

Predictive Relationships Between Emotional Schemas, Cognitive Flexibility and Distress Tolerance in Pre-Service Teachers

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ABSTRACT

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The aim of the study is to determine the predictive relationships between emotional schemas, cognitive flexibility, and distress tolerance in teacher candidates. The study group consists of a total of 399 teacher candidates, including 309 females and 90 males, in the academic years 2021-2022 in the Konya province. For data collection, a "Personal Information Form," "Leahy Emotional Schema Scale II," "Cognitive Flexibility Inventory," and "Distress Tolerance Scale" were utilized. A relational survey model was employed in the research. The collected data within the scope of the study were analyzed using Structural Equation Modeling (SEM). According to the emerged model, teacher candidates' emotional schemas predict their levels of cognitive flexibility and distress tolerance. Additionally, the findings of the research indicate that distress tolerance level predicts cognitive flexibility. The emotional schemas of teacher candidates exhibit a negative relationship with both cognitive flexibility and distress tolerance levels. Distress tolerance, on the other hand, is positively related to cognitive flexibility. Based on these findings, it can be concluded that emotional schemas are an important factor in solving the problems encountered by teacher candidates.

Öğretmen Adaylarının Duygusal Şemaları, Bilişsel Esneklik ve Sıkıntıyı Tolere Etme Arasındaki Yordayıcı İlişkiler

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Çalışmanın amacı öğretmen adaylarının sahip olduğu duygusal şemalar, bilişsel esneklik ve sıkıntıyı tolere etme arasındaki yordayıcı ilişkilerin belirlenmesidir. Çalışma grubu 2021-2022 yıllarında Konya ilindeki 309 kadın ve 99 erkek toplam 399 öğretmen adayından oluşmaktadır. Araştırmada verilerin toplanabilmesi amacıyla "Kişisel Bilgi Formu", "Leahy Duygusal Şema Ölçeği II", "Bilişsel Esneklik Envanteri" ve "Sıkıntıyı Tolere Etme Ölçeği" kullanılmıştır. Araştırmada ilişkisel tarama modeli kullanılmıştır. Araştırma kapsamında toplanan veriler Yapısal Eşitlik Modellemesi (YEM) aracılığıyla verilerin analiz edilmiştir. Ortaya çıkan modele göre öğretmen adaylarının duygusal şemaları, bilişsel esnekliklerini ve sıkıntıyı tolere etme düzeylerini yordamaktadır. Bunun yanında sıkıntıyı tolere etme düzeyinin de bilişsel esnekliklerini yordadığı araştırmanın bulguları arasındadır. Öğretmen adaylarının duygusal şemaları hem bilişsel esneklikle hem de sıkıntıyı tolere etme düzeyleriyle negatif yönde bir ilişki göstermektedir. Sıkıntıyı tolere etme ise bilişsel esneklikle pozitif bir ilişki içerisindedir. Bu bulgulardan yola çıkarak öğretmen adayları için duygusal şemaların karşılaştıkları sorunların çözümünde önemli bir faktör olduğu söylenebilir.



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INTRODUCTION

When considered in terms of its goals, education has undergone various changes over time based on the developmental levels of societies. In today's context, these goals have evolved in relation to the political, cultural, and economic assets of societies, additionally focusing on fostering individuals' personal abilities, interpersonal communication skills, economic competencies, and ensuring their participation as both human beings and responsible citizens (Ulusoy and Dilmaç, 2018). Meeting the economic, political, and cultural needs of society, ensuring personal development of individuals, and maintaining updated knowledge related to the teaching profession are crucial aspects in fulfilling these requirements for the emergence of conscious citizens through teaching and the teaching profession.

The teaching profession has many distinct aspects in terms of the characteristics that those engaged in this profession should possess, and individual views and behaviors play a significant role in the execution of the profession. The personal qualities of teachers and their beliefs about their profession will influence their performance levels. Therefore, it is observed that examining the thought structures of pre-service teachers who choose the teaching profession, undergo education in education faculties, or await appointments is an essential matter (Özbek Kahyaoğlu and Özgen, 2007). Teachers must respond to their students' problems and anxieties, regardless of their own emotional states. This situation requires teachers to not only be advisory, warm, and conveying love to their students but also to remain calm in the face of challenging students in the classroom, ensuring that they can consistently capture their students' attention for an efficient learning environment (Basım, Yalçın, and Beğenirbaş, 2013). In addition to exploring the thought structures of teacher candidates regarding their profession in the face of these challenges, investigating their beliefs about their own emotions and thoughts is crucial in revealing factors that affect their professional performance.

In the scope of the study, the 'Emotional Schema' approach (Leahy, 2019) is identified as the first variable, emphasizing that pre-service teachers react based on specific emotional schemas when addressing the emotional responses they exhibit in response to the challenges they encounter. A crucial factor to be examined is whether pre-service teachers are aware of their choices while exhibiting these reactions, their beliefs regarding their abilities to turn to these choices, and whether they perceive themselves as competent in this regard (Martin and Anderson, 1998). In addition to these, it is important to uncover the ways pre-service teachers adopt in finding solutions in the face of the challenges mentioned above, shedding light on their 'Distress Tolerance' strategies. Distress tolerance emphasizes individuals' ability to cope with negative psychological situations they experience, which may be rooted in either physical or emotional experiences. It represents the individual's attempts to reduce the impact of these emotional experiences. If an individual's level of distress tolerance is low, they may perceive this distress as unbearable or insurmountable (Simons and Gaher, 2005).

Aim of The Research

The aim of the study is to determine the predictive relationships between pre-service teachers' emotional schemas, cognitive flexibility, and distress tolerance levels. In line with this aim, the following questions will be addressed:

1. Do the emotional schemas of pre-service teachers predict their levels of cognitive flexibility?
2. Do the emotional schemas of pre-service teachers predict their levels of distress tolerance?
3. Do the cognitive flexibility levels of pre-service teachers predict their levels of distress tolerance?

METHOD

Research Design

The research was conducted using a relational survey model. This model, which is a general survey model, aims to obtain clues for revealing the relationships between two or more variables and making cause-and-effect inferences between variables. Through this model, it is intended to uncover the relationships and clues necessary for cause-and-effect inferences among variables (Büyüköztürk et al., 2018).

Study Group

Table 1

Descriptive Characteristics of the Gender of pre-service Teachers in the Study Group

Gender	Number (N)	Percentage (%)
Male	309	77,4
Female	90	22,6
Total	399	100

When examining Table 1, it is observed that 309 (77.4%) female and 90 (22.6%) male pre-service teachers participated in the study.

Table 2

Descriptive Characteristics of the Departments of Pre-Service Teachers in the Study Group

Departments	Number (N)	Percentage (%)
Guidance and Psychological Counseling	123	30,8
German Language Teaching	28	7,0
Turkish Language Teaching	67	16,8
Elementary School Mathematics Teaching	87	21,8
Clasroom Teaching	54	13,5
Preschool Teaching	40	10,0
Total	399	100

When we look to the departments of the pre-service teachers constituting the study group (Table 2), it is observed that 123 (30.8%) are from Guidance and Psychological Counseling, 28 (7%) from German Language Teaching, 67 (16.8%) from Turkish Language Teaching, 87 (21.8%) from Elementary School Mathematics Teaching, 54 (13.5%) from Classroom Teaching, and 40 (10%) from Preschool Teaching.

Research Tools and Processes

In the study, three measurement tools were used for collect the data, along with a researcher-developed 'Personal Information Form' to obtain demographic information about the participants. The three measurement tools used for data collection are the 'Leahy Emotional Schema Scale II,' the 'Cognitive Flexibility Inventory,' and the 'Distress Tolerance Scale.' Detailed information about these measurement tools is presented in the subsections below.

Leahy Emotional Schema Scale-II

Within the scope of the research, the 'Leahy Emotional Schema Scale-II,' consisting of 28 items, was utilized, and validity and reliability studies for this scale were conducted in 2015 by Batmaz and Özdel. The instrument, which is a 6-point Likert scale, allows participants to provide responses ranging from 'Not valid for me at all' to 'Very valid for me.' If participants' scores on the scale are high, it can be interpreted that their negative emotional schemas are also at a high level. Following the validity and reliability studies, the Cronbach's Alpha coefficient for the scale was found to be 0.76, indicating that the instrument is capable of revealing individuals' emotional schemas in the Turkish clinical population (Batmaz and Özdel, 2015). In this study, the Cronbach's Alpha value for the scale was found to be 0.77.

Cognitive Flexibility Inventory

The adaptation of the Cognitive Flexibility Inventory, developed by Dennis and Vander Wall (2010), into Turkish was carried out by Gülüm and Dağ in 2012. The scale consists of two sub-dimensions: 'Alternatives' and 'Control,' and a high score on the scale indicates a high level of cognitive flexibility (Dennis and Vander Wall, 2010). The 20-item scale, using a 5-point Likert scale, requires participants to provide responses ranging from 'Not appropriate at all' to 'Completely appropriate.' In the study, the Cronbach's Alpha value for the 'Alternatives' dimension was found to be 0.91, and for the 'Control' dimension, it was 0.86. High scores on the scale indicate individuals' high levels of cognitive flexibility (Gülüm and Dağ, 2012). In this study, the overall Cronbach's Alpha value for the scale was found to be 0.88.

Distress Tolerance Scale

The scale, consisting of 15 items and based on self-reporting, was adapted into Turkish by Akın, Akça, and Gülşen (2015). The original scale, developed by Simons and Gaher (2005), is a 5-point Likert scale where participants provide responses ranging from 'Completely Agree' to 'Completely Disagree' (Yılmaz, 2018). The internal consistency reliability coefficient for the scale was found to be 0.82. Therefore, it can be stated that the scale is a valid and reliable measurement tool capable of providing consistent results in the fields of education and psychology (Akın, Akça, and Gülşen, 2015). In this study, the overall Cronbach's Alpha coefficient for the scale was found to be 0.86.

Personal Information Form

The Personal Information Form was prepared by the researcher, and participants were asked to provide information about their gender and the departments that they graduated from or are currently studying.

Data Collecting Process

After obtaining the necessary permissions, the implementation phase commenced, and participants were provided with information about the study and the tools. The 'Leahy Emotional Schema Scale II,' 'Cognitive Flexibility Inventory,' and 'Distress Tolerance Scale' were distributed to voluntary pre-service teachers for them to respond. Additionally, for pre-service teachers who couldn't participate in face-to-face sessions, forms were delivered through Google Forms, and their participation was ensured. Participants, both in face-to-face and online settings, were informed about the purpose of the study and related details. A 30-minute period was allotted for the information session and completion of the forms.

Data Analysis

The Structural Equation Modeling Analysis was conducted using SPSS AMOS 24 to reveal predictive relationships among pre-service teachers' emotional schemas, cognitive flexibilities, and

distress tolerances, and to model the relationships between variables.

Structural Equation Modeling (SEM) analysis was employed in the study to reveal the complex relationships among the data obtained from the 'Leahy Emotional Schema Scale II,' 'Cognitive Flexibility Inventory,' and 'Distress Tolerance Scale,' allowing for a clear and understandable representation of the structure. Additionally, due to the complexity of examining the variables together in the study, the ability to perform the analysis in one go, suggestions for adjustments to the model, and sensitivity to errors in the measurements (Dursun and Kocagöz, 2010), structural equation modeling analysis was used in the research.

Limitations

This study is limited to the emotional schemas, cognitive flexibility, and distress tolerance levels of pre-service teachers in the 2021-2022 academic year in the province of Konya, Türkiye. Additionally, the study is restricted to the measurement results provided by the “Leahy Emotional Schema Scale II”, the “Distress Tolerance Scale” and the “Cognitive Flexibility Inventory” for the researcher, as well as the data related to the analysis of these results.

FINDINGS

This section includes descriptive analyses of the total scores obtained by participants from the scales and findings related to predictive relationships. In line with the main objective, data from the Structural Equation Modeling and the Path Analysis Table will also be presented.

Descriptive Statistics for Pre-Service Teachers Cognitive Flexibility Levels, Emotional Schemas and Distress Tolerance Levels

When examining the total scores obtained by pre-service teachers from the scales, the overall group's average total score on the 'CFI' was found to be 77.03, with a skewness value of -0.75 and a kurtosis value of 2.63.

The average score obtained by pre-service teachers on the 'LESS II' is 87.27, with a skewness coefficient of 0.34 and a kurtosis coefficient of -0.35.

The average score obtained by pre-service teachers on the 'DTS' is 48.56, with a skewness coefficient of -0.11 and a kurtosis coefficient of -0.44. Statistics for the scales are presented in Table 3.

Table 3

The Table Displaying Descriptive Statistics For The Total Scores Obtained by Participants From The Scales

	Cronbach Alfa	Mean Scores	Standart Deviation	Skewness Value	Kurtosis Value
Cognitive Flexibility Inventory Leahy	0.88	77.03	10.50	-0.75	2.63
Emotional Schema Scale-II	0.77	87.27	16.07	0.03	-0.35
Distress Tolerance Scale	0.86	48.56	11.23	-0.11	-0.44

Upon examining Table 3, it is found that the skewness and kurtosis values for the CFI, LESS II, and DTS scores of pre-service teachers indicate distributions close to normal for all three scales. As a criterion, it is noted that these skewness and kurtosis values fall within the -2 to +2 range, ensuring the

assumption of normal distribution (George and Mallery, 2020). Studies have reported that skewness coefficient values within the -2 to +2 range and kurtosis values within the -7 to +7 range indicate distributions close to normal (Curran, West, and Finch, 1996).

Correlational Findings for Pre-Service Teachers Emotional Schemas, Cognitive Flexibility, and Distress Tolerance Levels

Table 4

Correlational Findings Regarding the Total Scores Obtained by Participants From the Scales

Variables	Cognitive Flexibility Inventory	Leahy Emotional Schema Scale-II	Distress Tolerance Scale
Cognitive Flexibility Inventory	1	-.45**	.34**
Leahy Emotional Schema Scale-II	-.45	1	-.35**
Distress Tolerance Scale	.34**	-.35**	1

**Statistically significant relationship at $p < .01$ level.

When examining Table 4, it is observed that there is a statistically significant and negatively correlated relationship between the mean scores of pre-service teachers in the Cognitive Flexibility Inventory and their emotional schemas ($r = -.45, p < .01$). Additionally, a statistically significant and positively correlated relationship is found between the cognitive flexibility levels and distress tolerance levels of pre-service teachers ($r = .34, p < .01$). Finally, a statistically significant and negatively correlated relationship is found between the emotional schemas and distress tolerance mean scores of the participants ($r = .35, p < .01$).

Analysis of Predictive Relationships Between Pre-Service Teachers Emotional Schemas, Cognitive Flexibility, and Distress Tolerance

In the emerged model ($X^2 = 20.86, df = 12, p < .05$) there are two exogenous variables (Emotional schemas and distress tolerance) and one endogenous variable (Cognitive flexibility). It is observed that each of the paths in the model is statistically significant. Table 3.3 indicates that the goodness-of-fit values for the model, including RMSEA, SRMR, CFI, GFI, and AGFI criteria, show a good fit.

Table 5

Measurement	Good Fit	Acceptable Fit	Fitness Values of Model
(X^2/sd)	≤ 3	$\leq 4-5$	1.74
RMSEA	≤ 0.05	0.06-0.08	0.04
SRMR	≤ 0.05	0.06-0.08	0.03
CFI	≥ 0.97	≥ 0.95	0.98
GFI	≥ 0.90	0.89-0.85	0.98
AGFI	≥ 0.90	0.89-0.85	0.96

When examining the goodness-of-fit values in Table 5, it is found that $X^2 / df = 1.74$, RMSEA= 0.04, SRMR= 0.03, CFI= 0.98, GFI= 0.98, and AGFI= 0.96. These values indicate that the model has a good fit (Bollen, 1989; Browne and Cudeck, 1993; Byrne, 2010; Hu and Bentler, 1999; Kline, 2011; Tanaka and Huba, 1985). The tested single-factor model is depicted in Figure 1.

Figure 1
Pathway Analysis of The Model

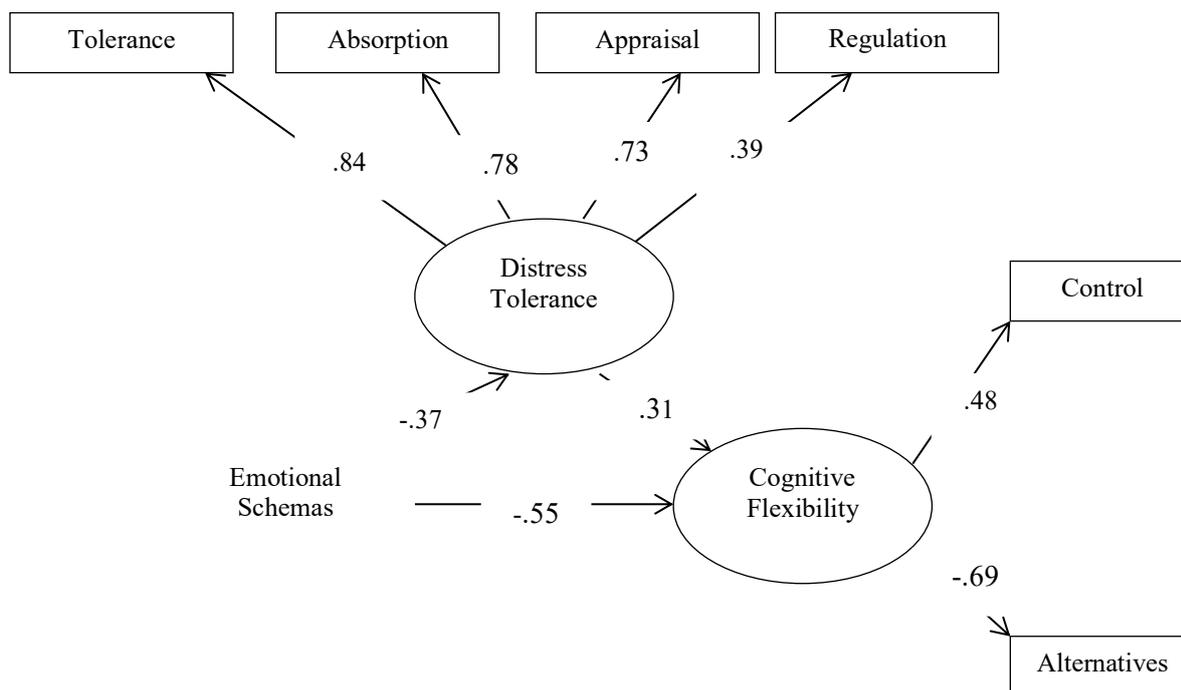


Table 6

Table Depicting The Model For Predictive Relationships Between Emotional Schemas, Distress Tolerance, and Cognitive Flexibility

Predictive Variable	Dependent Variable	Total Effect ^a	Direct Effect	Indirect Effect	Standart Error	Critical Value
Emotional Schemas	Distress Tolerance	-0.37	-0.37	0	0.01	-7.07***
Distress Tolerance	Cognitive Flexibility	0.31	0.31	0	0.10	3.97**
Emotional Schemas	Cognitice Flexibility	-0.66	-0.55	-0.11	0.02	-6.35***

*Distress Tolerance Total Effect = Direct Effect + Indirect Effect, ** $p < 0.01$, *** $p < 0.001$.*

Upon examining the model presented in Table 6, it is found that the emotional schemas of pre-service teachers are a significant factor influencing their levels of distress tolerance ($t = -7.07, p < .001$). The beta coefficient value for this factor is calculated as $\beta = -0.37$. When looking at the predictive relationships between participants' emotional schemas and distress tolerance levels, a negative and statistically significant relationship is observed. In other words, as the tendency towards negative emotional schemas increases, individuals' levels of distress tolerance are calculated to be lower.

In the model, it is found that the distress tolerance levels of pre-service teachers are a significant factor influencing their levels of cognitive flexibility ($t = 3.97, p < .001$). The beta coefficient value for the relationship between variables is calculated as $\beta = 0.31$. When examining the predictive relationships between participants' distress tolerance levels and cognitive flexibility levels, a positive and linear relationship is observed. Therefore, it can be stated that as the levels of distress tolerance increase, the levels of cognitive flexibility of pre-service teachers will also increase.

Lastly, it is observed that the emotional schemas of pre-service teachers are identified as a factor directly and indirectly influencing the levels of cognitive flexibility ($t = -6.35, p < .001$). The coefficient value for the inter-variable relationship is found to be $\beta = -0.66$. When examining the predictive relationships between the emotional schemas and cognitive flexibility levels of participants, a negative and statistically significant relationship is found. In this context, it can be stated that an increase in negative emotional schemas among pre-service teachers would indicate a decrease in cognitive flexibility levels.

DISCUSSION

The study examined the relationships between emotional schemas, cognitive flexibility levels, and distress tolerance levels of pre-service teachers. Based on the emerged data, it can be said that the obtained model shows a good level of fit.

When examining the predictive relationships between pre-service teachers' emotional schemas and cognitive flexibility levels, it was found that emotional schemas have both a direct and an indirect effect on cognitive flexibility levels. Additionally, it was observed that the inter-variable relationship is negative. Based on this finding, it can be stated that an increase in the levels of negative emotional schemas among pre-service teachers would lead to a decrease in cognitive flexibility levels.

When reviewing the literature, it is observed that there are very few studies examining the relationship between emotional schemas and cognitive flexibility levels among pre-service teachers. In a study by Yüksel (2019), it was revealed that both dimensions of cognitive flexibility were statistically significantly predicted by emotional schemas and mindfulness variables. Similarly, in another study involving individuals diagnosed with obsessive-compulsive disorder and panic disorder, it was found that the level of having negative emotional schemas was significantly higher in the experimental group compared to the control group, and cognitive flexibility levels were lower compared to the control group (Oğuz et al., 2019). In another study, it was reported that control, compromise, and acceptance emotional schemas are positively associated with psychological flexibility. This implies that psychologically flexible individuals have more control over their emotions, exhibit a more accepting attitude towards their emotional experiences, and have stronger beliefs that they, like others, can feel their emotions (Silberstein, Tirsch, Leahy, & McGinn, 2012). However, when looking at the literature, it is observed that cognitive flexibility and psychological flexibility are not the same concepts. Despite this distinction, in this study, it can be considered a similar finding that teacher candidates with negative emotional schemas also have lower cognitive flexibility, and psychological flexibility is positively related to not having negative emotional schemas (Silberstein et al., 2012), indicating a positive structure for both concepts. Yavuz (2009) emphasized that the ways individuals choose in response to their emotions can lead to positive or negative outcomes. In addition, it has been reported that individuals who are aware of the ways they choose in the face of situations, select the appropriate ones, and perceive themselves as competent in this regard are cognitively flexible (Martin and Anderson, 1998). Based on this information, it is expected that individuals with high cognitive flexibility can choose more effective ways and have fewer negative emotional schemas.

As a result of the study, it was found that there is a significant negative relationship between teacher candidates' emotional schemas and their ability to tolerate distress. In other words, the increase in the levels of negative emotional schemas among teacher candidates predicts a decrease in their ability to tolerate distress. Leahy (2021) stated that individuals having negative beliefs about their emotions, or possessing negative emotional schemas, may find it challenging to tolerate their emotions. In this study, a confirmatory relationship supporting this assertion has also been identified. Zvolensky and Vujanovic (2010) suggested that individuals with low levels of distress tolerance may engage in maladaptive responses to experiencing distress, leading to avoidance of negative emotions. Additionally, they mentioned that difficulties in choosing effective emotion regulation strategies are negatively associated with the behavioral outcomes of distress tolerance, especially in individuals with low attentional control (Bardeen et al., 2015). This finding aligns with the concept of 'Cognitive Attentional Syndrome,' which is part of the metacognitive approach, one of the foundational principles of the emotional schema approach. The metacognitive model emphasizes that pathologies emerge when attention control is not flexible, and individuals focus their attention on scanning threats and self-focused situations (Wells,

2021).

Finally, when examining the relationship between teacher candidates' levels of distress tolerance and cognitive flexibility, a positive and linear predictive relationship is observed. This suggests that an increase in the levels of distress tolerance in teacher candidates is associated with an increase in their levels of cognitive flexibility. In his study, Koç (2020) found that an increase in cognitive flexibility affects individuals' coping levels with stress. Additionally, individuals with high levels of distress tolerance also tend to exhibit high levels of cognitive flexibility (Arıcı-Özcan, Çekici, & Arslan, 2019). In addition, there are studies indicating that an increase in cognitive flexibility and distress tolerance levels is inversely related to suicidal tendencies in individuals, while difficulties in emotion regulation are positively associated with suicidal tendencies (Heidari Nejad, Heidari, & Davoudi, 2020). In addition, considering the inverse relationship between the high levels of cognitive flexibility in pre-service preschool teachers and emotional reactivity and emotional vulnerability levels (Yaşar Ekici & Balcı, 2019), it can be suggested that individuals with high cognitive flexibility, as found in this study, will also have high distress tolerance levels.

CONCLUSIONS

A statistically significant negative relationship has been found between the emotional schemas and cognitive flexibility levels of teacher candidates. Additionally, teacher candidates' emotional schemas significantly predict their cognitive flexibility. The relationship between the emotional schemas and distress tolerance of teacher candidates is statistically significant and negative. The negative emotional schemas of teacher candidates predict their distress tolerance levels. The relationship between the distress tolerance levels and cognitive flexibility of teacher candidates is statistically significant and positive. The distress tolerance levels of teacher candidates predict their cognitive flexibility.

RECCOMENDATIONS

The study found that the emotional schemas of teacher candidates predict the levels of cognitive flexibility and distress tolerance. Based on this finding, it can be argued that the development of any courses or activities that will contribute to teacher education in this regard, making studies related to emotional schemas an integral part of the current teacher education curriculum, would be beneficial. When the study group is examined, it is observed that 399 teacher candidates participated. Due to the study being conducted during the COVID-19 period, it is important to expand the group in future research to obtain findings that can better represent the population.

In the study, it is observed that teacher candidates' emotional schemas predict their ability to tolerate distress and their levels of cognitive flexibility. Based on this finding, planning, preparing, and implementing any activities that enable teacher candidates to be aware of their emotional schemas, to recognize and understand them, and to have knowledge about emotion regulation is important for positively influencing the school climate. Another finding of the study is that the distress tolerance levels of teacher candidates predict their cognitive flexibility. Based on this result, it should be considered that drama, micro-teaching, and group activities developed and implemented in relevant departments at universities can be beneficial in enhancing distress tolerance. Considering again that emotional schemas predict the level of cognitive flexibility and distress tolerance, efforts can be made to increase parents' knowledge about emotional schemas. School counseling services can organize parent courses or seminars for this purpose. Alternatively, local government-sponsored adult education courses can be utilized to inform families about emotional schemas.

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