efficacy beliefs. In another study, Kim and Kim (2010) found negative correlations between depression and self-efficacy among Korean preschool teachers. In particular, depression was a negative predictor of efficacy. These findings emphasize the importance of pre-service teachers' emotional states.

CONCLUSION AND RECOMMENDATIONS

Based on this study, the primary limitation of this study is the restricted data set, which was obtained only from the one Faculty of Education. Therefore, a recommendation for further research expanding the sample to include more universities would enhance the generalizability of the findings.

On the assumption that CTD is at least as important as critical thinking skills, CTD should be taught and fostered as early as possible in order to develop a person into a critical thinker. In schools, students' critical thinking is one of the desired outcomes of learning. Therefore, the development of critical thinking should be one of the main goals of teacher education. Designing and implementing educational programs that develop affective dispositions toward critical thinking can meet these needs of pre-service teachers. In addition, the study offers a new call for the strengthening of support for individuals with negative moods. Interventions that are designed to support individuals who may be experiencing low mood or depressive symptoms may be important for those who are entering the teaching field. This will provide higher quality interactions with their students in the classroom in the future.

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Citation: Çelikkol, A. K., and Konik, A. K. (2023). The role of critical thinking dispositions and depressive symptoms in predicting teacher candidates' perceptions of 'teacher self-efficacy'. *African Educational Research Journal*, 11(3): 293-299.
