

Personal Growth Initiative (PGI) and Life Satisfaction: Moderating and Mediating Effect of Grit

Eyüp ÇELİK
Turkey

The aim of the study is to explore the mediating and moderating effect of the characteristic of grit in the relationship between life satisfaction and personal growth initiative. Data were collected through the Turkish versions of the Personal Growth Initiative Scale, Grit Scale, and Satisfaction with Life Scale from 239 university students between the ages of 20 and 25 years ($M = 22.18$, $SD = 4.68$). The findings revealed that life satisfaction was related to grit and personal growth initiative. Mediation and moderation analyses, which tested the study's hypothesis, demonstrated that the life satisfaction and personal growth initiative relationship was partially mediated by grit, and this relationship was affected by interaction among grit and personal growth initiative. However, according to the results of the mediation and moderation analyses on the alternative mediation and moderation model, the relationship between life satisfaction and grit was partially mediated by PGI. That is, although the effect of PGI on life satisfaction is changed based on grit level, the effect of grit on life satisfaction was changed based on PGI levels. These results suggest that PGI and grit are reciprocal determinant variables on life satisfaction.

Keywords: Life satisfaction, Personal growth initiative, Grit, Mediator, Moderator.

A very significant construct for people of all ages is subjective well-being. This construct comprises two components, the first of which is called the affective component; this is generally divided into subcategories of pleasant and unpleasant affect (Diener, 1990 cited in Pavot, & Diener, 1993). The second component is cognitive, which considers life satisfaction (Andrews & Withey, 1976 cited in Pavot & Diener, 1993). According to Sousa and Lyubomirsky (2001), life satisfaction is an appraisal of the difference between expectations and achievements of one's life. It is also a general evaluation of an individual's overall life in terms of quality (Shin & Johnson, 1978). Life satisfaction is negatively related to various health-compromising experiences, including substance abuse (Zullig, Valois, Huebner, Oeltmann, & Drane, 2001) and acts of violence (Valois, Zullig, Huebner, & Drane, 2001).

It also has negative relationships with indicators of psychological problems, such as loneliness, suicidal attitudes, and depression (Swami et al., 2007). On the other hand, the findings of previous studies revealed that life

satisfaction is positively associated with general health (Chmiel, Brunner, Martin, & Schalke, 2012). By examining previous research, it shows the relationship between life satisfaction and personal growth initiative (e.g., Yang & Chang, 2014) and life satisfaction and grit (e.g., MacCann & Roberts, 2010; Singh & Jha, 2008). However, there is no existing research which examines whether grit has a mediating or moderating effect on the life satisfaction and personal growth initiative relationship. Thus, this study is important to understand university students' life satisfaction and to find out which variables promote increased life satisfaction.

Grit

Grit is characterized by a strong willingness to maintain goal-directed actions and resistance of challenges and obstacles in long-term projects (Duckworth & Quinn, 2009). According to Duckworth, Peterson, Matthews, and Kelly (2007), gritty people maintain effort and interest throughout several years for long-term plans despite adversity and failure, and they are more resistant to hardships than others. For non-gritty people, signals of disappointment or boredom

are indicators to change the route of action, but gritty people stay the course.

It is a personality trait that influences individuals' attitude and behavior in various contexts (Kleiman, Adams, Kashdan, & Riskind, 2013; Reed, Pritschet, & Cutton, 2013). According to Duckworth et al. (2007), grit positively influences educational outcomes like students' engagement and achievement levels (Duckworth & Quinn 2009; Strayhorn, 2013).

Previous research has demonstrated that grit is positively associated with life satisfaction (MacCann & Roberts, 2010; Singh & Jha, 2008), initial levels of adolescent well-being (Machell, 2016), both autonomy and competency needs (Jin & Kim, 2017), metacognition (Arslan, Akın, & Çitemel, 2013), conscientiousness (Duckworth et al., 2007), academic success (Duckworth & Quinn, 2009), and the intensity of exercise (Reed et al., 2013), but it was negatively related to suicidal ideation (Kleiman et al., 2013). When gritty students encounter difficulty or experience demoralization in solving problems, they do not give up their goals (Ayres, Cooley, & Dunn, 1990). Furthermore, grit increases individuals' flexibility and self-reflectivity levels, and gritty people can conceptualize problems abstractly (Wilis, 2008).

Personal Growth Initiative (PGI)

Counseling methods, such as humanistic approaches, psychodynamic approaches, and positive psychotherapy, emphasize the importance of personal growth. Humanistic approaches explain personal growth by focusing on individuals' self-actualization tendencies. According to psychodynamic approaches, personal growth is revealed based on individuation attempts and psychosocial development (Yang & Chang, 2014). Previous research (e.g., Park, 2004; Robitschek, 1999; Shorey, Little, Snyder, Kluck, & Robitschek, 2007) demonstrated that personal growth is related to various positive psychological outcomes such as optimism, positive affectivity, psychological adjustment, and well-being. In this context, it can be said that personal growth is important for mental health and life satisfaction.

Robitschek (1998) revealed personal growth initiative (PGI) as being intentionally and actively involved in the process of self-improvement and self-change. Previous research has demonstrated that PGI is positively related to well-being (Park, 2004; Robitschek & Keyes, 2009), psychological adjustment (Robitschek, 1999), assertiveness, vocational identity, problem-focused coping (Robitschek & Cook, 1999), resilience, and life satisfaction, but it is negatively related to depression (Yang & Chang, 2014). In this way, it is important for researchers to focus on PGI.

Individuals with high PGI are more proactive about personal development and activities which increase their life satisfaction. Personal growth is an attitudinal and cognitively and emotionally intra-individual change. It also includes subjectively positive experiences and changes towards self-actualization (Robitschek et al., 2012). According to the results of the previous studies, individuals' PGI levels positively influence the level of well-being (Robitschek & Keyes, 2009) and the setting of future-oriented goals (Robitschek, 1998). Even though it is considered relevant for people of all ages, PGI may be one of the most important factors for university students because it is crucial to developing new skills and coping with life stressors.

Present Study

Personal growth initiative may play a crucial role in the discovery of daily activities, but grit may influence whether to maintain these activities to increase life satisfaction. Previous research found a link between PGI and life satisfaction (Yang & Chang, 2014). For this reason, it can be said that most of the factors relating to PGI may be positively correlated with life satisfaction.

In previous research about grit, it is seen that grit has been positively related to life satisfaction (MacCann & Roberts, 2010), and flexibility (Wilis, 2008). Flexibility can also be an important part of PGI which means there can be a link between grit and PGI. In this context, the effect of PGI on life satisfaction may depend on grit level, because the PGI variable motivates individuals to endeavor to create change and new situation-

specific targets in their lives, and grit as a strong willingness to maintain goal-directed actions and resistance of challenges (Duckworth & Quinn, 2009), PGI and grit together may affect life satisfaction. Finally, when combining the results of previous studies (Duckworth et al., 2007; Duckworth & Quinn 2009; Kleiman et al., 2013; Reed et al., 2013) as mentioned before, it was hypothesized that grit and PGI would be important factors for predicting life satisfaction. It was further hypothesized that grit may have the role of mediator and moderator in the relationship between life satisfaction and PGI.

Method

The relational screening model that is a sub-type of the quantitative research method was used in this study. Christensen, Johnson, and Turner (2015) stated that the relational screening model is preferable to determine the level and quantity of the relationship between two or more variables. In this context, the relational screening model was used to test the hypotheses of the study.

Participants

Research data were collected from 239 university students who range in age from 20 to 25 years ($M = 22.18$, $SD = 68$). Of the participants, 63% were female. In this context, the data were obtained from students who study psychological counseling and guidance at Sakarya University, and they were willing to participate in the research.

Measures

Satisfaction with Life Scale. Students' life satisfaction levels were gathered by this scale. It was designed by Diener, Emmons, Larsen, and Griffin (1985) to measure life satisfaction. The psychometric properties of the Turkish version of the scale were examined by Durak, Şenol-Durak, and Gençöz (2010). It is a 5-item scale with responses rated on a 7-point Likert-type scale. The total scores obtained from the scale can range from 5 to 35. There is no reverse item. Points are calculated by summing the responses to the items, and high points obtained from the scale indicate high levels of life satisfaction. The Cronbach's alpha coefficient was found as .81, and fit indices obtained in confirmatory factor

analysis were found to be acceptable ($\chi^2/df = 2.026$, $RMSEA = .43$, $CFI = .99$, $TLI = .98$, and $IFI = .99$) for the Turkish version of the scale in the adaptation research.

The Revised Turkish Version of Grit Scale. Students' grit levels were gathered by this scale. It was designed by Duckworth and Quinn (2009) to measure grit. The instrument was adapted by Akın, Abacı, Arıcı, Uysal, and Uysal (2011) into Turkish. It is an 8-item scale with responses rated on a 5-point Likert scale. There is no reverse item. Scores are calculated by summing the responses to the items, with higher scores indicative of higher levels of grit. The Cronbach's alpha coefficient was found to be .60 for perseverance of effort and .63 for consistency of interest, and fit indices obtained from confirmatory factor analysis were found as acceptable ($\chi^2/df = 2.08$, $RMSEA = .059$, $CFI = .93$, $AGFI = .94$, $IFI = .93$, $GFI = .97$, and $SRMR = .061$) for the Turkish version of the scale in the adaptation study.

Personal Growth Initiative Scale. Students' PGI levels were gathered by this scale. It was designed by Robitschek (1998) to measure PGI; it was adapted by Akın and Anlı (2011) into Turkish. The scale is a 9-item scale with responses rated on a 6-point Likert-type scale. There is no reverse item. Scores are calculated by summing the responses to the items, with higher scores indicative of higher levels of PGI. The internal consistency reliability level was found at .90, and fit indices obtained in confirmatory factor analysis were found to be acceptable ($\chi^2/df = 2.024$, $p = 0.00255$, $RMSEA = .055$, $NFI = .96$, $CFI = .98$, $IFI = .98$, $GFI = .97$, and $AGFI = .94$) for the Turkish version of the scale.

Data Analysis

To determine the variables, which relate to life satisfaction, correlation and regression analyses were done. Moreover, the mediating and moderating role of grit on the PGI-life satisfaction relationship was tested with regression-based mediation and moderation analyses. According to Hayes (2013), mediation analysis is a statistical method used to explore how a causal agent X (independent variable) transmits its effect onto Y (dependent variable).

In other words, it shows the mechanism by which X influences Y. However, moderation analysis is used to determine whether the size or sign of the effect of X on Y depends on one way or another (i.e., “interacts with”). In addition, direct and indirect effects were determined by the bootstrapping method with bias-corrected confidence estimates (MacKinnon, Lockwood, & Williams, 2004). In this study, the 95% confidence interval of the indirect effect was obtained with 1000 bootstrap resamples.

Before the mediation analysis was done, the research data were examined with regards to the regression assumptions, such as normality, linearity, and multicollinearity problems. For this, Mahalanobis distance, normal distribution curve (see Figure 1), skewness, and kurtosis scores were reviewed for normality and linearity assumption. The five data that undermined normality and linearity assumption were deleted from the results of this analysis. After, data were examined in terms of Variance inflation factors (VIFs) and Condition Index CI values to determine the multicollinearity among the independent variables. Tabachnick and Fidell (2007) stated that when VIF scores were lower than 10 and CI scores were lower than 30, there were not multicollinearity problems among independent variables. In this context, when VIF and CI scores were examined, it was seen that there were no VIF scores higher than 10 (VIFs scores: 1.24 for PGI, 1.23 for grit) and CI scores higher than 30 (CI scores: 12.83 for PGI, 13.92 for grit). Furthermore, it was seen that skewness scores (-.67 for life satisfaction, -.80 for PGI, and -.49 for grit) and kurtosis scores (.22 for life

satisfaction, 1.16 for PGI, and .65 for grit) were acceptable level.

Results

Table 1 presents the results of the correlation analysis, the means, and the standard deviations. As seen in Table 1, life satisfaction is positively associated with PGI and grit in the expected direction.

Table 1. The Results of Correlation Analysis and Descriptive Statistics

Variables	1	2	3
Life Satisfaction	1		
PGI	.58**	1	
Grit	.44**	.44**	1
M	23.87	39.08	26.06
SD	6.12	6.98	4.81

**p< 0.01

Mediating Role of Grit

Regression analysis, which was done at the initial stage of mediation analysis, demonstrated that PGI predicted life satisfaction significantly (Coeff. = .51; SE = .04; F = 118.76; t = 10.90; R² = .34; 95% CI: .42 – .60; p< .001).

As seen in Table 2, the findings of the regression-based mediation analysis demonstrated that both life satisfaction (Coeff. = .42; t = 8.38; 95% CI: .32 – .52; p< .001) and grit (Coeff. = .30; t = 7.45; 95% CI: .22 – .38; p< .001) were meaningful and positively predicted by PGI, and life satisfaction was significantly predicted by grit (Coeff. = .29; t = 3.88; 95% CI: .14 -.43; p< .001). When grit is added to the regression model, the predicting level of PGI in life satisfaction decreased (from .51 to .42), and R² increased from .34 to .38. As seen, grit partially

Table 2. The Result of Mediation Analysis

Independent variables	Consequent							
	a	Grit			Life Satisfaction			
		Coeff.	SE	p	Coeff.	SE	p	
PGI	a	.30	.04	<.001	c'	.42	.05	<.001
Grit		-----	-----	-----	b	.29	.07	<.001
Constant	i ₁	14.22	.04	<.001	i ₂	-.14	2.08	>.05
		R ² =.19			R ² =.38			
		F(1, 232) = 55.47; p = .000			F(2, 231) = 70.49; p = .000			

Table 3. The Result of Mediation Analysis

Independent variables	Consequent							
	PGI			Life Satisfaction				
	Coeff.	SE	p	Coeff.	SE	p		
Grit	a	.64	.08	<.001	c'	.29	.07	<.001
PGI		-----	-----	-----	b	.42	.05	<.001
Constant	i ₁	22.48	2.27	<.001	i ₂	-.14	2.08	>.05
			R ² = .19		R ² = .38			
			F(1, 232) = 55.47; p = .000		F(2, 231) = 70.49; p = .000			

mediated the link between life satisfaction and PGI ($Z = 3.42$; $p < .001$). In addition, the bootstrapping analysis demonstrated that the direct effect of PGI on life satisfaction became meaningful ($\beta = .42$; $t(234) = 8.38$; $p = .000$, 95% CI = .32 to .52) when controlling for grit, thus suggesting partial mediation. The indirect effect of PGI on life satisfaction is significant ($\beta = .09$; Boot SE = .03; 95% CI = .02 to .16). The R-squared mediation effect size was found as .15 (Boot SE = .04; 95% CI: .06 – .24). The direct effect of the mediator construct of grit accounts for a significant amount of variance on life satisfaction.

Alternative Model

Before the mediation analysis, which tested the alternative model, the predictive level of grit on life satisfaction was tested with regression analysis. The result of this analysis demonstrated that grit significantly predicted life satisfaction (Coeff. = .56; $t = 7.38$; $R^2 = .19$; $F(1, 232) = 52.52$; 95% CI: .41 – .70; $p < .001$). The findings of the mediation analysis obtained from the alternative model are shown in Table 3.

As seen in Table 3, the result of the regression-based mediation analysis showed that both life satisfaction (Coeff. = .29; $t = 3.88$; 95% CI: .14 – .43; $p < .001$) and PGI (Coeff. = .64; $t = 7.45$; 95% CI: .46 – .80; $p < .001$) were significantly predicted by grit, and PGI significantly predicted life satisfaction (Coeff. = .42; $t = 8.38$; 95% CI: .32 – .52; $p < .001$). When PGI is added to the regression model, the predicting level of grit in life satisfaction decreased (from .56 to .29), and R^2 increased from 19 to 38. As seen, PGI partially mediated the link between life satisfaction and grit ($Z =$

5.54; $p < .001$). In addition, the bootstrapping analysis demonstrated that the direct effect of grit on life satisfaction became meaningful ($\beta = .29$; $t = 3.88$; $p = .000$; 95% CI = .14 to .43) when controlling for PGI, thus suggesting partial mediation. The indirect effect of grit on life satisfaction is significant ($\beta = .27$, Boot SE = .05; 95% CI = .18 to .38). The R-squared mediation effect size was found at .15 (Boot SE = .04; 95% CI: .06 – .24). Thus, the direct effect of the mediator construct, PGI, accounts for a significant amount of variance on life satisfaction.

Moderation Role of Grit

According to the findings of the moderation analysis, as seen in Table 4 and Figure 1, both PGI (Coeff. = .37; 95% CI: .25 – .49; $p < .001$) and grit (Coeff. = .26; 95% CI: .09 – .42; $p < .001$) significantly predicted life satisfaction. Furthermore, life satisfaction was significantly predicted by the interaction of grit and PGI (Coeff. = -.03; 95% CI: -.04 – -.01; $p < .001$). Finally, as presented in Figure 1, the link between life satisfaction and PGI was significantly moderated by grit.

Table 4. Moderational Model Coefficients

	Coeff.	SE	t	p
Constant	24.30	.32	73.76	<.001
PGI	.37	.06	6.17	<.001
Grit	.26	.08	3.12	<.01
PGI X Grit	-.03	.01	-3.25	<.01
R ² = .42; MSE = 22.0502				
F(3, 230) = 52.65; p < .001				

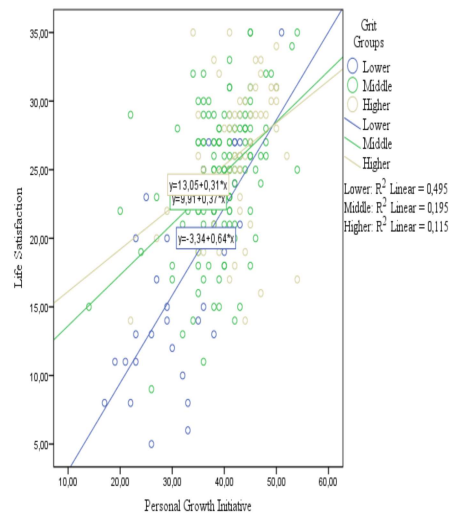


Figure 1. The interaction of grit and PGI on life satisfaction

Alternative Model (Moderation Role of PGI)

The moderation role of PGI in the relationship between grit and life satisfaction was tested with an alternative model. According to the findings of the moderation analysis towards alternative moderational model, as seen in Table 5 and Figure 3, both grit (Coeff. = .26; 95% CI: .12 – .40; $p < .001$) and PGI (Coeff. = .37; 95% CI: .27 – .47; $p < .001$) significantly predicted life satisfaction. Furthermore, life satisfaction was significantly predicted by the interaction of grit and PGI (Coeff. = -.03; 95% CI: -.04 – -.01; $p < .001$). Finally, as presented in Figure 3, the link between life satisfaction and grit was significantly moderated by PGI.

Table 5. Coefficients towards Alternative Moderational Model

	Coeff.	SE	t	p
Constant	24.30	.32	74.92	<.001
Grit	.26	.07	3.59	<.001
PGI	.37	.05	7.30	<.001
Grit X PGI	-.03	.01	-4.06	<.001
R ² = .42; MSE = 22.0502				
F(3, 230) = 52.65; p < .001				

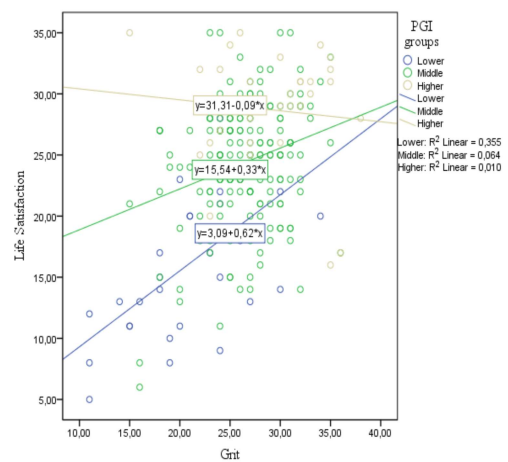


Figure 2. The interaction of PGI and grit on life satisfaction

Discussion and Conclusion

The relationships between PGI and life satisfaction and between grit and life satisfaction were explored in the study. Findings revealed that grit explained a part of the positive link between PGI and life satisfaction. On the other hand, the alternative mediation and moderation model showed that PGI mediated and moderated the relationship between life satisfaction and grit. Finally, a probable justification for these results is that life satisfaction levels are determined by the interrelationship of PGI and grit.

The results of this study are consistent with positive psychology. According to positive psychologists, proactive individuals who have higher PGI act on their personal growth (Luke & Kiweewa, 2010; Moran et al., 2013; Park, 2004; Robitschek, 1998). Therefore, individuals with high PGI are more successful at making positive changes in their lives and tend to change negative situations which may decrease life satisfaction. In this way, PGI relates to the life satisfaction because it is a necessary component for coping with life stressors, acquiring new skills, and forming and maintaining close relationships (Hendrick, 1995).

Previous studies found links between life satisfaction and positive subjective experiences, positive individual traits, achievement of a better quality of life, and increased well-being (e.g. Diener, 2003; Seligman & Csikszentmihalyi,

2000). These variables associated with life satisfaction can be affected by PGI, the positive relationship between life satisfaction and PGI may be found in this study. Furthermore, consistent with the findings in previous research, PGI was positively associated with life satisfaction (e.g. Robitschek & Keyes, 2009; Yang & Chang, 2014), and grit was also positively related to life satisfaction (e.g. MacCann & Roberts, 2010). The link between these three variables (life satisfaction, PGI, and grit) has been explicitly expressed in relevant literature. In this context, this article emphasizes why and how this relationship exists.

The results of the mediation analysis supported the hypothesis of this study that grit partially mediates the link between life satisfaction and PGI. This result supports findings from other studies that both PGI and grit are positive indicators of life satisfaction (MacCann & Roberts, 2010). A probable justification for the mediation found in this manuscript is that grit may catalyze people to maintain effort and interest for long-term goals, which contributes to enhanced life satisfaction levels. Furthermore, gritty individuals may be more resistant than others when faced with adversity and failure. On the other hand, grit may decrease university students' life satisfaction, well-being, and happiness in some instances because university students with higher grit may not be open to change, innovation, new experiences, and goals; however, individuals with high PGI may be open to these. However, gritty individuals may not be as proactive in the matter of their personal development as individuals with high PGI. In this context, the grit and PGI interaction may change life satisfaction, and the life satisfaction level may be determined by the interrelationship of PGI and grit.

The moderation analysis showed that the PGI-life satisfaction relationship was moderated by grit; this relationship is further remarkable for people with low to moderate levels of grit. Considering previous studies e.g. Jin & Kim, 2017; Kleiman et al., 2013; MacCann & Roberts, 2010; Machell, 2016, a probable justification for the moderation found in this research is that grit may be protective in the context of adverse experiences, which causes decreased levels of

life satisfaction. On the other hand, the finding of the alternative moderation model demonstrated that the grit-life satisfaction relationship is moderated by PGI; this relationship is stronger for people with low to moderate levels of PGI. So, according to the results obtained with these two models, it is conceivable that the life satisfaction level is determined by the interrelationship of PGI and grit.

People with high grit levels are less likely to experience cognitive and emotional gains which increase life satisfaction, from the existence of high PGI, but for those with moderate to little grit, PGI will have a greater effect. When individuals with high grit are inclined to feel better about themselves, PGI's effect on life satisfaction may be irrelevant. However, individuals who experience low or moderate levels of various positive psychological outcomes that accompany increased PGI, like optimism, well-being, and positive affectivity, may see a more substantial increase of life satisfaction.

Finally, the findings of the present study demonstrated that if people have higher PGI and lower grit level, they have higher levels of life satisfaction. However, if people have higher grit and lower PGI levels, they have higher levels of life satisfaction. In this context, we can say that the present research fills a gap in psychology literature. While the link between PGI and life satisfaction and the link between grit and life satisfaction have been settled, this initial research examines merely a portion of the complexities of these links.

The present research findings provide incentive for furthering the investigation of how PGI and grit influence university students' life satisfaction. However, there are several limitations in our study. First, the generalizability of the findings of the present research is limited to other populations because the study sample consisted of university students who study psychological counseling and guidance at Sakarya University. Second, research data was gathered only through self-report assessments, and the data collection method (survey) which did not allow for a causal inference between grit and life satisfaction, and PGI and life satisfaction. Thus, initiative investigators should consider

experimental or prospective designs. Third, the cross-sectional and correlational nature of this research did not warrant us to draw strong causal links among variables. On the other hand, despite the limitations listed above, the findings of the present study are an important addition to the literature related to positive psychology. Grit, PGI, and the interrelationship of the two were found to play a crucial role in the prediction of life satisfaction, as PGI and grit had both direct and indirect effects on life satisfaction.

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Eyüp ÇELİK, Sakarya University, Faculty of Education Educational Sciences, Sakarya/
Turkey. E-mail: eyupcelik@sakarya.edu.tr