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# The Mediation Role of Yoga in The Relationship Between Personality Types and Anxiety/Depression

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**Abstract**

The objective of this study is to demonstrate the results of the mediating effect of yoga between personality types and anxiety and depression. Today, anxiety and depression are the primary psychological disorders that are encountered very commonly. For this reason, it is intended to evaluate the results of the supportive effect of yoga on the basis of personality traits. Within the scope of study, "Personality Types Inventory (Big5)", "Hospital Anxiety and Depression Scale (HADS)" and "Yoga Self-Efficacy Scale (YSES)" were used and a survey consisting of these scales was applied to 165 people. In order to ensure that the concepts used in Yoga Self-Efficacy Scale are understood clearly, participants are consisted of the individuals practicing yoga. The confirmatory factor analysis and the structural equation model analysis were performed on the data obtained in order to investigate the mediating effect. In addition, Cronbach's Alpha coefficients of each scale and their dimensions were calculated to test the reliability of the study. Accordingly, Cronbach's Alpha Coefficients of all scales and the sub-dimensions of scales are included in the "highly reliably" scale. As the result of the analyses, the singular relationships between scales in the model used in the study were investigated. In the singular relationships, a negative relationship was found between hospital anxiety and depression scale and yoga scale. Practicing yoga may reduce the predisposition to anxiety and depression. In addition, it has been found that yoga has a mediating role between the predispositions of the extrovert (EXT), agreeable (AGR) and self-confident (CON) people, among personality types, to anxiety and depression.

**Keywords:** Anxiety, Depression, yoga, Personality Types, Structural Equation Model.

## INTRODUCTION

In today's world, individuals may have many psychological problems due to different reasons. Anxiety and depression are the most common ones. In society, one in five people have depression at some point in their lives. Depression is observed in three out of every 100 men and six out of every 100 women in community controls at any given time (Mete, 2008). Depression is a disorder that is not always easy to recognize. People often describe depression differently. They may complain of pain, palpitations or nausea and try to explain their grief and lack of taste in life. Most people can consult a doctor with bodily complaints, palpitations, inability to breathe, numbness and tingling, widespread pain, fainting, digestive problems, gas, nausea, such as gastrointestinal problems. Because the symptoms of depression are not clearly visible to the eye, it can sometimes feel like lack of effort, inability, or laziness. In order to decognize depression, it is important to cooperate between medical disciplines and to improve it (Couper 2003).

Anxiety, on the other hand, is a specific pathological condition accompanied by somatic symptoms due to hyperactivity of the autonomic nervous system, with a feeling of fear (Arslan et al.,2011). Physical symptoms, tremors, chills, backache and headaches, Nov tension, hyperventilation, fatigue, startle response, fading and hot flashes, tachycardia, palpitations, sweating, hands-down cool, diarrhea, dry mouth, frequent urination, fatigue, and difficulty of swallowing. A sense of fear among psychological symptoms, concentration difficulties, insomnia or somnolence, decreased libido, feeling a knot in his throat and has the feeling of contractions in the stomach (Kocabasoglu, 2008).

Whether the person's personality structure is harmonious, extroverted, self-disciplined, open to experience or stagnant, psychological disorders such as anxiety-depression can be supported by some different techniques. Breathing techniques and yoga practices are also included in these techniques (Mete, 2008). The bodily postures, namely asanas and breathing exercises used in yoga, support the strengthening of the muscles, increase in flexibility, regulation of blood circulation and increase in the oxygen ratio in the body, positively affecting hormone releases. In addition, people who practice yoga regularly have an increased resistance to stressful situations, a decrease in the risk factors for developing diseases such as cardiovascular diseases (Parshad, 2004)

Breathing exercises act as a bridge between body and mind. When the effect of breath on the muscles, joints and internal organs is evaluated, it is shared that pranayama exercises have an important place in balancing the body and mind. (Oken et al., 1994).

There are studies on the positive effects of yoga in the literature. According to a study performed on yoga, those who have been practicing yoga for at least 100 days has been found to be more self-confident than those who have not practice it (Ashokkumar and Asthana, 2016). In another study, it has been demonstrated that the 8-week hatha yoga practice may significantly increase the health-related aspects of the physical fitness in young, healthy and predominantly female subjects and it has been mentioned that yoga training may increase the muscle strength, muscle resilience, flexibility and cardiorespiratory resilience (Tran et al., 2007). According to a yoga study in people with high blood pressure, yoga is the best method that can be utilized for the cure of this disease (Satyanand et al., 2016). Desai and Vyas (2001) observed a 10% improvement in hypertensive patients following a Yogic relaxation for four weeks. Woodyard (2011) conducted a study to evaluate the findings of the articles related to therapeutic effects of yoga and to make an extensive review about the benefits of regular yoga practice.

In this study, it is desired to emphasize the importance of yoga, which is a mediator between personality types and anxiety-depression.

Study; aims to share the positive results of yoga and to contribute to the literature in the sense of yoga. In this sense; A structural equation modeling was created for the mediation effect of yoga between anxiety/depression and personality types, and the results obtained with this study are presented. In the research design department; method, sampling and data collection method are mentioned. Quantitative research method was used in the study and the obtained data were analyzed. The sample of the study consists of individuals who practice yoga. With the face-to-face survey method, the results of 170 participants were reached and the research was concluded with 165 of them.

**Personality Types**

Personality is an evolutionary process that involves many factors simultaneously. It includes many concepts such as genetics, biological, environmental conditions, social environment and changing living conditions. For these reasons, there are many approaches that intend to account for personality and the research is still ongoing. Burger thinks of personality as a set of processes within the personality and consistent behaviors specific to the individual (2006). Burger emphasizes the determinant attributes that distinguish us from others, not the aspects we may have in common with people, through this definition. Various theories that can describe personality under certain headings through this system of thought are put forward. The five factor theory is the most accepted approach among them (Goldberg RL, 1990; McCrae RR, Costa PT, 2003). This theory, which is also described as the distinctive trait theory, intends to try to define behavior, rather than to predict behavioral change or development. While there are different opinions on the dimensions of the five factor theory, McCrea and Costa identify the dimensions as agreeableness, extraversion, conscientiousness, openness to experience, and neuroticism. According to Agreeableness dimension, individuals are docile,

reliable, helpful, generous, acceptor and good-natured. It is said that individuals with high scores in the agreeableness dimension are prone to cooperation, while those with low scores are prone to competitiveness (McCrea & Costa, 2003). Individuals with high Extraversion scores are talkative, funny, playful, affectionate, sociable and social. Individuals with low Extraversion scores are introverted, passive, timid, quiet, inactive individuals who enjoy solitude. It has been observed that individuals with high scores in the Conscientiousness dimension are hardworking, well ordered, well organized, ambitious and determined, while individuals with low score are aimless, careless and disorganized people who do not take anything seriously.

It has been observed that the individuals with high score in Openness dimension tend to have independent thoughts and question traditional values. The individuals with high score in Neuroticism dimension are anxious, insecure, self-pitying, and are prone to emotional and stress-related psychological illnesses (McCrea & Costa, 2003).

**Anxiety and Depression**

Physical disorders can have negative psychological effects on individuals. Psychological negativities can reduce the people's quality of life and slow down or even worsen their recovery processes. Regardless of the disease, people are negatively affected biologically, emotionally, spiritually and socially. In individuals hospitalized for any reason, thoughts about the disease or the hospital environment can cause negative feelings and behaviors. It is known that the disease state also increases the risk of psychological disturbances (Gagnonn and Patten, 2002; Grau et al. 2003, Li et al. 2003). The factors that should be taken into consideration include the definition of physical disorder, its severity, process, the extent of its seriousness, the course of the disease, the affected organs and organ systems as well as their meaning and significance for the person. In addition, the psychological reactions shown are also very important. It is important to consider the patient as a whole when evaluating behavioral, emotional and even mental responses to physical disorder, though it varies depending on the disease and the patient (Öz 1999, Özkan 2001).

The primary psychological disorders that are encountered most commonly together with physicial disorders are depression and anxiety. Even if there is no danger in the outer environment, the person worries that something bad may happen to him/her. As a result, a fight-or-flight reaction develops in the person when the amygdala, hypothalamus, pituitary glands and all endocrine glands of the person are stimulated, resulting in the activation of sympathetic nervous system (Şahin, 2014; Özmen and Aydemir,1993; Aydemir and Bayraktar, 1996).

Later on, problems start to arise in the relationships of the individual with other people due to internal and external contact interruptions. Contact interruption may either be a reaction to mental pain or the cause of the pain itself. The person may have tendency of withdrawal, avoidance or hiding in the moments when s/he feels that the present situation is dangerous or that s/he gets hurt, and thus s/he may get away from other people and avoid external contact. This way, the person stops thinking of the things that bother him/her and learns to ignore the painful feelings or not to feel them at all.

If the sensations and tensions in the person's body remind memories, needs or fears that s/he does not want to remember, the person shuts him/herself to these sensations, may deny them and begins to become unable to solve his/her problems on his/her own (Şahin, 2019). In case that the person is under stress, which is so intense that s/he cannot cope, inexplicable anxiety disorders develop. Although the sympathetic system is not a real danger in anxiety disorders, especially in panic attacks that occur in case of panic disorders, it causes the person to be alarmed. Minor problems are exaggerated too much, especially in case of generalized anxiety disorder, and individuals suffer from constant anxiety and tension. In cases of extreme anxiety, the sympathetic system continues its effectiveness and the parasympathetic system does not come into play. People who experience such situations cannot relax, cannot rest even while sleeping, and chronic tensions and pain develop in their bodies, and even existing physiological problems intensify because of the anxiety (Şahin, 2019).

**Yoga**

Yoga: It is a practice that is based on breathing, physical movement and mind-oriented exercises in order to improve physical health, to be healthy and to support inner transformation (Desikachar T. 1999). Yoga is described in "Yoga Sutras" by Patanjali, which is thought to have been written between centuries between 4 BC and 4 AD, in detail. Sutras are defined as the aphorisms of yoga, and the processes of yoga are also described in detail. Yoga sutras are

the first known written texts of yoga and serve as a guide for yoga (Patanjali, 2011). Patanjali says that when an individual trusts in his/her own yoga practice, this can improve his/her physical and mental health and increase confidence (Desikachar T., 1999).

Yoga contains eight stages on which person needs to contemplate and comprehend in order to start his/her own inner journey and to purify his/her body and mind regularly. These are yama, niyama, asana, pranayama, pratyahara, dharana, dhyana and samadhi (Patanjali, 2011). Yamas include all negative behaviors that the person should avoid such as lies, theft, hypocrisy, greed, excessive consumption, and gossip. Niyamas are positive attitudes and behaviors that need to be repeated and reinforced. Behaviors such as bodily and spiritual cleansing, thankfulness, thanking and living simply can be given as examples of Niyamas. Asana literally means posture in Sanskrit. It is the state that the body takes certain postures. Prana refers to life force and pranayama refers to breathing techniques. Pratyahara is the state of failure of us to feel the effects of our sense organs. Dharana refers to concentration, or focusing, of the attention on a single point. Dhyana, on the other hand, is the name of the studies aimed at increasing the level of awareness through the use of meditation techniques. Samadhi can be defined as the state that the individual meets with his/herself (Desikachar, 1999). Krishnamacharya, who is regarded as the founder of yoga, is of the opinion that these eight stages, which are considered as the steps of yoga, can be explained under 3 basic principles:

**1-Body:** It is the practices done to relax the body with the help of asanas. Those who do physical exercise regularly perform breathing in the form of flow by using body movement.

**2-Breath:** Practice can also be done only by breathing, with no body movement. This is called pranayama. Besides, breathing and body exercises are performed simultaneously.

**3-Mind:** It is a state of meditation. Meditation is a state of mental silence (Desikachar, 1999).

Yoga and anxiety-depression relationship

Many studies that have been conducted recently state the positive effects of yoga. It is observed that regular yoga practices increase the muscle strength in the body and the body flexibility, improve the respiratory and cardiovascular functions, are used as a method to promote the dependency treatment, lead to a decrease in anxiety, depression, stress and chronic pains, have a positive impact on regulation of sleep and increase the quality of life (Woodyard, 2011). In addition, it has been put forward that yoga can be an additional recommendation for psychological problems of people and should be tried together with pharmacological treatment. It has been emphasized that yoga is as effective in elimination of anxiety, depression and stress as cognitive behavioral therapy and other active control interventions (Bussing et al., 2012).

However, today, yoga is also recommended as holistic health approach and booster (Jeter et al., 2015). In many studies related to the field in the literature, it has been reported (by Chan et al., 2011) that mind-body and breath therapies have positive effects to equilibrate the psychiatric disorders such as depression (Nakao et al., 2001; Shapiro et al., 2007) and anxiety (Deckro et al., 2002).

In the studies conducted on feelings in particular, it has been put forward that yoga increases the positive feelings and decreases the negative feelings (Dwivedi et al., 2015; Kale, 2017).

**Research Pattern**

**Methodology**

Ouantitative research method was used in this study. The research pattern is the literature review. A questionnaire was used as data collection method. SPSS 22.00 and AMOS 22.00 were used to analyze the data in the study.

**Participants**

In order to understand the concepts clearly, the sample was created with the participants who practiced yoga. For this, simple random sampling technique within the scope of probability sampling methods was used as the sampling selection technique. A survey was conducted on 170 people between August 2019 and December 2019. As a result of the review, 5 surveys were excluded from the evaluation because the rate of completion was very low. The study was conducted with results obtained from 165 participants.

**Data Collection Method**

Three different scales were used in this study. The recent version of Big five personality scale consisting of 16 items and 5 sub-dimensions was put forward by McCrea and Costa. Five dimensions were determined as agreeableness, extroversion, self-confidence, openness to experience and neurotic

tendency. These 5 dimensions are scored by the 5-point likert scale. According to this, it is stated that the individuals with a high agreeableness score are predisposed to collaboration and those with lower score are predisposed to competition (McCrea and Costa, 2003). In extroversion dimension, the individuals with higher scores are talkative, fun, joker, affectionate, sociable and outgoing. Those with lower scores are introvert, passive, timid, quite, inactive people who love solitude. In the self-confident dimension, it has been observed that the individuals with higher score are hard-working, tidy, well-organized, ambitious and determined, whereas the individuals with lower score are reckless, purposeless, inattentive and untidy. In the Openness to Experience dimension, it has been observed that the individuals with higher score have independent opinions and are predisposed to question the traditional values. In Emotional Stability dimension, those with higher score are anxious, insecure, self-pitying, emotional and prone to the stress-related psychological disorders (McCrea and Costa, 2003).

"The Hospital Anxiety and Depression Scale" (HADS) was developed by Zigmond and Snaith in 1983. The scale consists of 14 items. 7 of these items measure anxiety symptoms and the other 7 measure depression symptoms. The items in the scale are assessed through a 4-point Likert scale and are based on a scoring system ranging between 0-3. According to the scoring, the score between 0-1 is considered as people with no disease, the score '2' is considered as patient at borderline, and '2-3' is considered as seriously ill patient. In addition, it seems that the scores obtained from the scale are not affected by physical disorders (Clark & Steer, 1994).

The aim of the scale is not to make a diagnosis, but to measure the psychological conditions of the patients and to take the necessary precautions (Zigmond & Snaith, 1983).

Validity and reliability analysis of the scale was carried out in 1997 by Aydemir et al. along with the adaptation study to Turkish. The HAD scale was also applied to those with no physical disease, but it was observed that it yielded more sensitive results in patient groups (Aydemir et al., 1997).

The yoga self-efficacy scale (YSES) used in the study was developed by Gurjeet S. Birdee, Stephanie J. Sohl and Ken Wallston in 2016. The scale contains items related to the three basic principles of yoga, namely body, breath and mind. They used the self-efficacy items of Desikachar and the theory of Bandura and Schwarzer while creating the scale. However, they took the concepts of focus, stretch, understandability and convenience into consideration while creating the items. As a result of the studies on the scale, they gathered the items under three main titles, namely body, breath and mind, in a way to reflect yoga. Through studies, the scale that was prepared in 32 items was assessed by many experts and yoga experts from the Krishnamacharya school and reduced to 14 items (Gurjeet S. Birdee, Stephanie J. Sohl and Ken Wallston, 2016). Support from 3 yoga teachers who have been living with yoga for many years in the teaching of Krishnamacharya was taken to improve the scale and to re-evaluate the items in the scale. Arrangements were made as a result of the feedbacks of the yoga teachers and interviews made for their feedbacks. The scale was directed to the volunteers verbally, also taking their cognitive characteristics into account. A 9-point Likert scale was used for the responses of the items (ranging from "strongly disagree" to "strongly agree"). Scale was re-evaluated, edited, revised and as a result, a 13-item YSES (Yoga Self-Efficacy Scale) was developed, considering volunteers' state of understanding/not understanding and responding/not responding to the items (Gurjeet S. Birdee, Stephanie. Sohl and Wallston, 2016).

**Participants**

In order to understand the concepts clearly, the sample was created with the participants who practiced yoga. The participants are consisted of the people who regularly practice yoga.

**Table 1.** Demographic Characteristics of Participants

| | | N (165) | % |
|---|---|---|---|
| **GND** | male | 23 | 13,9% |
| | female | 142 | 86,1% |
| **AGE** | less than 25 | 1 | 0,6% |
| | Between 25-29 | 12 | 7,3% |
| | Between 30-34 | 45 | 27,3% |
| | 35 and above | 107 | 64,8% |
| **EDC** | primary/elementary school | 1 | 0,6% |
| | high school | 7 | 4,2% |
| | university | 109 | 66,1% |
| | master's degree/phd | 48 | 29,1% |
| **Profession** | manager | 91 | 55,2% |
| | member of profession | 25 | 15,2% |
| | teacher-lecturer | 30 | 18,2% |
| | other | 19 | 11,5% |
| **EXP** | less than 5 years | 18 | 10,9% |
| | 5-10 years | 35 | 21,2% |
| | 11-16 years | 41 | 24,8% |
| | 16 years and above | 71 | 43,0% |

As seen in Table 1: 142 women make up 86.1% of the participants, and 23 men make up the remaining 13.9%. 64.8% of the participants are 35 and over, 27.3% of them are people between the ages of 30 and 34. 109 people, who make up 66.1% of the sample, are university graduates and 48 people have a graduate level education. While 55.2% of the 91 people are working in managerial status, 30 people corresponding to 18.2% are working in the status of trainers. The experience of 43% of the participants is over 16 years, and the experience of 41 people, 24.8% of them, is between 11 and 16 years.

**Analysis of Data**

The data obtained as a result of the survey study were analyzed by using SPSS 22.00 and AMOS 22.00 programs. The mediation effects of the scales used in the survey were investigated by confirmatory factor analysis and structural equation modeling through AMOS program. Reliability and Internal Consistency Criterion Values of the Scales: The scale(s) used in a survey should be evaluated in terms of reliability and validity. Reliability also demonstrates how consciously the questions asked to measure a variable have been responded (Özdoğan & Tüzün, 2007).

In this study, Cronbach's Alpha coefficients, which are the fit value based on the correlation between the questions, were used for the Reliability Analysis. Cronbach's Alpha value also shows the reliability level of the items below the factor. Classification for these values was presented in Table 2 (Şeref K., 2006).

**Table 2.** Classification for Cronbach's Alpha

| **Cronbach's Alpha** | **Interpretation** |
|---|---|
| 0,80 to 1,00 | High Reliability |
| 0,60 to 0,80 | Highly reliable |
| 0,40 to 0,60 | Low reliability |
| 0,40 and below | Not reliable |

It has a very reliable level with the Big Five (,786) value, one of the scales used. For the Hospital Anxiety and Depression (HADS) scale and the Yoga Self-Efficacy Scale (YSES), these coefficients were calculated as (,805) and (,875), respectively, and were included in the high reliability scale.

**Table 3.** Reliability Values of the Scales

| Scale | Number of Items | Cronbach's Alpha |
|---|---|---|
| **Big Five(BF)** | 10 | 0,786 |
| Extraversion (EXT) | 2 | 0,771 |
| Agreeableness (AGR) | 3 | 0,765 |
| Conscientiousness (CON) | 3 | 0,745 |
| Emotional Stability (EM) | 2 | 0,712 |
| **Anxiety and Depression Scale (HADS)** | 9 | 0,805 |
| Anxiety | 6 | 0,813 |
| Depression | 3 | 0,745 |
| **Yoga Self-Efficacy Scale (YSES)** | 12 | 0,875 |
| Body (BD) | 5 | 0,856 |
| Breath (BRT) | 4 | 0,823 |
| Mind (MND) | 3 | 0,812 |

The participants are consisted of the people who regularly practice yoga.

Big Five (BF) scale was gathered under 4 dimensions. Cronbach's Alpha values of its sub-dimensions are as follows: Extraversion (0,771), Agreeableness (0,765), Conscientiousness (0,745) and Emotional Stability (0,712) and these values are included in the highly reliable scale. In the sub-dimensions of the Hospital Anxiety and Depression (HADS) scale, it has a "high reliability" level in the Anxiety dimension with the value of (0,813), and a "highly reliable" level in the depression dimension with the value of (0,745).

In the Yoga Self-Efficacy Scale sub-dimensions, Cronbach's Alpha values of Body (0,856), Breath (0,823) and Mind (0,812) have the "high reliability" level.

**Confirmatory Factor Analysis:**

The significance of the measurement models was investigated with the AMOS 22.00 package program. When the results were examined, it was observed that the measurement models had acceptable criteria. In the evaluation of the confirmatory factor analysis applied to the scales used for the study, whether the general tested models are suitable or not have been determined as a result of the examination of the Chi-Square ($\chi 2$) value corrected by the the degree of freedom (Chi-Square value/Degree of freedom), other goodness of fit indexes and values in the standardized residual covariance matrix (Bayram, 2013). And Table 4 was taken as reference for acceptable limits of the goodness of fit indexes that were used (Meydan, 2011).

$\chi 2$ /sd: Since chi-square statistics are affected by the sample size too quickly, $\chi 2$ /sd ratio which is affected less by the sample is a measure that can be used instead of it (Şimşek 2007; Waltz, Strcikland and Lenz 2010). This value that is obtained by dividing $\chi 2$ value by the freedom degree must be equal to or less than two. A value of or below five is an acceptable value (Munro 2005; Şimşek 2007; Hooper and Mullen 2008).

RMSEA (Root Mean Square Error of Approximation): It is a measure of the approximate fitness in the matrix. It takes a value between zero and one (Munro 2005; Yılmaz and Çelik 2009; Çokluk,

Şekercioğlu and Büyüköztürk 2010; Schumacker and Lomax 2010). Normal and acceptable values are given in Table 4.

GFI: It refers to Goodness of Fit Index (Yılmaz and Çelik 2009). It shows to what extent the model measures the covariance matrix in the sample (Çokluk, Şekercioğlu and Büyüköztürk 2010; Waltz, Strcikland and Lenz 2010). GFI value varies between 0 and 1. If the GFI is greater than 0.90, this shows that model is fit (Munro 2005; Waltz, Strcikland and Lenz 2010).

AGFI (Adjusted Goodness of Fit Index): It is an index used to make up for the deficiency of GFI test in the high sample volume. Its value varies between 0 and 1 and must be higher than 0.90 (Munro 2005; Çokluk, Şekercioğlu and Büyüköztürk 2010).

SRMR (Standardized Root Mean Square Residual): As this value approaches to zero, it is understood that the tested model shows a better goodness of fit. Its standardized form is called SRMR goodness of fit index (Çokluk, Şekercioğlu and Büyüköztürk 2010; Wang and Wang 2012). Normal and acceptable ranges are given in Table 4.

CFI (Comparative Fit Index): It gives the difference of the established model from the deficiency model, assuming that there is no relationship between the variables. It is a model that assumes there is no relationship between variables. Its value varies between 0 and 1(Munro, 2005; Çokluk, Şekercioğlu and Büyüköztürk, 2010).

**Table 4.** Goodness of Fit Index and Fit Values

| Indexes | Good Fit | Acceptable Fit |
|---|---|---|
| $\chi 2$ / df | $0 \leq \chi 2/df \leq 2$ | $2 < \chi 2/df \leq 3$ |
| GFI | $\geq 0,90$ | 0,85 to 0,89 |
| CFI | $\geq 0,97$ | $\geq 0,95$ |
| SRMR | $\leq 0,05$ | $0,06 \leq SRMR \leq 0,08$ |
| RMSEA | $\leq 0,05$ | $0,06 \leq RMSEA \leq 0,08$ |

**Big five Personality Scale (BF)**

In the big five scale used, 6 items were eliminated because their factor loads were low. This brought the result that this scale was gathered under 4 dimensions, unlike the literature. The analysis continued with the remaining 10 items. In DFA performed with the remaining 10 items, the item factor weight values are within the range of (0,57; 0,80).

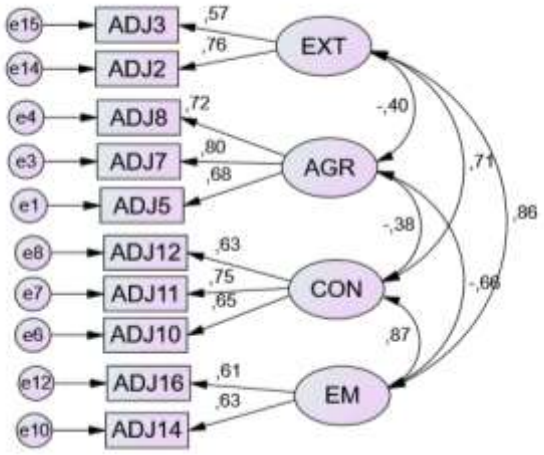


**Figure 1.** DFA for Big five

(Agreeableness (AGR), Extraversion (EXT), Conscientiousness(CON), Emotional Stability (EM), Yoga Self-Efficacy (YSE))

It is understood that DFA is significant since the model test values have been found to be $\chi 2$ (45,51), $\chi 2/df$ (1,625) in the confirmatory factor analysis. GFI (0,949), CFI (0,950), SRMR (0,075), RMSEA (0,062), the fit index values of the model, are within acceptable limits, so DFA is valid.

**DFA for Hospital Anxiety and Depression Scale (HADS)**

5 items from the 14-item Hospital Anxiety and Depression (HADS) scale were eliminated because their item factor loads were low. In DFA performed with the remaining 9 items, it is observed that the item factor weight values are within the range of (0,51; 0,78).

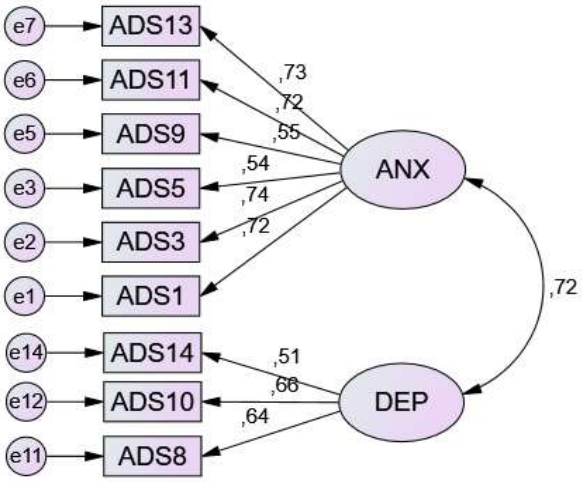


**Figure 2.** DFA for HADS

(Anxiety (ANX), Depression (DEP))

DFA is significant since the model test values have been found to be χ2 (208,21), χ2/df (1,395) in the confirmatory factor analysis. GFI (0,961), CFI (0,980), SRMR (0,0405), RMSEA (0,049), the fit index values of the model, are within acceptable limits.

Consequently, it can be said that the confirmatory factor analysis for Hospital Anxiety and Depression (HADS) Scale is valid.

**Yoga Self-Efficacy Scale (YSES)**

One item from the 13-item Yoga Self-Efficacy scale was eliminated because its item factor load is low. In DFA performed with the remaining 12 items, the item factor weight values are within the range of (0,53; 0,90).

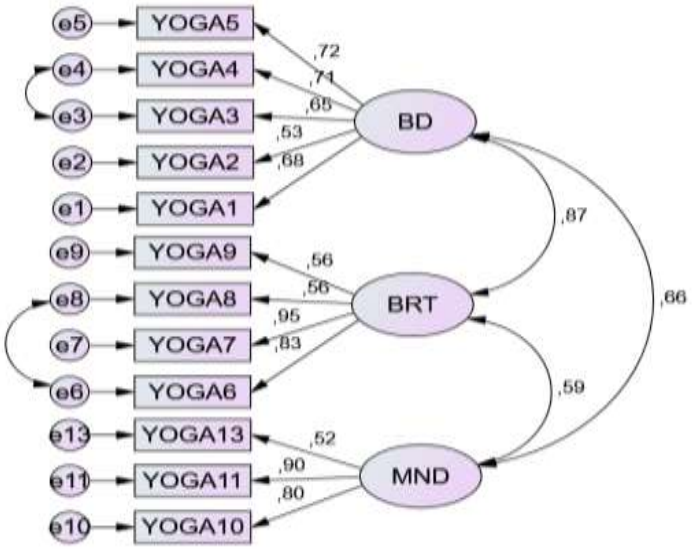


**Figure 3.** DFA for YSES

(Body (BD), Breath (BRT), Mind (MND))

DFA is significant since model test values has been found to be: χ2 (87,70), χ2/df (1,993) in the confirmatory factor analysis. It can be said that the Confirmatory Factor Analysis of the Yoga Self-Efficacy scale is valid because GFI (0,923), CFI (0,954), SRMR (0,069), RMSEA (0,078), the fit index values of the model, are within acceptable limits.

**Mediator Variable Effect Study by Means of Amos**

According to Bayram (2013), the models revealing the existence of mediator variables form the basis of structural equation modeling and these models can be considered as simple structural

equation models (Craig, 2009). If a variable meets the requirements in Figure 4, it is called as the mediator (arbitrator, intermediary) variable (Baron & Kenny, 1986; MacKinnon, 2008).

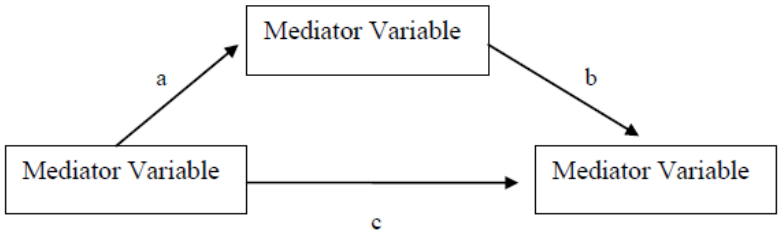


**Figure 4.** Mediator Model

1) When the changes in the independent variable account for the reasons of the changes in the predicted mediator variable and are significant (path a),
2) When the changes in the mediator variable account for the reason of the changes in the dependent variable and are significant (path b),
3) If the previously significant relationship between the dependent and the independent variable is no longer significant (path c), one can speak of the presence of a mediator. In the event that the path c approaches zero, it means that there is a single and dominant mediator, and in the event that the path c is not zero, there are multiple mediator factors.

In order to understand whether the mediator requirements are met or not, it should be investigated whether the relationships between the independent variables and the mediator variable, the relationships between the mediator variable and the dependent variable, and the singular relationships between the independent variable and the dependent variables are significant.

**Table 5.** Singular Effect Values

| Effect | Exogenous | Effect | Endogenous | β | Std. β | CR | p |
|---|---|---|---|---|---|---|---|
| Independent→Dependent | EXT | → | HADS | -1,070 | -,742 | -3,688 | ,000*** |
| | CON | → | HADS | -,637 | -,638 | -4,537 | ,000*** |
| | AGR | → | HADS | ,573 | ,707 | 4,475 | ,000*** |
| | EM | → | HADS | -,129 | -,134 | -,456 | ,745 |
| Independent→Mediator | EM | → | YSE | ,599 | ,471 | 3,169 | ,002 |
| | CON | → | YSE | -,288 | -,420 | -3,970 | ,000*** |
| | AGR | → | YSE | ,303 | ,450 | 4,151 | ,000*** |
| | EXT | → | YSE | .425 | ,471 | 3,588 | ,000*** |
| Mediator→Dependent | YSE | → | HADS | -,458 | -,687 | -5,003 | ,000*** |

(Agreeableness (AGR), Extraversion (EXT), Conscientiousness(CON), Emotional Stability (EM), Yoga Self-Efficacy (YSE)).

Significant effects on the effects of the Big Five scale sub-dimensions, which are independent variables, on the mediator variable in singular relations are as follows: Effect of EXT variable on HADS variable (β=-1,07; p<0,05); Effect of CON variable on HADS variable (β=-,637; p<0,05); Effect of AGR variable on HADS variable (β=,573; p<0,05).

The non-significant relationship is, on the other hand, the effect of the EM variable on the HADS variable (β=-,129; p>0,05).

Consequently, the mediation state of the YSE variable regarding the effect of the EM variable on the HADS variable goes away. In this case, it will be sufficient to take EXT, CON and AGR variables that have significant effects on the HADS variable for mediation.

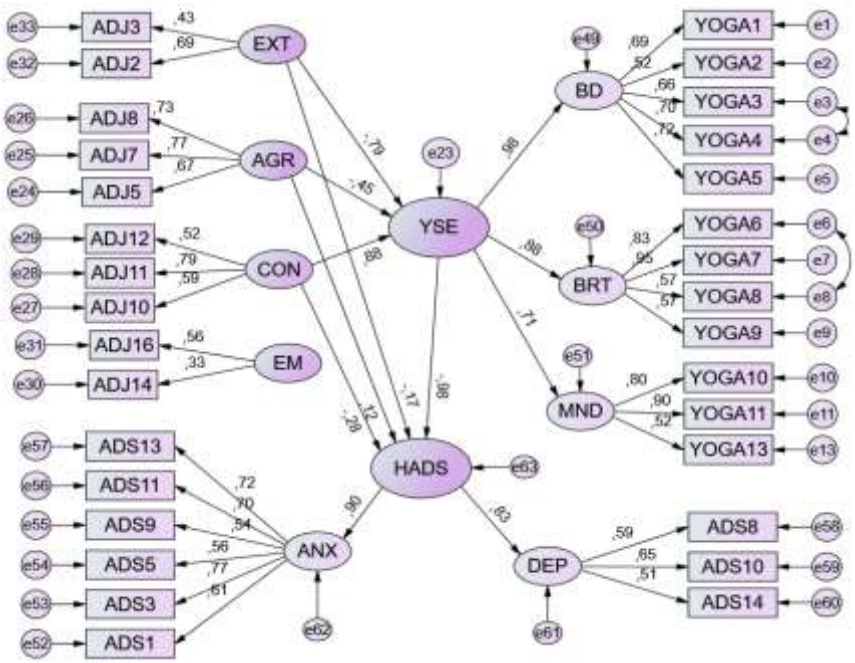


**Figure 5.** Multiple Mediator Model Tested

Since the model test values used for the mediator model analysis have been found to be as follows: $\chi 2$ (775,96), $\chi 2/df$ (1,955), model is significant. In addition, it has been found that the fit index values are GFI (0,831), CFI (0,826), SRMR (0,0814), RMSEA (0,070). GFI, CFI and SRMR values are close to acceptance limits, but outside the limits. It is an expected situation for the models with full mediator not to be within the acceptance limits (Baron & Kenny,1986; MacKinnon, 2008). Details of the effect values included in the model are presented in Table 6.

**Table 6.** Singular effect values between independent, dependent and mediator variable

| | Exogenous | Effect | Endogenous | β | Std. β | CR | p |
|---|---|---|---|---|---|---|---|
| Independent→Mediator | EXT | → | YSE | -,716 | ,362 | -1,975 | ,048 |
| | AGR | → | YSE | -.480 | ,168 | -2,855 | ,004 |
| | CON | → | YSE | ,754 | ,275 | 2,746 | ,006 |
| Mediator→Dependent | YSE | → | HADS | -,667 | ,212 | -3.151 | ,002 |
| Independent→Dependent | **AGR** | → | HADS | ,087 | ,121 | .739 | ,460 |
| | EXT | → | HADS | -,102 | -,166 | -,329 | ,742 |
| | **CON** | → | HADS | -,164 | -,281 | -,413 | ,679 |

(Agreeableness (AGR), Extraversion (EXT), Conscientiousness(CON), Emotional Stability (EM), Yoga Self-Efficacy (YSE))

In the model, the effect of EXT variable on YSE variable (β= -,716; p<0,05) is significant. The effect of YSE variable on HADS variable (β= -,667; p<0,05) is significant. These results will be verified by means of Sobel Test, as well.

In the model, the effect of AGR variable on YSE variable (β= -,480; p<0,05) and the effect of YSE variable on HADS variable (β=-,667; p<0,05) are significant. Since the value of the effect of AGR variable on the HADS variable (β=,087; p>0,05) is not significant, it is understood that YSE variable has a complete mediation effect on the effect of AGR on HADS variable. This model will also be verified by means of Sobel Test.

It has been found that the effect of CON variable on YSE variable (β= -,754; p<0,05) and the effect of YSE variable on HADS variable (β=-,667; p<0,05) are significant. Since the value of the effect of CON variable on the HADS variable (β=,164; p>0,05) has been found to be non-significant, it is understood that YSE variable has a complete mediation effect on the effect of CON on HADS variable. This model will also be verified by Sobel Test.

Baron and Kenny's three-step method is used in academic studies and partial or complete mediation decision is made according to the result of the analysis. In addition, it is necessary to put forward whether the indirect effect of the exogenous variable on the endogenous variable is significant through the mediator variable in order to talk about the mediation effect. There are various tests for this purpose. Sobel Test is the most preferred one among them (Sobel, 1982). For Sobel test, uncorrected regression coefficients (β) of relevant variables and their standard error values are used (Sobel, 1982).

**Table 7.** Sobel Test Values FOR Mediator Relationships

| Model No. | Endogenous | Effect | Exogenous | β | SD | p |
|---|---|---|---|---|---|---|
| | EXT | → | YSE | -,716 | ,279 | |
| 1 | YSE | → | HADS | -,667 | ,212 | **0,04673975*** |
| | AGR | → | YSE | -,480 | ,168 | |
| 1 | YSE | → | HADS | -,667 | ,212 | 0,03441809* |
| | CON | → | YSE | ,754 | ,275 | |
| 2 | YSE | → | HADS | -,667 | ,212 | **0,03872962*** |

*Sobel Test P value *p<0.05 **p<0.01*

(Agreeableness (AGR), Extraversion (EXT), Conscientiousness(CON), Emotional Stability (EM), Yoga Self-Efficacy (YSE))

The effect of EXT variable on HADS variable in singular relations (β= -1,07; p<0,05) is significant; however, together with YSE variable falling between EXT and HADS, the value of the effect of EXT variable on HADS variable is (β= -,102; p>0,05), so the complete mediation was confirmed by the value (p <0,05) found in the Sobel test. The YSE variable is the complete mediator between EXT and HADS variables. The effect of the CON variable on the HADS variable in singular relations (β= -,637; p<0,05) is significant; however, together with the YSE variable falling between CON and HADS, the value of the effect of CON variable on the HADS variable is (β= -,1645; p>0,05), so complete mediation was confirmed by the value (p <0,05) in the sobel test. The effect of the AGR variable on the HADS variable in singular relations (β=,573; p<0,05) is significant; however, together with the YSE variable falling between AGR and HADS, the value of the effect of AGR variable on the HADS variable is (β=,087; p>0,05). Consequently, it was confirmed by the value (p <0,05) found in the Sobel test that it was complete mediation.

## Conclusion and Discussion

In this study, the relationship between yoga and the tendency of individuals with different personality types to anxiety and depression was investigated. For this purpose, all scales used within the scope of the model were analyzed with the sample used in the research. To this end, Cronbach's Alpha coefficients of each scale were calculated and Reliability Analyzes of the scales were performed. As a result of the reliability analysis, it was observed that each scale was reliable. Then Confirmatory Factor Analysis was applied to the scales in order to analyze the construct validity and to examine whether the collected data is compatible with the theoretical structure. While evaluating the confirmatory factor analysis, $\chi 2$, $\chi 2/df$, GFI, CFI, SRMR and RMSEA values were taken into consideration and each scale was examined with these goodness of fit values. According to the analysis results, the goodness of fit values of the scales are within acceptable limits. As a result, it was determined that the goodness of fit values and the scales were verified by the data. Then, a confirmatory factor analysis of the proposed structural equation model was performed and the goodness of fit values were evaluated, and the mediation effects were tested. The singular relationships between the scales in the proposed model were studied. In singular relationships, a negative-oriented relationship was found between the hospital anxiety and depression scale and the YSE yoga scale. Practicing yoga can reduce the tendency to anxiety and depression. It is observed that regular yoga practices increase the muscle strength in the body and the body flexibility, improve the respiratory and cardiovascular

functions, are used as a method to promote the dependency treatment, lead to a decrease in anxiety, depression, stress and chronic pains (Woodyard, 2011).

Extroverted (EXT), self-disciplined (CON), and adaptive (AGR) personality types variables, which have significant effects on the anxiety/depression (HADS) variable in the mediating effect of yoga, were discussed together with the examination of singular relationships. In addition, it is one of the results that the effect of the YSI variable on the HADS variable is significant ($\beta$=-.667; $p<0.05$). With this result, it is seen that the susceptibility to anxiety and depression decreases in individuals who practice yoga. Yoga affects anxiety and depression predisposition negatively. This result is compatible with the literature. It has been emphasized that yoga is as effective as cognitive behavioral therapy and other active control interventions in eliminating anxiety, depression and stress (Bussing et al., 2012).

When examining singular relationships, personality types variables EXT, CON, AGR, which have significant effects on the HADS variable in the mediation effect of yoga, were discussed.

The results of the Sobel Test conducted to confirm the mediation effects have shown that YSE yoga variable is the complete mediator between EXT extroverted personality type and HADS variables; YSE yoga variable is complete mediator between CON self-disciplined personality type variable and HADS variable; and the YSE variable is the complete mediator between the AGR compatible personality type variable and the HADS variable. Accordingly, yoga has a mediating role between the extroverted (EXT), agreeable (AGR) and conscientious (CON) personality types of the people, and their tendency to anxiety and depression, and the relationships established with this model are statistically significant.

Accordingly, yoga has a mediating role among the decisiveness of people who are extroverted, compatible and self-disciplined from personality types to anxiety and depression, and the relationships established with this model are statistically significant. If there is a predisposition to anxiety and depression in extroverted, harmonious and self-disciplined people, yoga can have the ability to reduce this predisposition. Many studies related to the field in the literature have reported that there are positive effects of mind-body and breath therapies on balancing psychiatric disorders (Chan et al., 2011). such as depression (Nakao et al., 2001; Shapiro et al., 2007) and anxiety (Deckro et al., 2002). In particular, in studies conducted on emotions, it has been revealed that yoga increases positive emotions and, in turn, reduces negative emotions (Dwivedi et al., 2015; Castle, 2017).

Yoga has a very long history. It can have positive contributions to body, mind and spirit. Therefore, more studies need to be conducted on yoga. These studies should be reproduced with larger samples.

The studies should be diversified and thus, the effects of yoga should be examined. According to the scales used in this study, yoga and practices related to yoga have a positive impact on people in physical, mental and spiritual terms. It has been found that depression and anxiety levels decrease in individuals who regularly do yoga.

This study was carried out with the participants practicing yoga. It has been found that yoga has a complete mediating role between anxiety and depression and personality traits.

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