A Review on Adolescents’ Resilience in Terms of Submissive Behaviors and Self-Compassion

Fatmanur Kaygısız¹
Ministry of National Education

Zeliha Traş²
Necmettin Erbakan University

Abstract

The aim of this research is to review the level of adolescents’ resilience in terms of submissive behaviors and self-compassion. Correlational survey model is used in the research. Study group of the research is chosen through random cluster sampling method from 11th and 12th grade high school students who attend different schools. 518 high school students, 293 (56.6%) females and 225 (43.4%) males, participate in the study. In order to collect data, The Resilience and Adolescent Development Scale, The Submissive Behaviors Scale, The Self-Compassion Scale, The Risk Factor Selection Scale, and Personal Information Form are used. In the analysis of data Pearson Product Moment Correlation Technique and hierarchical multiple regression analysis are used. Out of average scores of adolescents in the resilience and complying behaviors scale, a negative and low-level relationship is found only in the external protective factors sub-dimension. A significant and positive relationship is determined between the average scores of students in the resilience and self-compassion scale. Research results reveal that the resilience levels predict the self-compassion levels.

Keywords

Resilience • Submissive behaviors • Self-compassion • Adolescents

¹ Teacher, Ministry of Education, Çankırı, Turkey, Çankırı. E-mail: fynur_kygsz@hotmail.com ORCID: 0000-0003-0998-749X
² Correspondance to: Zeliha Traş (PhD), Counseling Psychology and Guidance, Necmettin Erbakan University, Faculty of Ahmet Kelesoglu Education, Konya, Turkey. Email: zztras@gmail.com ORCID: 0000-0003-2670-0868

Citation: Kaygısız, F., & Tras, Z. (2019). A review on adolescents’ resilience in terms of submissive behaviors and self-compassion. Research on Education and Psychology (REP), 3(2), 127-141.
Drawing attention to positive psychology, Seligman and Csikszentmihalyi (2000) emphasize on a science of positive subjective experience. They express that with this science, qualities worth-living like hope, wisdom, creativity, spirituality, responsibility, and resolve should not be ignored. The aim of the positive psychology is to improve weak and problematic aspects of individuals and, also to help strengthen their strong sides (Seligman & Csikszentmihalyi, 2000; Seligman, 2002). Previous researches asserted that positive psychological properties help people cope with possible problems, and even they have a preventive effect (Fredrickson, 2000; Fredrickson and Joiner, 2002; Lazarus, 1993; Seligman, 2002). Individuals can oppose to stress through positive emotions, and in an indirect way can protect their physical and mental health (Fredrickson, 2004; Fredrickson & Joiner, 2002).

Many denotations pertaining to this concept can be seen in the studies about resilience. In various researches, it can be seen as “indomitableness” (Gürgan, 2006a; Gürgan, 2006b; Serbest, 2010), “psychological durableness” (Aktaş, 2016; Atarbay, 2017; Kurt, 2011; Lazarus, 1993), “recuperating power” (Terzi, 2008) and “resilience” (Aydın, 2010; Gizir & Aydm, 2006; Kararmak, 2006; Sipahiöglu, 2008). In this research” is considered as appropriate for “resilience” word.

Masten (2001) defines the resilience as a person’s recuperating, returning to pre-crisis status despite risk situations. Resilience is, in spite of very harsh conditions, the ability to struggle with these conditions, being successful at the end of the struggle, adaptation ability (Yılmaz & Sipahiöglu, 2012), and maintaining development process properly (Masten & Coatsworth, 1998). Terzi (2016) emphasizes the fact that resilience is the personality trait that works as a resistance source when confronted with stressful life events.

Two important conditions should be met in order for resilience to show up in an individual. The first one is that in order to reveal the protective factors that an individual has, there should be a risk situation which occurs in unexpected moments such as traumatic events (domestic violence, parental loss, war) or on-going situations like chronic poverty. The second condition is that the individual is able to adapt to the negativities brought about by risk situation and to reach to positive results. Resilience reactions of some people to harsh experiences are related to their positive individual characteristics, protective factors, and the conditions of their environment. The protective factors are the positive qualities of the individual or her/his environment, despite high-risk conditions (Brooks, 2006; Gilligan, 2000; Gizir, 2016; Kararmak & Siviş-Çetinkaya, 2011; Luthar & Cicchetti, 2000; Masten & Coatsworth, 1998; Masten & Reed, 2002).

One notion that is thought to affect the resilience is submissive behaviors. Budak (2009) defines the submission in the psychological dictionary as acting in accordance with the rules or orders imposed by the authority. Kabasakal (2007) defines it as the situation in which the individual accepts the hardship even if she/he opposes at first, or she/he makes an opposing person submit and yield. Individuals exhibit various submissive behaviors in order to gain friend status and to take society support along with the need of interacting with people (Gilbert, 2001).

Another concept which is thought to influence the resilience of individuals is self-compassion. Self-compassion is that the person is sincere with her/himself, aware of her/his sufferings, compassionate and kind to her/himself and sympathetic to her/his failures and shortcomings (Neff, 2003a; 2003b). Self-compassion is not to behave selfishly, not to put oneself in the center or not to ignore others’ need for their own needs. Instead, it is to recognize that she/he has sufferings, failures and inadequacies (Neff, 2003b). Self-compassion is composed of
three components: 1) Self-kindness; understanding rather than severe auto criticism and judgment, 2) Common humanity; distinguishing one’s experiences from the experiences of a large group, 3) Mindfulness; awareness against painful feelings and thoughts (Neff, 2003a; 2003b).

When researches on submissive behaviors are reviewed, it is seen that there is a significant and positive relationship between submissive behaviors and depression (Erdoğan, 2016; Gilbert, Cheung, Grandfield, Campey, & Irons, 2003; Öngen, 2006; Şahin & Şahin, 1992; Tuzcuoğlu & Korkmaz, 2001), childhood trauma types (emotional, physical and sexual abuse) (Berber-Çelik, 2010), psychological disorders (Allan & Gilbert, 1997), and a negative relationship with self-esteem (Arslan-Özkan & Özen, 2008). When the studies conducted on submissive behaviors we reobserved, it was seen that they were mostly conducted with risk groups (Berber-Çelik, 2010; Beştepe, Erbek, Saatçioğlu, Akar-Özmen, & Eradamlar, 2010; Görgülü, 2009; Kızıldağ, 2009; Kutlu, 2014; O’Connor, Berry, Weiss, & Gilbert, 2002; Tümkaya, Aybek, & Çelik, 2010; Wall & Holden, 1994).

In order for resilience to occur in an individual, two important conditions must be met. The first condition is the existence of a risk situation in the individual, and the second one is that the individual adapts to the negative effects of the risk situation and can achieve positive results. (Gizir, 2016; Kararmak & Siviş-Çetinkaya, 2011; Luthar & Cicchetti, 2000; Masten & Coatsworth, 1998). In the light of this information, it may be considered that the presence of a risky situation is effective for submissive behavior and resilience.

The individual with high self-compassion is aware of her/his problems, deficiencies and weaknesses; but she/he does not develop a strict and negative attitude towards her/himself, and behaves to her/himself with understanding and compassionate (Leary, Tate, Adams, Allen, & Hancock, 2007). It is stated that there is a positive relationship between self-compassion, emotional intelligence (Heffernan, Quinn-Griffin, McNulty, & Fitzpatrick, 2010; Neff, 2003b) and self-esteem (Neff, Kirkpatrick, & Rude, 2007). It is supported through researches that self-compassion has a negative relationship with anxiety, and depression (Neff, 2003b; Neff, Hsieh, & Dejitterat, 2005; Neff et al., 2007). In the light of this information, it can be said that self-compassion is a protective factor in combating risky situations.

Being resilient or not, submissive behaviors, and especially self-compassion that enable one to accept himself/herself in this process are the subjects that are believed to be urged upon for adolescence period. People may have difficulty throughout their lifetime. However, the individual in adolescence develops in many areas such as physical, cognitive, emotional, sexual, social and psychological aspects. Adolescence is a period in which turbulent and difficult processes take place. In addition, the adolescent tries to create her/his own personality and identity through the reactions she/he gives to the difficult situations. There as on for preferring adolescence period in the study is that the presence of a risk condition is thought to be effective for the emergence of resilience and submissive behaviors. In particular, the sample group of the study, 11th and 12th grade high school students, are dealing with the problems of adolescence and also preparing for the exam in order to get into a university with future anxiety.

Individual in adolescence is trying to get to know himself, he is also dealing with many developmental problems. Resilience, submissive behaviors and self-compassion that enable one to accept himself/herself during this period are the subjects that should be considered for adolescence. Self-compassion individuals are kind to themselves and more understanding of their inadequacies. Similarly, individuals with high psychological well-being have the ability to deal with problems and adapt. The individual with submissive behaviors believes
that he/she does not consider himself/herself valuable and has no right to speak. This attitude is one of the unwanted behaviors in the science of psychology because it affects people negatively and lowers their self-esteem. When the researches on resilience, submissive behaviors and self-compassion in Turkey are examined, a research that studies these three notions together in adolescents has not been encountered. Therefore, it is hoped that his study will conceptually and theoretically contribute to our field. In addition, the study is expected to shed light on the guidance services to be planned for adolescents. The aim of this research is to determine to what degree the adolescents’ resilience level is influenced by their submissive behavior and self-compassion level. In addition, it was aimed to reveal whether submissive behaviors and self-compassion predicted psychological resilience significantly.

Method

Research Model

In this research, correlational survey model which is a sub-type of survey model is used. Survey models are scans that are made on a group taken from the universe, in a universe of a large number of elements, in order to reach a general judgment about the universe. Via survey models, two types of screening, singular and relational, can be done. Correlational survey model is a research model executed to determine the relationship between two or more variables and to obtain clues about cause and effect (Büyükoztürk, Çakmak, Özcan, Karadeniz, & Demirel, 2013).

Study Group

Study group of the research is composed of 11th and 12th grade high school students in state secondary education institution in Bilecik city center, in 2017-2018 school years. This group is selected through random cluster sampling method out of students who attend different schools in city center. In this study, 940 questionnaires are distributed to all high schools in the city center for a high-level validity and generalizability. The questionnaires which are found to be empty and incomplete are not entered into the data. A total of 736 data entries are made and 207 of the students are excluded from the data because they did not make any markings on the Risk Factors Selection List. A total of 518 raw data, 293 females (56.6%) and 225 males (43.4%), are processed, after removal of 11 values, which are quite distant from the sample values. The age of the students is between 15 and 21 and the average age is 17.25.

Data Collection Tools

The Risk Factors Selection List. It can be expressed that in order for resilience to be examined, the individual should have risk factors. For this reason, a 32 item list is created by scanning the relevant literature and adding to the 30 item the Risk Factors Selection List created by the Terzi (2008) in order to determine the individuals with risk factors. When making edits and additions, researches on resilience are utilized (Esen-Aktay, 2010; Gizir, 2016).

The Resilience and Adolescent Development Scale. The original version of this scale is developed by Wested (2001) in order to describe and evaluate various internal and external protective factors that are associated with positive adolescent development. In the scale, 4 point Likert rating is used. Via 33 items and 18 items in the scale, 11 external protective factors (interest in relations within school, high expectations within school, participation in activities within school, interest in environmental relationships, environmental high
expectations, participation in environmental activities, interest in social circle, high expectations in social circle, interest in domestic relationships, high expectations in domestic relationships, participation in domestic activities) and 6 internal protective factors (cooperation and communication, empathy, problem solving, self-sufficiency, self-consciousness, aims and educational expectations) are determined, respectively. It is seen that internal consistency coefficients of 11 sub-dimensions that constitute external protective factors are between .59 and .86, and for 6 sub-dimensions that constitute internal protective factors it changes between .74 and .82. In studies on adaptation of the scale to Turkish, confirmatory factor analysis is applied in order to determine the validity of structure, and as a result, it is determined that it is composed of 48 items in total, by classifying as 9 external and 7 internal protective factors. In reliability studies of the scale, it is seen that Cronbach Alpha internal consistency coefficient is between .55 and .85 for 9 external protective factors, and is between .50 and .78 for 7 internal protective factors. As a result, it can be said that the scale is valid and reliable (Retreived from Gizir & Aydın, 2006).

The Submissive Behaviors Scale. The original version of the scale is developed by Gilbert and Allan (1994) in order to evaluate the submissive social behaviors of high school senior students. The original name of the scale is “The Submissive Acts Scale (SAS)”. 5-point Likert type grading is used in the scale. The scale is composed of 16 items, and it is asked in in each item, to what degree ditto behavior defines the individual. It is a self-assessment scale, and can be applied to adolescents and adults. Cronbach Alpha value of the Submissive Behaviors Scale is .89, and reliability coefficient of test-retest that is made 4 months apart is .84. In adaptation studies of the scale to Turkey, internal consistency value is calculated as .74 (Şahin & Şahin, 1992).

The Self-Compassion Scale. The original version of the scale is developed by Neff (2003b) in order to determinate self-compassion level of individuals. There are 6 sub-scales of the scale that is composed of 26 items; these are self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identified items. In the scale, 5-point Likert type grading is used. Cronbach Alpha reliability coefficient for the whole scale is .92, and this value for sub-scales varies from .78 to .81. Test-retest reliability of the scale’s total score is calculated as .93 (Neff, 2003b). Studies on the adaptation of the scale to Turkish are conducted by Deniz, Kesici and Sümer (2008). It is asserted that Turkish Self-compassion scale displays a one-dimensional structure in discordance with the original version. Also, 2 items that are below .30 in item total correlation are removed, and a 24-items scale is obtained. Internal consistency coefficient of the self-compassion scale is .89 and test-retest correlation is .83. It is considered that the scale is valid and reliable to assess the self-compassion level of university students. In this study, Cronbach Alpha internal consistency coefficient is calculated in order to see whether the assessment tool is reliable for research group, and alpha value is found as .81.

Data Analysis

In the research, the aim is to review the resilience levels of adolescents in terms of submissive behaviors and self-compassion, and to reveal whether submissive behaviors and self-compassion predict the resilience significantly. In line with this aim, “The Risk Factors Selection List” is applied to the students, and 518 high school students who make at least one marking in the list are included in study group. Research data is collected and made ready to be entered into electronic environment. The data are entered into SPSS 20.0 program and are analyzed. The statistical analysis of the data is discussed in a way to reveal the effects of independent variables on the dependent variable. Pearson Product Moment Correlation Technique and multiple linear regression
analysis are applied (Büyüköztürk, 2012). Pearson Product Moment Correlation Technique is used in order to determine the relationship between resilience and adolescent development scale scores of the adolescents, and submissive behaviors and self-compassion scores. Multiple linear regression analysis is used to determine whether the resilience scores of adolescents are predicted in terms of submissive behaviors and self-compassion. The significance level of .05 is taken into consideration in the interpretation of statistical results.

Findings

In Table 1, correlation results of the relationship between sub-scales of the resilience, namely external and internal protective factors, submissive behaviors and self-compassion are presented.

Table 1.
Correlation Results of Relationship between Resilience, Submissive Behaviors, and Self-Compassion in Adolescents

<table>
<thead>
<tr>
<th>Variables</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>External Protective</td>
<td>Pearson Correlation</td>
<td>-0.617**</td>
<td>-0.120**</td>
<td>0.229**</td>
</tr>
<tr>
<td>Factors</td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.006</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>518</td>
<td>518</td>
<td>518</td>
<td>518</td>
</tr>
<tr>
<td>Internal Protective</td>
<td>Pearson Correlation</td>
<td>0.617**</td>
<td>-0.069</td>
<td>0.305**</td>
</tr>
<tr>
<td>Factors</td>
<td>Sig. (2-tailed)</td>
<td>.000</td>
<td>.006</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>518</td>
<td>518</td>
<td>518</td>
<td>518</td>
</tr>
<tr>
<td>Submissive Behaviors</td>
<td>Pearson Correlation</td>
<td>-0.120</td>
<td>-0.069</td>
<td>-0.192**</td>
</tr>
<tr>
<td></td>
<td>Sig. (2-tailed)</td>
<td>.006</td>
<td>.006</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>518</td>
<td>518</td>
<td>518</td>
<td>518</td>
</tr>
<tr>
<td>Self-compassion</td>
<td>Pearson Correlation</td>
<td>0.229**</td>
<td>0.305**</td>
<td>-0.192**</td>
</tr>
<tr>
<td></td>
<td>Sig.(2- tailed)</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>N</td>
<td>518</td>
<td>518</td>
<td>518</td>
<td>518</td>
</tr>
</tbody>
</table>

**, p< .01

When Table 1 is examined, significant and moderate-level positive correlations are found between the average scores of adolescents from external and internal protective factors sub-scale of the resilience scale (r = .62,  p < .01). While a significant and low-level negative relationship (r= -.12, p< .01) is found between adolescents’ average score from external protective factor sub-scale of the resilience scale, and average score from the submissive behavior scale, a significant and low-level positive relationship (r= .229, p< .01) is found between adolescents’ average score from external protective factor sub-scale of the resilience scale, and average score from self-compassion scale. And while it is found that there is not a significant relationship (r= -.069, p> .01) between adolescents’ average score from external protective factor sub-scale of the resilience scale and average score from self-compassion scale. While it is found that there is not a significant relationship (r= -.069, p> .01) between adolescents’ average scores from internal protective factors sub-scale of the resilience scale and the submissive behaviors scale, it is seen that there is a significant and moderate-level positive relationship (r= .305, p< .01) between average scores from internal protective factors sub-scale of the resilience scale and self-compassion scale. Also, it is found that there is a significant and low-level negative relationship (r= -.192, p< .01) between adolescents’ average scores from submissive behaviors scale and self-compassion scale.
Findings for the Prediction of Resilience

Table 2
The Regression Analysis Results Regarding Average Scores of Adolescents from External Protective Factors Sub-scale of the Resilience Scale

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submissive Behaviors</td>
<td>-.117</td>
<td>.064</td>
<td>-.079</td>
<td>-1.810</td>
</tr>
<tr>
<td>Self-compassion</td>
<td>.241</td>
<td>.049</td>
<td>.214</td>
<td>4.907***</td>
</tr>
</tbody>
</table>

\[ F=15.971; R=.242, R^2=.058, p<.001 \]
**p<.01, ***p<.001

When Table 2 is examined, it is found that total score (F= 15.971; R=.242, R^2=.058, p<.001) obtained from the self-compassion scale significantly predicts the external protective factors sub-scale of the resilience scale. Also, the self-compassion total score predicts 6% of total variance concerning the external protective factors sub-scale of the resilience scale.

Table 3
The Regression Analysis Results Regarding Average Scores of Adolescents from Internal Protective Factors Sub-scale of the Resilience Scale

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>SE</th>
<th>β</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Submissive Behaviors</td>
<td>-.010</td>
<td>.039</td>
<td>-.011</td>
<td>-.256</td>
</tr>
<tr>
<td>Self-compassion</td>
<td>.213</td>
<td>.030</td>
<td>.303</td>
<td>7.089***</td>
</tr>
</tbody>
</table>

\[ F=26.489; R=.305, R^2=.093, p<.001 \]
**p<.01, ***p<.001

When Table 3 is examined, it is found that total score (F= 26.489; R=.305, R^2=.093, p<.001) obtained from the self-compassion scale significantly predicts the internal protective factors sub-scale of the resilience scale. Also, the self-compassion total score predicts 9% of total variance concerning the internal protective factors sub-scale of the resilience scale.

Discussion

When the research findings are examined, it is found that there is a significant and low-level negative relationship between average scores of adolescents from the external protective factors sub-scale of the resilience scale and from the submissive behaviors scale; and there is not a significant relationship between average scores from the internal protective factors sub-scale and the submissive behaviors scale. According to this result, it can be said that as the external protective factors of the individual increase, submissive behaviors decrease. Also, according to the findings, it is concluded that the total score obtained from the submissive behaviors scale does not significantly predict the external and internal protective factors sub-scales of the resilience scale.
There has not been any research that is directly related to resilience and submissive behaviors. However, when the studies on submissive behaviors are examined, it has been observed that studies are carried out with more risky groups (childhood traumatic experiences, poverty, depression, psychological disorders) (Allan & Gilbert, 1997; Berber-Çelik, 2010; Beştepe et al., 2010; Erdoğan, 2016; Görgülü, 2009; Kızıldağ, 2009; Kutlu, 2014; O’Connor et al., 2002; Öngen, 2006; Şahin & Şahin, 1992; Tuzcuoğlu & Korkmaz, 2001; Tümkaya, Aybek, & Çelik, 2010; Wall & Holden, 1994). In order to reveal the protective factors that an individual has, there should be a risk situation which occurs in unexpected moments such as traumatic events (domestic violence, parental loss, poverty, war) (Gizir, 2016; Karaırmak & Siviş-Çetinkaya, 2011; Luthar & Cicchetti, 2000; Masten & Coatsworth, 1998). In the light of this information, it can be thought that in order for submissive behaviors and resilience to occur, existence of a risk situation is influential. With the help of future studies on this subject, the results that support or do not support this view can be obtained and a more comprehensive idea can be reached.

When another finding of the study is examined, it is found that there is a significant and low-level positive relationship between adolescents’ average scores from the external protective factors sub-scale of the resilience scale and the average scores obtained from the self-compassion scale; and it is found that there is a significant and moderate-level positive relationship between the average scores from the internal protective factors sub-scale and the average scores obtained from the self-compassion scale. According to this result, it can be said that as the resilience level of adolescents gets higher, self-compassion level gets higher, too. Also, according to the findings, it is concluded that the total score obtained from the self-compassion scale significantly predicts the external and internal protective factors sub-scale of the resilience scale.

When the literature is examined, there are results revealing there is a significant relationship between the resilience and self-compassion, after the fashion of this study’s results (Bolat, 2013; Hayter & Dorstyn, 2013; Neff & McGehee, 2010). Trompetter, Kleine and Bohlmeijer (2017) determine via their studies that having self-compassion makes a person resilient in coping with psychological problems. In another research, it is found that in university students who come from a low-income family, self-compassion and social commitment predict optimism, and optimism directly and significantly predicts the resilience (Ergün-Başak & Can, 2018).

This research would make an authentic contribution to the literature in terms of revealing the predictor relationship between resilience, submissive behaviors and self-compassion. Because, a research in which resilience and submissive behaviors concepts are studied together has not been conducted yet. In studies about self-compassion, university students are made focal point as sample group. However, the fact that adolescent individuals cope with more than one developmental problem and try to settle their identities is found important in terms of studying these concepts. The fact that the data obtained in this study is limited to the data obtained from the scales used in the study and the answers given by the sample group of the study, which are 11th and 12th grade high school students, decreases its generalizability. In future researches different samples and variables (self-esteem, psychological well-being, life satisfaction, depression, alcohol use, divorced family structure and poverty) can be studied and thus, resilience concept can be revealed clearly. It is thought that longitudinal and experimental studies to determine the positive and negative factors that affect the development of the resilience in individuals over time are important.
The importance of protective factors in enhancing resilience cannot be ignored. Therefore, psychological counselors and guidance teachers who work with risky children in schools have a great responsibility. In schools, psychological counselors and guidance teachers can organize activities to increase resilience and especially to support internal protective factors in students. In order to increase the psychological well-being, appropriate school education programs can be developed and applied to each level. In this study, self-compassion is found to be an important predictor of resilience. It is thought that the studies and activities to increase the levels of self-compassion would contribute to the intervention programs prepared to improve the resilience of individuals.
References


136


Kurt, N. (2011). Çevik kuvvet personelinin stresle başa çıkma tutumları, psikolojik dayanıklılıkları ve iş dayanımı düzeyleri [Stress coping attitudes, psychological resilience and job satisfaction levels of riot personnel].


Author Note:

- This research is generated from the post graduate thesis of Fatmanur Kaygısız under the supervision of Assoc. Prof. Dr. Zeliha Traş.
- This research is presented verbally in 3rd Eurasian Congress on Positive Psychology, held in Üsküdar, İstanbul on 12-14 April 2019.
- This research is supported by Necmettin Erbakan Üniversitesi Bilimsel Araştırma Projeleri Fonu (Scientific Research Fund) with the number of 181310005.