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Subjective Happiness: Does Optimism
Play a Protective Role?**

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The Effect of Health Anxiety on Subjective Happiness: Does Optimism Play a Protective Role?

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Abstract

In this study, health anxiety and optimism were determined as predictors of subjective happiness. A total of 301 individuals, 168 females (55.8%) and 133 males (44.2%) participated in the study carried out based on the correlational model. The research data were collected online due to the pandemic. In the study, Personal Information Form, Health Anxiety Scale, Optimism Scale and Subjective Happiness Scale were used as data collection tools. According to the findings obtained from the study, statistically significant and negative correlations were found between the health anxiety variable and the variables of subjective happiness and optimism. In addition to these results, statistically significant and positive correlations were determined between the optimism variable and subjective happiness variable. Mediation analyses were conducted in the study, and according to the results, it was revealed that optimism had a mediating role in the relationship between health anxiety and subjective happiness. As a result, the indirect effect of health anxiety on subjective happiness was found to be statistically significant. It is believed that the findings of the research will benefit experts who prepare intervention programs for individuals who experience intense anxiety during the pandemic process and who have low levels of subjective happiness.

Introduction

Positive psychology, which offers an alternative perspective to the solution-oriented approach of psychology, emphasizes the strong and virtuous aspects of human beings (Sheldon & King, 2001). Seligman (2002), who is considered one of the pioneers of the theory, explains the philosophy of the theory as investigating the factors that make life worth living instead of the things that go wrong in life. It can be said that the basic concepts of the theory have been also shaped in the light of this philosophy. Human happiness lies at the center of these concepts. To put it briefly, positive psychology is concerned with happiness, enjoyment, meaningful life, in other words, the well-being of the individuals.

Subjective Well-Being

Well-being is a general concept that may correspond to the happiness and positive functionality of the individuals (Tuzgöl Dost, 2004). The concept of well-being is handled in two different ways in the theory as subjective and psychological well-being. While psychological well-being is used in the meaning of the self-realization and development of the individual (Ryff, 1989); subjective well-being, on the other hand, is used in the meaning that the individuals experience less negative emotions and more positive emotions, and is satisfied with their life (Diener, 1984; Diener, 2000; Diener et al., 2002; Diener et al., 1997; Ryan & Deci, 2001). Looking at the definition of subjective well-being; It is seen that it has a three-component structure as positive emotions, negative emotions and life satisfaction. It is seen that the part of these components related to positive and negative emotions represents the affective dimension of subjective happiness, and the part related to life satisfaction represents the cognitive dimension (Diener et al., 1999; Schimmack, 2008). In the affective dimension, the positive affection is associated with the intensity of emotions such as joy, being full of love, calmness, being fun and the negative affection is associated with the intensity of emotions such as anger, fear, anxiety, shame, guilt, regret (Diener & Tov, 2012). Life satisfaction, which is included in the cognitive dimension, is defined by Diener and Diener (1995) as the state of being satisfied, which includes all positive evaluations of life, and as the satisfaction with the whole of life as a result of these evaluations. In short, the subjective well-being is a concept related to both affectivity and evaluations of life in general. It can be said that

positive emotions being more than negative ones and life satisfaction indicate subjective well-being or, with its use in everyday language, happiness (Carr, 2014).

Studies show that various factors are effective on subjective well-being. Lyubomirsky et al. (2005) have evaluated variables related to subjective well-being in three groups. These are living conditions (education, gender, age, economic status); purposeful life activities (doing good, fulfilling religious obligations, forgiveness) and genetic traits. In the literature, personality traits (Heady & Weaning, 1989); neuroticism and extraversion (Argyle, 2001; Spangler & Polrecha, 2004); genetic factors (Costa & McCrae, 1980); age (Blanchflower & Oswald, 2004; Eryılmaz & Ercan, 2011; Luchman et al., 2012; Ryff, 1989) gender (Dilmaç & Bozgeyikli, 2009; Güler & Gazioğlu, 2008; Inglehart, 2002; Shmotkin, 1990; Tümkaya, 2011) marital status (Diener, 2009) economic status (Carbonell, 2005; Proto & Rustichini, 2013); religion (Argyle & Hills, 2000); hope (Bernardo, 2015; Snyder et al., 2003); optimism (Bailey et al., 2007; Cummins & Nistico, 2002; Gülcan & Bal, 2014; Sapmaz & Doğan, 2012) are some of the variables whose relationship with subjective happiness is examined. Based on this information, it can be said that subjective well-being is affected by and affects many variables in human life. In addition, research findings show that there is a relationship between subjective well-being and feeling healthy (Diener et al., 1999). Based on this relationship, health anxiety was included as a variable in the research and an answer was sought to the question of whether there is a relationship between health anxiety and subjective well-being.

Health Anxiety

Health anxiety is defined as an individual's intense concern about his/her health, constantly dealing with it, and interpreting changes in her body as a sign of an important disease (Reiser et al., 2014). In other words, it can be said that it is the fear of the individual against being sick. American Psychiatric Association (2013) defined disease anxiety with the symptoms in which the individual has repetitive thoughts that he/she has or will have a serious illness, the anxiety he/she feels is not consistent with his current situation, the anxiety he feels about his health is high and he is inclined to be afraid in this situation, and there is an excess of behaviours related to his health.

The research studies conducted has emphasized that the individual's feeling of health is positively related to subjective well-being (Diener et al., 1999) and revealed that subjective well-being is also related to personality traits (Doğan, 2013; Eryılmaz & Ercan, 2011; Reisoğlu & Yazıcı, 2016). There are research findings concluding that optimism, which is accepted as a personality trait with one dimension (Carver & Scheier, 2002), is also positively related to subjective well-being (Seligman, 2002). For this reason, optimism was included as a variable in the study and its intermediary role in the relationship between health anxiety and subjective well-being was investigated.

Optimism

Optimism is defined as a strong expectation that everything will be fine in life despite the difficulties and obstacles encountered (Gillham & Reivich, 2004; Scheier & Carver, 1985). In other words, it can be said that it is focusing on the good side of the events rather than the bad side (Benson, 2007). Carver and Scheier (2002), who conducted the first research study on optimism, one of the important concepts of positive psychology, in the context of psychology, emphasized the continuity and consistency of optimism. Not a situational optimism, but a continuous tendency to see the positive aspects of events in general has been mentioned and optimism has been considered as a personality trait. In addition to this view, there are approaches that deal with optimism as situational, but the optimism discussed in this study was considered as a feature with consistency and continuity.

Subjective well-being is a concept used synonymously with happiness in the literature (Tuzgöl Dost, 2010). Happiness is a common goal that all people have, a point they want to reach throughout their lives. Each information that will contribute to people in achieving this goal and bring them closer to it is of great importance. Research findings have been found in the literature demonstrating that optimism is negatively associated with depression, anxiety and stress (Chang et al., 2003; McIntosh et al., 2004; Scheier et al., 1994); it is positively associated with mental resilience (Nicholls et al., 2008) and physical health (Scheier & Carver, 1985) and subjective well-being is positively associated with physical health (Carr, 2014; Diener, 2012), optimism (Seligman & Csikszentmihalyi, 2014) and psychological well-being (Keyes et al., 2002; Linley et al., 2009). Both health anxiety and optimism are concepts that can be positively changed with interventions to be conducted. Psychotherapy interventions for anxiety are widely used. Studies have demonstrated that optimism is

a feature that can be learned and that the optimism levels of individuals can be increased with interventions (Seligman, 2006). In the light of this information, it is considered that the results of the research can be a guide in the interventions planned to be carried out to protect the mental health of individuals and increase their well-being levels. In the pandemic process, which has affected the whole world, it has been observed that individuals have become more sensitive to signals coming from their bodies due to the anxiety of catching the virus (Yazıcı-Çelebi, 2020). Anxiety or even panic can be experienced by perceiving a simple cough or a slight fever as a sign of Covid 19. Considering the high similarity with the criteria in the diagnosis of health anxiety, it can be considered that the current pandemic process will have a triggering effect on health anxiety. When considered from this point of view, it is believed that the findings of the research will be useful also for the experts who prepare intervention programs for individuals who experience intense anxiety due to the pandemic and who have low levels of subjective well-being. While forming the theoretical basis of the research, the extension and development model put forward by Fredrickson (1998) was taken as basis. The model is based on the principle that positive emotions contribute to the development of individuals' social, psychological and physical resources (Fredrickson et al., 2008), they are useful in coping with the difficulties encountered in life and contribute to permanent well-being (Kiken & Fredrickson, 2017). The aim of the study was to evaluate the mediating role of optimism in the relationship between health anxiety and subjective happiness. In line with this purpose, the following hypotheses were tested:

Hypothesis 1: Health anxiety is a significant predictor of subjective happiness.

Hypothesis 2: Optimism has a mediating role in the relationship between health anxiety and subjective happiness.

Method

Study Group

After the permission of the measurement tools used in the research were received and the ethics committee application was performed, the data of the research was obtained through online forms between 20 July 2020 and 27 July 2020. The data were collected online by the researchers by using the convenient sampling method. This method enables researchers to select participants from groups more accessible in terms of time, money, and availability (Creswell, 2014). All procedures in the research were completed within the framework of the approval numbered E.33572 of the Scientific Research and Publication Ethics Committee of Gümüşhane University. The descriptive information of the individuals constituting the study group of the research is presented in Table 1.

Table 1. Descriptive statistics of the participants

Variable		N	%	HA Score Means and Standard Deviations	O Average Scores and Standard Deviations	SH Average Scores and Standard Deviations
Gender	Female	168	55.8	16.06(5.35)	66.76(6.81)	19.56(4.16)
	Male	133	44.2	13.61(6.47)	67.31(6.95)	20.14(4.16)
Education Level	Associate/Bachelor	253	84.1	15.09(5.89)	66.68(7.04)	19.55(4.30)
	Postgraduate	48	16.0	14.40(6.49)	68.73(5.61)	21.21(3.07)
Social-Economic Level	Medium Level	109	36.2	15.50(5.51)	67.39(7.81)	19.20(4.33)
	Good Level	149	49.5	14.64(6.08)	67.17(6.15)	20.18(4.08)
	Very Good Level	43	14.3	14.84(6.82)	65.47(6.58)	20.09(3.97)
Chronic Discomfort	Yes	42	14.0	14.88(4.96)	66.88(5.65)	20.88(3.51)
	No	259	86.1	14.99(6.14)	67.02(7.05)	19.64(4.24)
The Status of Relatives/Friends	Yes	127	42.2	15.35(6.16)	66.52(6.59)	19.86(3.95)
Being Diagnosed with Covid-19	No	174	57.8	14.70(5.87)	67.36(7.06)	19.78(4.32)
Death due to Covid-19 in the immediate surroundings	Yes	17	5.7	16.12(6.18)	68.35(5.86)	21.18(3.68)
	No	284	94.4	14.91(5.98)	66.92(6.92)	19.73(4.18)

HA: Health Anxiety, O: Optimism, SH: Subjective Happiness

The study group of this research consisted of a total of 301 individuals, including 168 females (55.8%) and 133 males (44.2%). The ages of the individuals in the study group ranged from 19 to 31 ($Mean=20.3$, $SD=2.9$). It was determined that 253 (84.1%) of the individuals who participated in the research stated that they were at the associate/undergraduate level, and 48 (16.0%) were at the postgraduate level. When the socio-economic levels of the individuals constituting the study group of the research were examined, 109 (36.2%) of them reported that

they were at a medium economic level, 149 (49.5%) of them were at a good economic level, and 43 (14.3%) of them were at a very good economic level. 42 (14.0%) of the participants of the study stated that they had a chronic disease and 259 (86.1%) of them stated that they did not have a chronic disease. In addition to this information, the number of the participants who had people in their immediate circle diagnosed with Covid-19 was determined to be 127 people (42.2%). In addition, the number of the participants who lost their relatives due to Covid-19 was calculated to be 17 people (5.7%).

Data Collection Tools

Health Anxiety Scale

The Health Anxiety Scale is a self-report scale consisting of eighteen items developed by Salkovskis et al. (2002). The first 14 items question the feelings and thoughts of the participants about their health status, while the last four items consist of questions about how the participants will react when they think they have a serious illness (Salkovskis et al., 2002). The internal consistency coefficient of the scale was determined to be 0.89 for the first part (14 items) and 0.84 for the last part (4 items). Scoring of the scale is between 0-3 for each item ('0' is "I don't feel anxious about my health" and '3' is "I always worry about my health") and high score indicates high level of health anxiety. The scale was adapted to Turkish by Aydemir et al. (2013). In reliability analyses, internal consistency coefficient was determined to be 0.92. As a result of the reliability analysis conducted within the scope of this study, the internal consistency coefficient was determined as ($\alpha = 0.86$).

Optimism Scale

Optimism Scale, developed by Balcı and Yılmaz (2002) to measure the optimism levels of individuals, is a four-point Likert-type scale ('1' It is definitely not for me, and '4' Just like me) with twenty-four items. Internal consistency coefficient of the Optimism Scale was found to be 0.96, split-half reliability coefficient was found to be 0.91 and the test-retest correlation coefficient was found to be 0.61. Internal consistency coefficient of the scale was also found to be at a high level within the scope of the study ($\alpha = 0.75$).

Subjective Happiness Scale

Subjective Happiness Scale was developed by Lyubomirsky and Lepper (1999) to determine the happiness levels of individuals. The scale is a four-item 7-point Likert ('1' I am not happy at all and '7' I am very happy) type of measurement tool. The adaptation study of the Scale to Turkish culture was carried out by Akin and Satici (2011). Internal consistency coefficient after the studies conducted within the scope of reliability studies of the scale was determined as 0.83, while the test-retest reliability coefficient was calculated as 0.73 (Akin & Satici, 2011). Internal consistency coefficient of the scale was also found to be at a high level within the scope of the study ($\alpha = 0.81$).

Personal Information Form

In the form prepared by the researchers, there are questions about gender, education level, socio-economic level, status of getting psychological help, use of a psychiatric medication, and presence of a chronic illness.

Data Analysis

Before performing statistical operations on the data obtained within the scope of the research, missing value, extreme value, normality and linearity analysis were performed (Field, 2013). As a result of the analysis, it was determined that there were no missing values in the data set. In the extreme value analysis, the scores of the obtained variables were converted into standard z scores, and it was observed whether the whole data set was between -3 and 3 (Tabachnick & Fidell, 2014). Then, the skewness and kurtosis values of the variables obtained from the data set were examined. It was understood that the kurtosis and skewness values of the variables were between -2 and 2 and had a normal distribution (George & Mallery, 2019).

The research was planned based on the relational model among quantitative research approaches. Relational screening models are expressed as designs that aim to determine the existence of covariance among more than one variable (Fraenkel et al., 2015). In this study, it was aimed to determine the role of health anxiety and optimism as a mediating variable in predicting subjective happiness. For the purposes of the research, a mediation model based on the mediating role of optimism in the relationship between health anxiety and subjective happiness was developed. Before testing the mediation analysis of the study, its relationship with demographic variables that may have an effect on health anxiety, optimism and subjective happiness variables was also examined. For this purpose, a t-test was conducted for independent samples in order to find out whether one of their relatives was diagnosed with Covid-19, one of their relatives died from Covid-19, whether they have a chronic illness, whether optimism, subjective happiness and health anxiety differed in terms of gender and education level. On the other hand, whether optimism, subjective happiness, and health anxiety differed in terms of socio-economic level was examined with one-way analysis of variance.

During the testing of the hypotheses of the study, regression-based mediation analysis was carried out. The bootstrap method was used to test the mediation hypothesis. The fact that the confidence intervals obtained as a result of the analyses did not include zero indicated that the indirect effect was significant. The SPSS Macro Process software was used for the calculation of the Bootstrap method. SPSS 21.00 packaged software was used for analysis of obtained data.

Results

Before proceeding to the correlation analysis of the research, the effects of various demographic characteristics that may have an effect on the optimism, subjective happiness and health anxiety of individuals were examined. Before the analyses were carried out, the conditions of the parametric analyses were examined and it was determined that both normality and homogeneity of variance were provided.

Independent samples t-test was conducted to determine whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of whether they experienced a chronic disease. The results obtained are given in Table 2.

Table 2. Independent samples t-test results on whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of whether they experienced a chronic disease

Variable	Chronic Disease	N	Mean	SD	t	df	p
Health Anxiety	Yes	42	14.88	4.96	-0.112	299	0.911
	No	259	14.99	6.14			
Optimism	Yes	42	66.88	5.65	-0.124	299	0.901
	No	259	67.02	7.05			
Subjective Happiness	Yes	42	20.88	3.51	1.796	299	0.073
	No	259	19.64	4.24			

As a result of the analysis conducted, it was found in terms of having a chronic disease that the health anxiety levels of the individuals ($t_{(299)} = -0.112$, $p = 0.911$), and their optimism levels ($t_{(299)} = -0.124$, $p = 0.901$) and their subjective happiness levels ($t_{(299)} = 1.796$, $p = 0.073$) were not statistically and significantly different.

Independent samples t-test was conducted to determine whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of whether a relative of theirs was diagnosed with COVID-19. The results obtained are given in Table 3.

Table 3. Independent samples t-test results on whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of whether a relative of theirs was diagnosed with COVID-19

Variable	Diagnosed with Covid-19	N	Mean	SD	t	df	p
Health Anxiety	Yes	127	15.35	6.16	0.935	299	0.351
	No	174	14.70	5.87			
Optimism	Yes	127	66.52	6.59	-1.044	299	0.297
	No	174	67.36	7.05			
Subjective Happiness	Yes	127	19.86	3.95	0.157	299	0.875
	No	174	19.78	4.32			

As a result of the analysis conducted, it was found in terms of having a relative diagnosed with Covid-19 that the health anxiety levels of the individuals ($t_{(299)} = 0.935, p = 0.351$), their optimism levels ($t_{(299)} = -1.044, p = 0.297$) and their subjective happiness levels ($t_{(299)} = 0.157, p = 0.875$) were not statistically and significantly different. Independent samples t-test was conducted to determine whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of whether a relative of theirs died from COVID-19. The results obtained are given in Table 4.

Table 4. Independent samples t-test results on whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of whether a relative of theirs died from COVID-19

Variable	Death from Covid-19	N	Mean	SD	t	df	p
Health Anxiety	Yes	17	16.12	6.18	0.809	299	0.419
	No	284	14.91	5.98			
Optimism	Yes	17	68.35	5.86	0.834	299	0.405
	No	184	66.92	6.92			
Subjective Happiness	Yes	17	21.18	3.68	1.391	299	0.165
	No	284	19.73	4.18			

The results of the analysis indicated that in terms of having a relative who died of Covid-19, the health anxiety levels of the individuals ($t_{(299)} = 0.809, p = 0.419$), their optimism levels ($t_{(299)} = 0.834, p = 0.405$) and their subjective happiness levels ($t_{(299)} = 1.391, p = 0.165$) were not statistically and significantly different. Independent samples t-test was conducted to determine whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of their education levels. The results obtained are given in Table 5.

Table 5. Independent samples t-test results on whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of their education levels

Variable	Education Level	N	Mean	SD	t	df	p
Health Anxiety	Associate Degree/Bachelor Degree	253	15.09	5.89	0.733	299	0.464
	Postgraduate	48	14.40	6.49			
Optimism	Associate Degree/Bachelor Degree	253	66.68	7.04	-1.715	299	0.091
	Postgraduate	48	68.73	5.61			
Subjective Happiness	Associate Degree/Bachelor Degree	253	19.55	4.30	-1.923	299	0.061
	Postgraduate	48	21.21	3.07			

According to the results of the analysis, it was found in terms of education levels that the health anxiety levels of the individuals ($t_{(299)} = 0.733, p = 0.464$), their optimism levels ($t_{(299)} = -1.715, p = 0.091$) and their subjective happiness levels ($t_{(299)} = -1.923, p = 0.061$) were not statistically and significantly different. Independent samples t-test was conducted to determine whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of their gender. The results obtained are given in Table 6.

Table 6. Independent samples t-test results on whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of their gender

Variable	Gender	N	Mean	SD	t	df	p	d
Health Anxiety	Female	168	16.06	5.35	3.597	299	<.001	0.41
	Male	133	13.61	6.47				
Optimism	Female	168	66.76	6.81	-0.685	299	0.494	
	Male	133	67.31	6.95				
Subjective Happiness	Female	168	19.56	4.16	-1.192	299	0.234	
	Male	133	20.14	4.16				

According to the results of the t-test conducted, it was found in terms gender that the health anxiety levels of the individuals ($t_{(299)} = 3.597, p < .001$) differed; their optimism levels ($t_{(299)} = -0.685, p = 0.494$) and their subjective happiness levels ($t_{(299)} = -1.192, p = 0.234$) were not statistically and significantly different. According to this result, it can be said that women's mean score from health anxiety ($Mean = 16.06, SD = 5.35$) was higher than that of men ($Mean = 13.61, SD = 6.47$). In terms of effect size, it was found that gender had a moderate effect ($d = 0.41$) on individuals' health anxiety (Cohen, 1992). One-way anova was conducted to determine whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of their socio-economic levels. The results obtained are given in Table 7

Table 7. One-way anova results on whether the health anxiety, optimism, and subjective happiness levels of individuals differed in terms of their socio-economic levels

Variable	Source	Sum of Squares	df	Mean Square	F	p
Health Anxiety	Between groups	47.30	2	23.65	0.659	0.518
	Within groups	10701.54	298	35.91		
	Total	10748.84	300			
Optimism	Between groups	121.68	2	60.84	1.294	0.276
	Within groups	14015.32	298	47.03		
	Total	14137.00	300			
Subjective Happiness	Between groups	64.29	2	32.14	1.863	0.157
	Within groups	5141.30	298	17.25		
	Total	5205.58	300			

Finally, as a result of the one-way anova analysis conducted, it was found in terms of their socio-economic level that the health anxiety levels of the individuals ($F_{(2, 298)} = 0.659, p = 0.518$), their optimism levels ($F_{(2, 298)} = 1.294, p = 0.276$) and their subjective happiness levels ($F_{(2, 298)} = 1.863, p = 0.157$) were not statistically and significantly different according to the one-way analysis of variance results. According to the results obtained, research analyses were carried out differently for both genders, since there was a differentiation between health anxiety levels in terms of genders. The results of the correlation analysis carried out to determine the relationships between health anxiety, optimism and subjective happiness of both female and male participants of the study are presented in Table 8.

Table 8. Relationships between health anxiety, optimism, and subjective happiness

Variable	Health Anxiety (M)	Optimism (M)	Subjective Happiness (M)
Health Anxiety (F)	1	-0.303***	-0.264***
Optimism (F)	-0.278***	1	0.564***
Subjective Happiness (F)	-0.332***	0.531***	1

*** $p < .001$, F: Female Sample, M: Male Sample

According to the results of the correlation analysis, a negative and significant relationship was found in women between health anxiety and optimism ($r = -0.278, p < .001$), and subjective happiness ($r = -0.332, p < .001$). In contrast, a positive and significant relationship was determined between optimism and subjective happiness ($r = 0.531, p < .001$). A negative and significant relationship was found in men between health anxiety and optimism ($r = -0.303, p < .001$), and subjective happiness ($r = -0.264, p < .001$). Besides these results, a positive and significant relationship was determined between optimism and subjective happiness ($r = 0.564, p < .001$).

According to the results of the mediation analysis conducted within the scope of the research hypotheses, it can be said that the total effect of health anxiety on subjective happiness in women is significant ($\beta = -0.258, t = -4.538, p < .001$). Also, it was found that the effect of health anxiety on optimism ($\beta = -0.353, t = -3.724, p < .001$), and the effect of optimism on subjective happiness ($\beta = 0.290, t = 7.099, p < .001$) was found significant. As a result of the analyses, that the 95% bias corrected confidence intervals did not include zero (Preacher & Hayes, 2008) demonstrated that optimism had a mediating role in the relationship between health anxiety and subjective happiness ($ab = -0.102$ % 95 CI [-.1832, -.0374]). In addition to this situation, when the effect of optimism was controlled, it was determined that the predictive effect of health anxiety on subjective happiness was significant ($\beta = -0.155, t = -2.995, p = .003$). This means partial mediation (Preacher & Hayes, 2008). In addition, as a result of the analysis, it was determined in women that health anxiety explained 8% of the variance in optimism, while health anxiety and optimism explained 32% of the variance in subjective happiness.

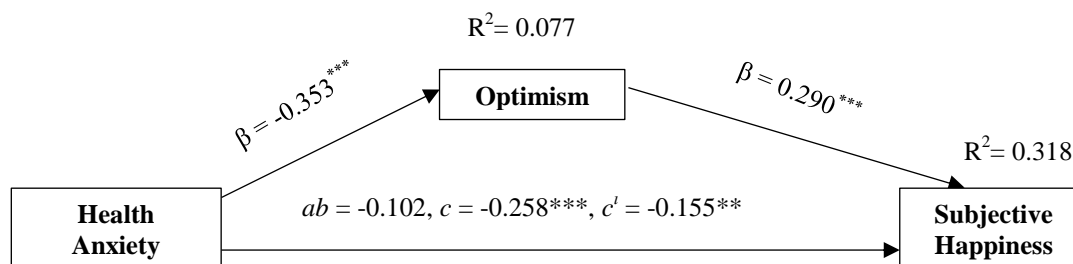


Figure 1. Prediction of subjective happiness by health anxiety through optimism in women
** $p < .01$, *** $p < .001$, ab : Indirect Effect, c : Total Effect, c' : Direct Effect

According to the results of the mediation analysis conducted within the scope of the research hypotheses, it can be said that the total effect of health anxiety on subjective happiness in men is significant ($\beta = -0.169, t = -3.128, p = .002$). Also, it was found that the effect of health anxiety on optimism ($\beta = -0.325, t = -3.642, p < .001$), and the effect of optimism on subjective happiness ($\beta = 0.319, t = 7.063, p < .001$) was found significant. As a result of the analyses, that the 95% bias corrected confidence intervals did not include zero (Preacher & Hayes, 2008) revealed that optimism had a mediating role in the relationship between health anxiety and subjective happiness ($ab = -0.104$ % 95 CI [-.1728, -.0489]). In addition to this situation, when the effect of optimism was controlled, it was determined that the predictive effect of health anxiety on subjective happiness was not significant ($\beta = -0.065, t = -1.351, p = 0.150$). This means complete mediation (Preacher & Hayes, 2008). In addition to these findings, as a result of the analysis, it was determined in men that health anxiety explained 9% of the variance in optimism, while health anxiety and optimism explained 33% of the variance in subjective happiness.

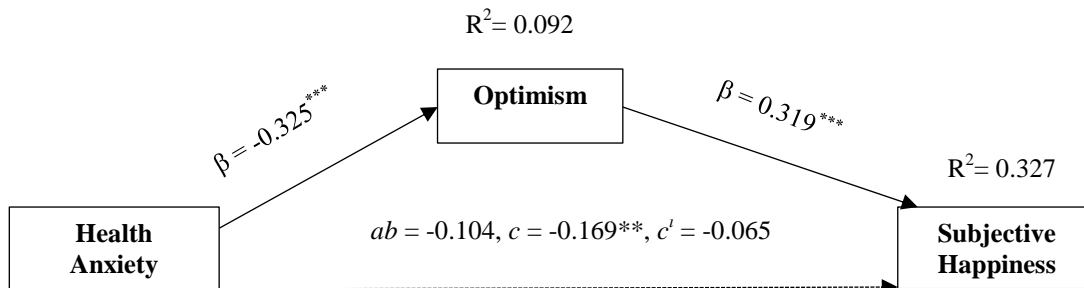


Figure 2. Prediction of subjective happiness by health anxiety through optimism in men
 $^{**}p < .01, ^{***}p < .001, ab$: Indirect Effect, c : Total Effect, c' : Direct Effect

Discussion

The study results revealed that there were significant relationships between subjective happiness, health anxiety and optimism. While health anxiety was negatively related to both optimism and subjective happiness, a positive and significant relationship was found between optimism and subjective happiness. These results are consistent with many research findings in the literature. Similar to this research, it has been observed that there are research results concluded that happiness and optimism were positively related (Bailey et al. 2007; Chang et al., 1997; Cummins & Nistico, 2002; Demir & Murat, 2017; Ho et al., 2010; Lightsey, 1996; Lucas et al., 1996; Myers & Diener, 1995; Öztürk & Çetinkaya, 2015) and optimism predicts subjective well-being (Compton, 2000; Eryılmaz & Atak, 2011; Sapmaz & Çetinkaya, 2015). Many research findings on life satisfaction, which is considered as one of the components of subjective well-being, also demonstrate that life satisfaction is related to optimism (Doğan, 2006; Ryan & Deci, 2001; Tuzgöl-Dost, 2007). Optimism, which can be summarized as looking at the events from a positive perspective and focusing on the positive rather than the negative, is a situation that is expected to contribute to the well-being of individuals, that is, their happiness, and the findings support this idea, consistent with the literature.

Another finding of the study is that health anxiety is negatively related to both subjective happiness and optimism. The number of studies examining health anxiety and these variables directly and together is quite limited, but studies on anxiety, as it is a type of anxiety, were also examined and it was seen that the results of the research were consistent with the literature. Similar to the results of this study, it is seen that there are many studies which found that subjective well-being is negatively related to anxiety (Kasser & Ryan, 1993; Öztürk & Çetinkaya, 2015). Studies indicate that individuals with high levels of subjective well-being rarely experience anxiety (Diener et al., 1999). Ho et al. (2010) also concluded in their study with adolescents that life satisfaction, which is a component of subjective well-being, is negatively related to psychological problems. In studies dealing with subjective well-being in terms of physical health, it has been concluded that subjective well-being has been observed to be associated with feeling healthy of the individual (Diener et al., 1999; Diener et al., 2018) and health conditions (Steptoe et al., 2015). To summarize, subjective well-being is negatively related to negative emotions (Diener, 2000; Pavot & Diener, 2008). Considering in this context, it can be said that the negative effects of a situation in which negative emotions such as health anxiety are dominant on happiness is an expected result.

Research results indicate that the relationship between health anxiety and optimism is also negative. These findings are also consistent with the literature. Myers and Reynolds (2000) have concluded that those who use

effective coping strategies in health-related events have high levels of optimism. It can be said that an effective coping mechanism is not used in health anxiety in which a mechanism in which absent or very mild symptoms are exaggerated and transformed into anxiety. It can be interpreted that those who use effective coping strategies will have less risk of experiencing health anxiety, and this can be interpreted as optimism is associated with health anxiety. Reaching a conclusion that confirms this interpretation, Akkuzu (2019) revealed in his research that there is a positive and significant relationship between negative problem orientation, that is, an approach that can be considered the opposite of optimism, and health anxiety. Considering that, in health anxiety, the individual's developing repetitive thoughts that bad things will happen about his health includes a pessimistic viewpoint, it is expected that optimism is negatively related to health anxiety. In terms of general psychological health, it can be said that the situation is similar. Studies have demonstrated that optimists show less depressive symptoms (Lyubomirsky, 2001), that optimism reduces neurotic and psychotic tendencies (Gençoğlu, 2006) and is negatively related to anxiety (McIntosh et al., 2004; Scheier et al., 1994). From the point of view of physical health, it has been observed that there are research findings demonstrating that optimism has positive effects on physical health as well as psychological health (Aydın & Tezer, 1991; Rasmussen et al., 2009; Scheier & Carver, 1985; Scheier et al., 1994), optimists live longer and get better faster (Lyubomirsky, 2001).

The scores obtained from the variables used in the study and the relationships between them were also discussed in terms of the gender variable. While the scores obtained from the health anxiety variable differed in terms of gender, it was seen that there was no significant difference between the scores obtained from the other variables. In terms of the relationships between the variables, health anxiety was negatively correlated with optimism and subjective happiness in both men and women, while optimism and subjective happiness were positively correlated in both groups, and it was determined that the levels by which the variables predicted the dependent variable were very close to each other in women and men. In the mediation analysis, it was found that optimism had a partial mediating effect in the relationship between health anxiety and subjective happiness in women, while it had a full mediation effect in men. The results of this study revealed that women's health anxiety scores were higher than those of men. When the studies in the literature are examined, it is seen that different results have been reached regarding the relationship between health anxiety and gender. The results of the majority of the studies are consistent with the findings of this research. Similar to this study, there are studies showing that women have higher health anxiety levels (Bahadır Yılmaz et al., 2018; Ekiz et al., 2020; MacSwain et al., 2009; Noyes et al., 2003; Özlü et al., 2021) as well as research findings indicating that gender does not make a significant difference (Karapınar et al., 2012; Şimşekoğlu & Mayda, 2016). In general, it is reported that women are more prone to anxiety disorders than men (Özdemir, 2014). Studies on general anxiety also indicate that women's anxiety levels are higher (Bandelow & Michaelis, 2015; Çırakoğlu, 2011; Janzen, et al., 2014; Leung et al., 2004; Leung et al., 2005; Wang et al., 2020).

The results of the research revealed that subjective happiness did not differ in terms of gender. While this result is consistent with some studies in the literature, it contradicts others. There are many studies that conclude that happiness does not differ in terms of gender, which is consistent with this research (Cihangir-Çankaya, 2009; Eryılmaz & Atak, 2011; Tingaz & Hazar, 2014). In addition to these, there are also studies suggesting that happiness differs in favour of women in terms of gender (Atay, 2012; Şaşmaz, 2016). Akın and Şentürk (2012), on the other hand, found in their research that men were happier than women. Similar to this study, it is seen that the results of the studies on subjective well-being, which is evaluated in the same sense as subjective happiness, do not show a significant difference in terms of gender (Acock & Hurlbert, 1993; Andrews & Withey, 1976; Fujita et al., 1991). In addition, there are studies showing results in favour of women (Lamu & Olsen, 2016; Lee & Browne, 2008; Ozcakir et al., 2014; Steverink et al., 2001; Wood et al., 1989) and in favour of men (Calys-Tagoe et al., 2014; Eryılmaz & Ercan, 2011; Liu et al., 2016). In the studies conducted in the literature, different results were attributed to the characteristics of the groups studied. Cowan et al. (1998) emphasized that gender inequalities could lead to differences in subjective well-being. Nolen-Hoeksema and Rusting (1999), on the other hand, found that marital status rather than gender could produce different results in women and that there was a decrease in the subjective well-being of married women due to the responsibilities they took on. Reflecting on all these findings, it can be said that the gender-based differences or similarities in subjective well-being will be affected by variables such as the culture and gender roles of the individuals in the study group and that it would be useful to examine this with larger-scale studies that include different variables.

As a result of examining the optimism in terms of gender, it was concluded that there was no significant difference. In the literature, there are research findings that reach different results on this subject. Similar to this study, there are research results that conclude gender is not related to optimism (Aydın & Tezer, 1991; Demir & Murat, 2017; Gençoğlu et al., 2014; Gülcan & Nedim-Bal, 2014) as well as results that are in favour of women (Ruthig & Allery, 2008) and men (Puskar et al., 2010; Tusaie & Patterson, 2006). Based on this information, it

can be said that whether or not there is differentiation by gender may depend on other characteristics of the study group and that it would be useful to address these issues in future research.

Looking at the results of the mediation analysis, it is seen that both hypotheses of the study were confirmed, that is, health anxiety is a predictor of subjective happiness, and the mediating role of optimism in this relationship is significant. In the literature, it is seen that there are research studies showing that optimism is a predictor of subjective happiness (Baileyvedi, 2007; Compton, 2000; Cummins & Nistico, 2002; Demir ve Murat, 2017; Gülcan & Nedim-Bal, 2014; Sapmaz & Doğan, 2012). This shows that our research is consistent with the literature. Eken and Ebadi (2019) have concluded that life satisfaction, which is a component of subjective happiness, is negatively related to anxiety and that anxiety is a predictor of life satisfaction. It has been observed that there are many research results concluding that anxiety predicts life satisfaction (Beutel et al., 2010; Deniz et al., 2009; Serin, et al., 2010). In addition, in their study examining the mediating role of optimism, Karacaoğlu and Köktaş (2016) concluded that optimism has a partial mediating role between psychological resilience and psychological well-being. Since psychological well-being is a dimension of subjective well-being, it can be said that the result of this research is consistent with our result.

As a result, it is seen that while health anxiety affects the happiness levels of individuals negatively, optimism has a positive effect on happiness, and it has a partial mediation role in its relationship with health anxiety. Health anxiety is inversely related to optimism and subjective happiness, in other words, optimism and subjective happiness decrease in the individuals with high health anxiety, while subjective happiness levels of individuals with high optimism increase. It can be said that the answer to the question in the title of the study is yes, that is, optimism has a mediating role in the relationship between health anxiety and subjective happiness.

Conclusion

According to the results of the current research, health anxiety levels of individuals differ in terms of gender. In other words, it was observed that women's health anxiety levels were higher than men. In both female and male samples of the study, health anxiety showed negative significant relationships with both subjective happiness and optimism variables. In addition, there was a statistically significant positive correlation between the optimism variable and the subjective happiness variable. According to the mediation analysis results, it was determined that optimism decreased with the increase in the health anxiety variable in both samples, and subjective happiness increased with the increase in optimism. Moreover, it was determined that in the relationship between health anxiety and subjective happiness, optimism had a partial mediating role among women, and a full mediator role among men.

Recommendations

It can be suggested that optimism, one of the variables examined in the research, is a learnable and developable feature, and that psycho-educational studies to be carried out on this subject in the future should be planned considering that it will increase the optimism levels of individuals and indirectly their happiness levels. It has been determined that health anxiety is a condition that negatively affects the well-being of individuals. Based on these results of the research, it is of great importance to provide information that their anxiety levels can reduce their well-being, especially when the pandemic process is considered. It is recommended that those in need be guided for the necessary assistance by conducting informative studies on this issue.

In this study, the relationship between health anxiety, optimism and subjective happiness was tried to be examined. In future studies, it is recommended to carry out larger-scale studies in which different variables (conscious awareness, cognitive flexibility, psychological resilience) that are thought to be related to health anxiety and may have an effect on the subjective happiness of individuals are discussed. This study was conducted based on the cross-sectional method. In this respect, it may be recommended for researchers to conduct longitudinal studies in order to better determine the change in the relationship between health anxiety, subjective happiness and optimism variables.

The use of self-report measurement tools may bring along various errors originating from the participants. This may be considered as one of the limitations of the study. In this respect, in addition to self-report measures, additional evaluation methods (for example, two or more source of information) can contribute to a clearer and more accurate understanding of the variables. For example, parents, spouses, and peers can be included in future research as sources of information about the symptom levels individuals experience.

The study was carried out in accordance with the relational screening model, one of the quantitative research methods. For this reason, the relationships between the variables do not provide an opportunity to examine in depth. The subject can be discussed in depth with possible qualitative studies in the future. This study is limited to the self-report data obtained from 301 individuals reached through online forms between July 20, 2020 and July 27, 2020. It may be suggested that the studies planned to be done in the future examine quantitative results and examine these results with the mixed method, which provides the opportunity to investigate these quantitative results in depth, together with qualitative research.

Scientific Ethics Declaration

The authors declare that the scientific ethical and legal responsibility of this article published in JESEH journal belongs to the authors.

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