Examining the Relationship Between Metacognitive Learning Strategies and Positive-Negative Life Experiences in Adolescents in Terms of Cognitive and Emotion Regulation Mediator Variables

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ABSTRACT

The aim of this study was to examine the relationship between metacognitive learning strategies, positive– negative life experiences, and cognitive emotional regulation in adolescents. In addition, adolescents' metacognitive learning strategies, positive– negative life experiences, and cognitive emotional regulation variables were examined by addressing demographic variablessuch as gender, grade level, family income level, and family attitudes. The sample of the study was 623 students in Ereğli district of Konya. Because of the research, there is a significant difference between adolescents' positive and negative life experiences and gender. There was no significant difference between adolescents' positive and negative life experiences and grade level. There is a significant difference between adolescents' positive and negative life experiences and parental attitude variables. There was no significant difference between adolescents' positive and negative life experiences and income level variables.

Keywords:[1]
Cognitive regulation, emotional regulation, adolescent, correlation, positive negative life experiences, metacognition.

INTRODUCTION

Metacognition

Flavell used the term "metacognition" for the first time in 1976. Flavell categorized metacognition into three categories. These are individual variables, task variables, and strategy variables. It is an individual variable that would be more useful to study by taking notes instead of studying by reading. The individual's thinking that it would take less time to take notes in the science course than in the math course is the task variable. Deciding which strategy to use is a strategy variable (Akış, 2022; Özsoy, 2008).

Metacognition provides students with the opportunity to take responsibility for learning. It gradually frees students from dependence on the guide. It makes the student independent in the learning process. When a student with metacognitive thinking skills encounters a problem, think about what they can do to find a solution, make plans, and manage their time (Kalemkuş, 2021). At the end of this process, a self-assessment is conducted (Yeşilyurt, 2021). In experimental studies revealing metacognition and academic achievement, significant changes were observed in academic achievement as metacognitive skills improved (Özsoy, 2008). Metacognition alone is not enough to ensure success, but it is an important tool for success (Yeşilyurt, 2021).

Methods that can be applied to develop metacognition are as follows:Identify what you know and what you don't know: The individual realizes their knowledge, missing knowledge, and what they need to learn about the subject. They acquire new knowledge through this method. The individual uses his/her own ways of thinking when expressing his/her thoughts aloud. In this way, they would generate original thoughts and this would cause them to think more. Planning and self-monitoring: It is easier for an individual to follow a plan in which he/she chooses his/her own materials, time, and topic rather than a standardized plan made by someone else.

Keep a thinking diary: It is a diary in which individuals write the stages they go through during the thinking process. Questioning the thinking process: Discussions at the end of the process in which the individual evaluates this process and sheds light on other processes (Yeşilyurt, 2021).

Positive– Negative Life Experience

Life experiences are unique to each person because we perceive life events differently. An individual may have multiple life experiences at a random moment, but may not always be aware that they are experiencing such experiences. Some experiences may have a beginning and an end point, whereas others may develop as

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a process (Mutlu, 2015). Because adolescence is a time of change in many areas, these experiences are common (Öztürk, 2020).

Risky behaviors facilitate adaptation to the changes that occur during adolescence, even if negatively (Öztürk, 2020). Some of the risky behaviors during adolescence include alcohol, smoking, substance abuse, suicidal tendencies, dropping out of school, running away from home, and gaming (Can, 2023). A risky behavior can lead to other risky behaviors. Higher level of occurrence during adolescence (Öztürk, 2020).

Risk factors that increase the likelihood of negative outcomes in adolescents Risk factors can be categorized under three headings: individual, family, and environmental. Individual risk factors include gender, temperament, and social skill deficiencies (Yoldaş & Demircioğlu, 2019). History of substance or alcohol abuse, criminal history (Alikaşifoğlu & Ercan, 2009), and divorce or death of parents (Yoldaş & Demircioğlu, 2019). Environmental risk factorsinclude low socioeconomic status (Alikaşifoğlu & Ercan, 2009), negative friend groups, and negative social media channels (Can, 2023).

Protective factors that reduce or end the occurrence of a negative situation (Alikaşifoğlu & Ercan, 2009). Protective factors can be divided into internal and externalfactors. Intrinsic factors: intelligence, academic achievement, positive outlook, social skills, and psychological resilience (Karaırmak, 2006). Extrinsic factors: high educational level of parents, high socioeconomic status (Ateş, 2023), strong family communication, social activities (Can, 2023), and being educated in a good school (Karaırmak, 2006).

Cognitive and Emotional Regulation

There is no common view on the definition of emotion in the literature. In this regard, Lazarus (1991) defined emotion by emphasizing three main points: an emotion, physiological disturbance or change; a tendency to behave in an unexpressed manner; and a subjective experience, often referred to as affect.

Emotion regulation plays a role in an individual's personal development and communication. Emotions are expressed not to the extent of what is felt but to the extent of people's reactions. Because of the feedback received from Onat and Otrar (2010).

Emotions are often useful. In cases where it is not considered useful, the concept of emotion regulation emerges. Negative emotions can be regulated and positive emotions (Duy & Yıldız, 2014). Emotion regulation can also manifest as hiding emotions. The behavior of hiding emotions emerges in adulthood. For example, when a child is scolded by his teacher, he becomes upset, and this can be seen in his behavior. When an adult is reprimanded by his/her boss, he/she still gets upset, but does not want to show this emotion and hides it (Atalar & Atalay, 2018).

When an adult is reprimanded by his/her boss, he/she still gets upset, but does not want to show this emotion and hides it. Positive emotions are welcomed, and life is meant to be built on positive emotions. Negative emotions are seen as something that should not be experienced and are suppressed and not expressed (Kelek, 2020). Contrary to what the individual thinks, suppressive behavior does not eliminate emotions and does not relieve the individual (Akbulut, 2018). The point here is not to try to experience positive emotions all the time. It is being aware of and accepting all kinds of emotions. In particular, to accept negative emotions, to be aware of what this emotion is telling us, and to regulate this negative emotion (Kelek, 2020).

Cognitive strategies are used in a situation, and emotional reactions are then given (Çelik & Kocabıyık, 2014). Cognitive processes are important for exploring emotions. Cognitive emotion regulation strategies are divided into adaptive and maladaptivestrategies. Adaptive strategies include recognizing, accepting, and regulating emotions. Maladaptive strategies include looking for blame and suppressing emotions (Rıza, 2016).

Adolescence is a period of development and change in many aspects of an individual's life. As the adolescent attempts to adapt to this period of life, the likelihood of risky behavior increases. There are risk factors that bring you closer to these risky behaviors and protective factors that keep you away from them (Gençtanırım Kurt & Ergene, 2017). Scientific studies have concluded that the prefrontal cortex develops significantly from adolescence to young adulthood (Bernheim, Halfon & Boutrel, 2013). As the prefrontal cortex of adolescents continues to develop during adolescence, their higher-order thinking skills (metacognition) also develop at the same time (Polat, Akay & Aydın, 2021).

In this respect, having a healthy mindset is important for healthy emotional regulation in order to be a healthy individual. Healthy emotion regulation significantly affects positive/negative life. Within the scope of the original value of the research, it is very important to examine the relationship between thought, emotion, and behavior. It reflects the original value of the research in terms of determining the potential damages that adolescents cause to themselves and their environment because of their risky behaviors.

The original value of this study is to examine metacognition in relation to adolescents' positive– negative life experiences and cognitive emotion regulation in terms of various demographic variables.

Method

Sample Group

The sample group of the research is 9th, 10th, 11th, and 12th grade high school students in Konya Ereğli district.

The sample of the study consists of 623 high school students. The sample consisted of 370 girls (60%) and 253 boys (40%). The average age of the sample was 15.59 (SD=1.4). 222 students were in the 9th grade, 110 in the 10th grade, 158 in the 11th grade, and 133 in the 12th grade. Ethical approval was obtained from the Necmettin Erbakan University Social Sciences and Humanities Research and Publication Ethics Committee. The scales and demographic information forms used in the research were converted into a single form in face-to-face and Google Forms and shared to reach individuals via e-mail, social media, and other online data platforms. Data were collected face-to-face and online, and only volunteers were asked to participate in the study. Participants were informed that they could leave the study at any time.

Data collection tools

Positive and Negative Life Experiences Scale (Adolescent form)

Fernando N´uñez-Regueiro et al. (2021); and developed and validated the Positive and Negative Life Experiences (Adolescent form) scale, an 11-item instrument that allows researchers to measure adolescent stressors more validly and efficiently than existing scales. The Positive and Negative Life Experiences (Adolescent form) scale was validated for construct validity (factor structure, measurement invariance, and composite reliability) in a sample of French high school adolescents (N = 1513). Overall, the Positive and Negative Life Experiences (Adolescent form) scale offers a viable alternative to existing methods for conducting quantitative research on adolescent stress processes, especially those related to school dropout and dropout processes.

Metacognitive Learning Strategies Scale

Flaming Wang et al. (2021) investigated the validity of the Cognitive and Metacognitive Learning Strategies Scale for adolescents' learning processes. 698 Chinese high school seniors underwent exploratory and confirmatory factor analysis, reliability analysis, measurement invariance across gender groups, and criterion-related validity. The results showed that the adapted scale was reliable and valid. A model with four specific factors. Because of the exploratory factor analysis, 17 items were analyzed. For the 17-item final EFA model, the Kaiser–Meyer– Olkin value was .909 and Bartlett's test of sphericity was significant ($\chi2$ (136) = 2946.14, p < .001). The four factors explained 58% of the total variance. The four factors obtained were rehearsal, elaboration and organization, critical thinking, and metacognitive self-regulation. The correlations between the factors ranged between .236 and .613.

Cognitive and Emotional Regulation Scale

Within the scope of reliability studies, Cronbach's alpha, item-total, item-remainder, item-discrimination, and test-r-test methods were used. Because of the statistical analysis, Cronbach Alpha value α=.784 and test-r-test reliability coefficient "r=. 1.00". The item-total correlation values of the scale are ".188, and the item residual correlation values range.392". Because of the item discrimination analysis, we concluded that the discrimination of each item was high. The results of the analysis revealed that the Cognitive Emotion Regulation Scale is a valid and reliable measurement tool (Onat & Otrar, 2010).

Findings

Positive and negative life experiences

Table 1. ANOVA Table of Adolescents' Positive and Negative Life Experiences and Gender Variables

		Group Statistics			
Gender	N	Average	Std. Deviation	Std. Error Mean	Sig.(2-Tailed)
1	318	12,2296	3,36630	,18877	,003
2	261	13,0536	3,11402	,19275	,002

There was no significant difference between adolescents' positive and negative life experiences and grade level.

Table 2. ANOVA Table of Adolescents' Positive and Negative Life Experiences and Grade Level Variables

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	46,794	3	15,598	1,455	,226
Within Groups	6164,045	575	10,720		
Total	6210,839	578			

There was no significant difference between adolescents' positive and negative life experiences and grade level.

Table 3. ANOVA Table of Adolescents' Positive and Negative Life Experiences and Income Level Variables

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	59,172	2	29,586	2,770	,063
Within Groups	6151,667	576	10,680		
Total	6210,839	578			

There is no significant difference between adolescents' positive and negative life experiences and the income level variable

Table 4. ANOVA Table of Adolescents' Positive and Negative Life Experiences and Parental Attitude Variables

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	130,508	5	26,102	2,460	,032
Within Groups	6080,331	573	10,611		
Total	6210,839	578			

There is a significant difference between adolescents' positive and negative life experiences and parental attitudes.

Cognitive and Emotional Regulation

Table 5. ANOVA Table of Adolescents' Cognitive and Emotion Regulation Levels and Gender Variables

	Gender	N	Average	Std. Deviation	Std. Error Mean
Emotion regulation	1	317	11,6751	3,19193	,17928
	2	261	11,8429	3,51292	,21744
Cognitive regulation	1	318	14,0346	3,59662	,20169
	2	260	13,6731	3,75464	,23285

There was no significant difference between the cognitive and emotion regulation levels of adolescents and the gender variable.

Table 6. ANOVA Table of Adolescents' Cognitive and Emotion Regulation Levels and Class Variables

		Sum of Squares	Df	Mean Square	F	Sig.
Emotion	Between Groups	13,920	3	4,640	,415	,742
	Within Groups	6418,204	574	11,182		
	Total	6432,125	577			
Cognitive regulation	Between Groups	68,608	3	22,869	1,704	,165
	Within Groups	7701,918	574	13,418		
	Total	7770,526	577			

There was no significant difference between the cognitive and emotion regulation levels of adolescents and the class variable.

Table 7. ANOVA Table of Adolescents' Cognitive and Emotion Regulation Levels and Parental Attitude Variables

		Sum of Squares	Df	Mean Square	F	Sig.
Emotion Regulation	Groups Between	84,063	5	16,813	1,515	,183
	Within	6348,062	572	11,098		
	Groups Total	6432,125	577			
Cognitive regulation	Groups Between	252,898	5	50,580	3,848	,002
	Within	7517,628	572	13,143		
	Groups Total	7770,526	577			

There was no significant difference between adolescents' emotion regulation levels and parental attitude variables. There was a significant difference between adolescents' cognitive regulation levels and parental attitude variables.

Table 8. ANOVA Table of Adolescents' Cognitive and Emotion Regulation Levels and Income Variables

		Sum of Squares	Df	Mean Square	F	Sig.
Emotion Regulation	Groups Between	15,092	2	7,546	,676	,509
	Within	6417,032	575	11,160		
	Groups Total	6432,125	577			
Cognitive regulation	Groups Between	12,172	2	6,086	,451	,637
	Within	7758,354	575	13,493		
	Groups Total	7770,526	577			

There was no significant difference between adolescents' cognitive and emotion regulation levels and the income variable.

Table 9. Results of the Correlation Analysis

		Mls	pls	nls	er	Cr
Mls	Pearson Correlation	1	,207**	-,089*	,172**	,333**
	Sig. (2-tailed)		,000	,037	,000	,000
	N	555	555	555	554	554
Ple	Pearson Correlation	,207**	1	-,032	,236**	,303**
	Sig. (2-tailed)	,000		,447	,000	,000
	N	555	555	555	554	554
Ne	Pearson Correlation	-,089*	-,032	1	,045	-,078
	Sig. (2-tailed)	,037	,447		,286	,066
	N	555	555	555	554	554
Er	Pearson Correlation	,172**	,236**	,045	1	,330**
	Sig. (2-tailed)	,000	,000	,286		,000
	N	554	554	554	554	553
Cr	Pearson Correlation	,333**	,303**	-,078	,330**	1
	Sig. (2-tailed)	,000	,000	,066	,000	
	N	554	554	554	553	554

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

*. Correlation is significant at the 0.05 level (2-tailed).

(metacognitive learning strategies:mls, positive life experiences:ple, negative life experiences: nle, Emotion regulation: er, cognitive regulation:cr)

There is a significant difference between metacognition and positive life experiences.20 There is a significant difference between metacognition and negative life experiences .08. There is a significant difference between metacognition and emotion regulation.17. There is a significant difference between metacognition and cognitive regulation.33 There is no significant difference between positive life experiences and negative life experiences. There is a significant difference between positive life experiences and emotion regulation.23 There is a significant difference between positive life experiences and cognitive regulation at the.30 level. There was no significant difference between negative life experiences and emotion regulation. There was no significant difference between negative life experiences and cognitive regulation. There is a significant difference between emotion regulation and cognitive regulation at .33 level.

Table 10. Regression Model of Metacognition and Positive and Negative Life Experience

Model	R	R Square	Adjusted R Square	Std. Error in the Estimate
1	,207[a]	,043	,041	12,03281
2	,222[b]	,049	,046	12,00124

a. Predictors: (Constant), ple
b. Predictors: (Constant), ple, and ne

When the regression analysis of metacognition and positive and negative life experiences is performed, the explanation rate .04 for metacognition. When the cognitive emotion regulation mediator variable is added, the summation level of the relationship between metacognition and positive –negative life experience is .12. The mediating variable of cognitive and emotion regulation explains metacognition at the level of .08.

Discussion and Conclusion

Positive and negative life experiences were analyzed in terms of gender, class, income level, and parental attitude. The results are as follows: There is a significant difference between adolescents' positive and negative life experiences and gender. This difference favors males.

In parallel with this research result, Bryce and Hawort (2002) examined the relationship between flow and life satisfaction based on leisure time activities and concluded that there are differences according to gender. ahin (2019) concluded that male students had a higher experience of physical neglect and abuse. Ulukol et al. (2014) reached a similar conclusion in their study. Negative life experiences were found to be higher in men than in women.

There was no significant difference between adolescents' positive and negative life experiences and grade level.

There is a significant difference between adolescents' positive and negative life experiences and parental attitude variables. Ulukol et al. (2014) concluded that the rate of negative experiences decreased as the educational level of parents increased. In this study, it was also observed that the prevalence of having at least one negative life experience was high in broken or extended families.

There is no significant difference between adolescents' positive and negative life experiences and income level. ahin (2019) concluded in his study that students with low income levels had higher negative life experiences and physical abuse than those in the middle and high income groups.

Cognitive and emotional regulation were examined in terms of the mediating variables of gender, grade, income level, and parental attitude. The results are as follows: There is no significant difference between the cognitive and emotion regulation levels of adolescents and the gender variable. Similar to this research result, Tuncal (2022) concluded that there was no significant difference in cognitive emotion regulation strategies according to gender. In parallel with this result, Neriman (2022) concluded that there was no significant difference between the use of cognitive emotion regulation strategies and the gender mediator variable. Likewise, supporting these results, Atalay and Özyürek (2021) concluded that emotion regulation strategies did not differ according to gender in their study of adolescents.

Unlike the research result, Bedirhanbeyoğlu (2018) and Kaya (2015) examined the sub-dimensions of the Cognitive Emotion Regulation scale with the mediating variable of gender. Because of these studies, there was a significant difference in the favor of women in some sub-dimensions and a significant difference in the favor of men in some sub-dimensions. In some sub-dimensions, it was concluded that there was no significant difference according to gender. Similar to this result, Zengin (2019) concluded that rumination in cognitive emotion regulation strategies was higher in women, whereas positive refocusing and blaming others scores were higher in men. In some sub-dimensions, it was concluded that there was no significant difference according to gender. Finally, in parallel with this result, a study conducted by Rza (2016)concluded that rumination, a cognitive emotion regulation strategy, was used more by women. There is a significant difference between the genders.

There was no significant difference between the cognitive and emotion regulation levels of adolescents and the class variable. Similar to this result, Yokuş and Kalaycıoğlu (2013) found no significant difference in the cognitive emotion regulation strategies of prospective music teachers according to their grade level. In contrast to these results, Aka (2011) used the Emotion Regulation Scale and Emotion Regulation Processes in his study with adults. We concluded that younger participants used the cognitive reappraisal sub-dimension more frequently than older participants. There was no significant difference between adolescents' emotion regulation levels and parental attitude variables. There was a significant difference between adolescents' cognitive regulation levels and parental attitude variables. In contrast to this result, Altan (2006), in a study conducted with preschool children aged 4-6 years and their mothers, examined the relationship between mothers' socialization and children's emotion regulation skills. It was concluded that emotion regulation skills were at the highest level when there was a moderate level of positive maternal behavior and warmth. In addition, Yaman (2018), in his study on children's emotion regulation skills, found that authoritarian parental attitudes had a negative effect and democratic parental attitudes had a positive effect.

There was no significant difference between adolescents' cognitive and emotion regulation levels and the income variable. Similar to this result, Şener (2020) examined the relationship between the cognitive emotion regulation subscale and income level.

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