

Doi: 10.30520/tjsosci.1287405

Received Date: 25.04.2023

Accepted Date: 18.08.2023

**STUDY ON THE MEDIATION EFFECT OF BODY IMAGE BETWEEN
SOMATIZATION and SUBJECTIVE WELL-BEING LEVELS IN INDIVIDUALS**

Devrim AKKAYA KAÇMAZ¹

Didem TETİK KÜÇÜKELÇİ²

Ümit SAHRANÇ³

Abstract

The aim of this study is to examine the relationships between subjective well-being, body image, somatization and to reveal the mediating effect of body image. People become more at peace with their bodies as their subjective well-being increases. In addition, subjective well-being and the goodness of body image reduce somatic symptoms. The questionnaire consisting of body image, subjective well-being and somatization scales delivered to the volunteer participants. Accordingly, an online survey was conducted with 534 participants between March 2020 and June 2020. SPSS 24.00 package program was used for the analysis of the data obtained from the participants. Cronbach's Alpha coefficients of the scales were calculated in order to perform the reliability analysis of the scales. These values are (0.797), (0.925) and (0.808) for the subjective well-being scale, Body image and somatization scale, respectively, the reliability of the scales was high. Afterwards, descriptive statistics, correlation analysis, regression analysis and mediation effect studies were carried out ($p < 0.05$). According to the results obtained, people with low somatization characteristics have a positive attitude towards life and are physically healthier. In addition, it was concluded that body image has a partial mediating effect on the relationship between somatization and subjective well-being. The decrease in somatic symptoms and the feeling of well-being of people have a negative relationship, and this relationship is supported by being at peace with their bodies and being happy.

Keywords: Body image, Relationship, Somatization, Subjective Well-Being

¹ Graduate in Clinical Psychology/İstanbul Kent University, devrimakkaya@hotmail.com, ORCID: 0000-0002-0396-8848

² Faculty of Economics, Administrative and Social Science, Management Information Systems Department/ İstanbul Gelişim University, didemkucukelci@yahoo.com.tr, ORCID: 0000-0001-8911-4554

³ Faculty of Education, Educational Sciences Department/ Sakarya University, sahranc@sakarya.edu.tr, ORCID: 0000-0002-2407-7745

INTRODUCTION

Subjective well-being is defined as a good state of mind, which includes various positive and negative evaluations that people make in their lives and their sensory reactions against the experiences they have (OECD Guidelines On Measuring Subjective Well-Being, 2013: 10). Diener, Lucas and Oishi (2002: 63), on the other hand, defined the subjective well-being as the cognitive and sensory evaluations of the person regarding his/her life. Accordingly, subjective well-being is a broad concept that involves nice emotional experiences, low level of negative mood and high level of life satisfaction.

Body image is defined as the individual's evaluation of his/her positive and non-positive feelings towards the parts of his/her and their functions (Aslan, 2004). The body image concept called as body image and ego is the formation of attitudes such as making positive or negative evaluations of the individual about the body and its functions, creating attitudes about how his/her body looks and the grade of being pleased with his/her body (Altınok and Kara, 2017; Cash and Pruzinsky, 2002; Uskun and Şabaplı, 2013).

Somatization is the expression of psychological and emotional problems through somatic symptoms. Breuer and Freud (1893) defined the hysterical symptoms as the symbolic expression of the traumatic experiences and unacceptable unconscious fantasies and impulses through the body. Somatization is the expression of the psychic or psychosocial problems over the body by symbolizing them. It was adapted to Turkish in 2000 and brought to the literature (Dülgerler, 2000).

Purpose

The purpose of this study is to examine the relationships between subjective well-being, body image, and somatization, and to reveal the mediating effect of body image. As subjective well-being increases, individuals become more at peace with their bodies. Additionally, subjective well-being and positive body image reduce somatic symptoms. A survey consisting of measures of body image, subjective well-being, and somatization was administered to voluntary participants. According to the results, individuals with low somatization tendencies exhibited a positive attitude towards life and were physically healthier. Furthermore, it was concluded that body image partially mediated the relationship between somatization and subjective well-being. There is a negative relationship between individual's somatic symptoms and their sense of well-being, and this relationship is supported by being at peace with one's body and feeling happy. Subjective well-being is a positive mood that encompasses individuals various positive and negative evaluations and experiences in their lives. Body image, on the other hand, refers to the evaluation of individual's feelings about the parts and functions of their bodies, including positive and negative aspects. Somatizations, on the other hand, is the expression of psychological and emotional problems through somatic symptoms. This study investigates the relationship between these concepts and the mediating effect of body image in this relationship.

The significance of this study can be considered from several perspectives:

1. **Health and Psychology:** The research helps us understand the relationships between body image, subjective well-being, and somatization. This can assist experts in the fields of health and psychology to better understand the link between individual's body perception and their emotional state, thus providing more effective treatment and support in this regard (Aslan, 2004).
2. **Youth and Adolescence:** Body image and subjective well-being are particularly important during the adolescent period. Adolescents make significant efforts to feel at peace with their

bodies and experience positive emotions. This study can help us understand the relationships between body image, subjective well-being, and somatization in young people, and provide better guidance to adolescents during this development stage (Altnok & Kara, 2017).

3. Social Perception and Image: Body image is related to how individuals perceive and evaluate themselves and others. This study can raise awareness about body perception and body image within society. Understanding individual's attitudes towards their own bodies and the bodies of others is important for promoting body positivity and acceptance (Cash & Pruzinsky, 2002).

4. Research and Scientific Literature: This study contributes to the scientific literature on the relationships between body image, subjective well-being, and somatization. Such research expands knowledge in the field and establishes a foundation for future studies and applications (Diener et al., 2002).

In conclusion this study is significant in understanding the relationships between body image, subjective well-being and somatization and providing valuable insights in the fields of health, psychology, youth, social perception and scientific literature.

Relationship Between Subjective Well-Being and Somatization

Somatization is a nomenclature used for the medical complaints and symptoms whose root cause cannot be found or explained by medical research methods (Lipowski 1988). The individuals with low levels of subjective well-being are more vulnerable to the conditions such as depression and anxiety disorders. According to the concept of subjective well-being, a person with a high level subjective well-being, that is, happy, is rarely anxious and generally happy and cheerful. From a different point of view, the subjective well-being levels of the people, who have intense positive emotions, less negative feelings and include activities that give satisfactions in their lives increase, so their somatic symptoms decrease (Diener and Seligman 2002a).

H₁: There is a relationship between Subjective Well-Being and Somatization.

Relationship Between Subjective Well-Being and Body Image

It is observed that the positive body image contributes to the improvement of positive subjective well-being feelings. The result of many studies in the literature points out the relationship between body image and subjective well-being. Diener, Wolsic and Fujita (1995) also draw attention to the relationship between physical attraction and subjective well-being Donaghue (2009) has stated in his study researching the body image, gender scheme and subjective well-being that there is a significant relationship between body satisfaction and subjective well-being. Additionally, research show that women's pleasure with their bodies, in particular, has a significant impact on their life satisfactions and happiness (Katz and Farrow, 2000). The association between body image and subjective well-being is another point made by Durkin and Paxton (2002) in their research of adolescents in various grade levels. According to Stokes and Frederick-(2003) Recascino's research on women of different ages, women's body satisfaction positively impacts their subjective well-being. According to Tuzgöl Dost's (2006) research, university students' subjective well-being and their happiness with their outward looks are significantly correlated.

H₂: There is a relationship between Subjective Well-Being and Body Image.

The Relationship Between Body Image and Somatization

The results of this study showed a connection between somatization and body image. It causes people who are prone to somatization to feel an exaggerated pain that would not typically be

painful. People experience more bodily symptoms when under stress. These individuals are ill or feel that their bodies are ill for the most of their life (Güleç, 2003).

Their body images are negatively impacted as a result of this. Patients commonly exhibit signs of anxiety and depression.

H₃: There is a relationship between Body Image and Somatization.

The Intermediary Effect of Body Image Between Somatization and Subjective Well-Being

This study researches the relationship of “Body Image”, “Subjective Well-Being” and “Somatization” scales with each other. In addition, the mediation effect of the body image between somatization and subjective well-being was demonstrated through analyses in this study. No study that addressed the mentioned mediation relationship was encountered in the literature.

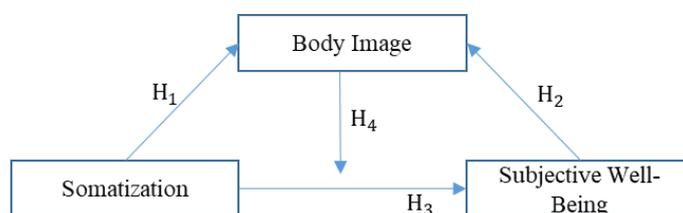


Figure 1. Research Model

H₄: The Body Image has a mediation effect between Somatization and Subjective Well-Being.

METHOD

Method

The research was carried out using the literature review method, one of the quantitative research techniques. The literature review researches can be described as “the researches on the bigger samples, generally compared to other researches in which the participants’ opinions, or features such as interest, skill, capability, attitude etc. about a subject or event are determined” (Karasar 2012: 122).

Universe and Sampling

The universe of the study is consisted of the adults who live in various cities of Turkey and the sampling is consisted of 534 people who are selected from the universe randomly. The study is ethically approved by Istanbul Gelişim University (Ethics meeting date: 27/04/2022; ethics meeting number: 2022-08; ethical decision number: 2022-08-17).

Data Collection Tools

The data collection tools used in the study include gender, age and educational background among socio-demographic features. In addition, necessary permissions for the scales used were obtained and the study was ethically approved.

Somatization Scale

Somatization scale is consisted of 33 items. It has been arranged in a way that the individual can apply by him/herself. It is very easy to apply. There are 2 options in every question, namely,

Yes or No. The applicator are prompted to check the item that suits him/her the most. In addition, it is clearly stated that the person does not need to check if there is no item that suits him/her.

The answers of all questions checked as True and False are collected and a new score is obtained from this sum. The scores calculated as the result of scale are included in the range of 0 and 33. This scale was created by considering the somatization disorder-related items of The Minnesota Multiphasic Personality Inventory (MMPI) (Hathawa and Mckinley, 1943). The validity and reliability study on Somatization Scale was performed by Dülgerler (Dülgerler, 2000).

Subjective Well-Being Scale

Subjective Well-Being Scale (SWBS) developed by Tuzgöl Dost (2005) is consisted of 46 items. The scale aims to determine the frequency and intensity of the positive and negative feelings through cognitive assessments of the individuals about their lives and thus, to determine the subjective well-being levels.

Subjective well-being scale is consisted of personal judgments about the living spaces as well as positive and negative feeling expressions. The lowest score that can be received from the scale is 46, and the highest score is 230. The high score indicates that the subjective well-being level is high.

Body Image Scale

Body Image Scale was developed by Secord and Jourard in order to measure how pleased the people are with various parts of their bodies and various body functions. The Turkish version of the scale, the Turkish adaptation of which was made by Hovardaoğlu, is a single-dimension measurement tool consisting of 40 items, which are answered with 5-point rating (1=I like it a lot, 2=I like it pretty much, 3=I cannot decide, 4=I don't like it much, 5=I don't like it at all). Accordingly, the lowest total score that can be received from the scale is 40, and the highest total score is 200. A higher total score on the scale implies a lower level of contentment with the person's physical parts or functions, whereas a lower score suggests a higher level of satisfaction. The internal consistency coefficient of the Turkish version of the scale was determined to be 0.91 (Hovardaoğlu, 1993). The internal consistency coefficient of the scale was determined as 0.92 for this study.

STATISTICAL TECHNIQUES USED FOR THE DATA ANALYSIS

The survey data collected in the study were analyzed by using IBM SPSS for Windows 24.00 program and the obtained tables were interpreted. The research was carried out on the basis of 5% significance level. For the scales used in the study, Cronbach's Alpha coefficients were calculated for reliability analysis and internal consistency values. A correlation analysis were made to study the relationship between scales.

Correlation Analysis

The relationship between variables is investigated by using different statistical techniques depending on the measurement nature of the variables, the features of distribution, whether the relationship between them is linear, the number of variables and the control status. Dual or simple correlation approaches are used to find the correlation between two variables (Büyükoztürk, 2018, p.31).

The correlation coefficient's range of values goes from -1 to +1, with +1 being the greatest possible number. It may be inferred that the association between the variables gets stronger as the correlation coefficient approaches +1 or -1, and weaker as it approaches 0.

Regression Analysis

Regression analysis is the mathematical modeling of the relationship between variables.

It is done by designating one of the two or more variables—between which there is a relationship—as the dependent variable and the others as the independent variables. Regression analysis is said to as either linear or non-linear (curvilinear) depending on whether the connection between the variables employed in the study is linear (Büyüköztürk, 2018, p.91).

Mediation Analysis Through Regression Method

The mediator variable is a part of the cause-and-effect relationship between two variables (McKinnon, Fairchild and Fritz, 2010). The mediator relationship is tested by a model illustrated in Figure 2.

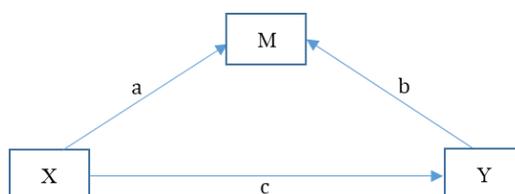


Figure 2. Mediation Research

Accordingly, X represents the independent variable, while Y represents the dependent variable and M represents the mediator variable. In addition, c route indicates the effect between independent variable and dependent variable, while a route indicates the effect between independent variable and mediator variable, and b route indicates the effect between mediator variable and dependent variable (Baron and Kenny, 1986).

Reliability and Internal Consistency

When considering the study's results, the validity and reliability of the scales utilized are crucial. Before usage, the scales must be validated and evaluated for validity (Özdoğan and Tüzün, 2007, p.644). In this study, Cronbach’s Alpha model will be used while performing Reliability.

Table 1. Cronbach’s Alpha Values of Scales

Scale	Number of Items in the Scale	Reliability
Subjective Well-being	46	.797
Body Image	21	.925
Somatization	33	.808

Table 1 shows the Cronbach’s Alpha values calculated for reliability values of the scales used in the study. Accordingly, when the total scores of the scales are examined, ‘Subjective Well-being’ scale is consisted of 46 items and is highly reliable with a Cronbach’s Alpha of (.797); ‘Body Image’ scale is consisted of 21 items and has a high reliability with a value of (.925);

‘Somatization’ scale is consisted of 33 items and is included in the high reliability interval with the value of (.808).

Correlation Analysis

Pearson Correlation coefficients between all scales used in the study were calculated. Table 2 shows the calculated values.

Table 2. Correlation Analysis Results of the Scales

		1	2	3
1	Subjective Well-Being Scale	1	-.541**	.621**
2	Somatization Scale		1	-.481**
3	Body Image Scale			1

*p<.05 **p<.01

There is a negative moderate relationship (r=-.541) between Subjective Well-being and Somatization. Accordingly, as the subjective well-being of the participants increases, their somatic features decrease. Or as their subjective well-being decreases, their somatic features increases. Accordingly, the study hypothesis

“**H₁**: There is a relationship between Subjective Well-Being and Somatization.” is validated.

There is a positive strong relationship (r=.621) between Subjective Well-being and Body Image. Accordingly, as the subjective well-being of the participants increases, their body images increases, too. Or, as the subjective well-being of the participants decreases, their body images decreases, too. Accordingly, the study hypothesis

“**H₂**: There is a relationship between Subjective Well-Being and Body Image.” is validated.

There is a negative moderate relationship (r=-.481) between Subjective Well-being and Body Image. Accordingly, as the somatic features of the participants increase, their body image decreases or as their somatic features decrease, their body image increases. Accordingly, the study hypothesis

“**H₃**: There is a relationship between Body Image and Somatization.” is validated.

Investigating the Mediator Role for Body Image Scale through Regression Analysis

Within the scope of the study, it was researched whether the body image scale has a mediator effect in the relationship between somatization scale and subjective well-being scale. Table 3 presents the outcomes obtained as the result of the Regression Analysis performed.

Table 3. Regression Analysis Outcomes for Mediator Effect

Mediator Variable Test Steps			B	B standard error	β	t	p	R ²
Step 1								
Somatization (Y)	Subjective (K)	Well-being	-2.311	.156	-.541	-14.855	.00	.29
Stage 2								
Somatization (Y)	Body Image (K)		-.182	.014	-.481	-12,663	.00	.23
Step 3								
Somatization (Y)	Subjective (K)	Well-being	1,346	.155	-.315	-8,696	.00	.46
Body Image (M)	Subjective (K)	Well-being	.760	.059	.470	12.970	.00	

*p<.05 **p<.01

As is seen in Table 3, it was found that the somatization scale negatively predicted the subjective well-being scale ($\beta=-.54$, $t=-14.855$, $p<.01$).

This result complies with the correlation analysis performed. As the somatization level increases, subjective well-being level decreases, whereas somatization level decreases, subjective well-being level increases.

In the second step, it was concluded that the somatization scale negatively predicted the body image scale ($\beta=-.48$, $t=-12.633$, $p<.01$). This result was found compliant with the correlation analysis results. In this respect, the body image levels decrease in the individuals whose somatization level increases, and it is concluded that the individuals with low somatization levels are pleased with their bodies.

In the third step, it was concluded that the body image scale positively predicted the subjective well-being scale ($\beta=.47$, $t=12.970$, $p<.01$). This result found complies with the data obtained as the result of the correlation analysis. Accordingly, the subjective well-being of the individuals with the increased body image also increases. In the stepwise regression analysis which examines the subjective well-being prediction level of the somatization, it is seen that the subjective well-being prediction level of somatization scale decreases when the body image scale is included in the model ($\beta=-.32$, $t=-8.696$, $p<.01$). It was found in the mediation test that the body image decreased the the subjective well-being prediction level of the somatization from $-.54$ to $-.32$. According to the mediation test performed within this frame, it can be said that the body image has a partial mediator effect in the relationship between somatization and subjective well-being.

DISCUSSION

The results of this study contribute significantly to understanding the relationships between somatization, subjective well-being, and body image. Firstly, a negative relationship was found between somatization and subjective well-being. This result indicates that individuals with more somatic symptoms have lower levels of subjective well-being. Similarly, a negative relationship was observed between somatization and body image. This suggests that individuals with more somatic symptoms have lower of body image satisfaction.

Additionally, a positive relationship was found between subjective well-being and body image. This implies that as individual's subjective well-being increases, their body image also improves. Furthermore, it was found that body image partially mediates the relationship between somatization and subjective well-being. This indicates that body image attenuates the predictive power of somatization on subjective well-being.

The findings of this study provide valuable insights for interventions in the fields of health and psychology. Specifically, interventions targeting body image may help improve the subjective well-being of individuals with somatic symptoms. These interventions can positively influence body image, thereby enhancing subjective well-being. Additionally, raising awareness about societal perceptions and body image issues is crucial. Assisting individuals in challenging negative thoughts and perceptions related to body image can contribute to achieving higher levels of subjective well-being.

It is important to acknowledge the limitations of this study. For instance, the reliance on self-report data and subjective assessments, as well as the characteristics of the scales used, may have influenced the study's outcomes. Moreover, the sample size and demographics should be considered. Taking these limitations into account, future research should aim for more comprehensive and diverse studies.

This study sheds light on the relationships between somatization, subjective well-being, and body image. These findings can be instrumental in providing more effective treatments and support in the fields of health and psychology. It is hoped that future research will further contribute to our understanding of these relationships and their practical implications.

CONCLUSIONS AND RECOMMENDATIONS

In this study, a questionnaire was conducted to evaluate the subjective well-being, somatization and body images of people in different age groups. For this purpose, all scales considered within the scope of the model were analyzed with the sample used in the study. First of all, the Cronbach Alpha coefficients of each scale were calculated and the reliability analyzes of the scales were made. As a result of the reliability analysis, it was seen that each scale was reliable. Then, the descriptive statistics of the scales were evaluated. According to the results obtained, considering the subjective well-being of individuals, somatization values decrease as individuals tend to be positive. High somatization scores indicate that people have psychological and physical problems. People with somatic symptoms may have medically unexplained problems and may have various complaints about their bodies and organs. They complain of burning sensations in their bodies, constantly shifting pains, different tastes on their tongues, and occasional cramps. However, this study showed that as subjective well-being scores increased, somatization scores of individuals decreased. The increase in well-being has shown that complaints such as unexplained burning sensations, aches and cramps in their bodies have decreased. In addition, subjective well-being is also related to the fact that people are at peace with their body parts and bodies. Body image is the individual's evaluation of parts of his body and having a positive or negative attitude about the functions of these parts. Being positive is associated with increased body image scores. Therefore, with the increase in subjective well-being, body image also increase positively. In conclusion, it is an important result that somatization has an opposite relationship with subjective well-being and body image. Another important result obtained in the study was that body image had a partial mediating effect in the relationship between somatization and subjective well-being, and each increase in body image further reduced the effect of somatization, and it was observed that people felt better.

Compliance with ethical principles

The study is ethically approved by Istanbul Gelişim University (Ethics meeting date: 27/04/2022; ethics meeting number: 2022-08; ethical decision number: 2022-08-17).

REFERENCES

- Altınok, A., & Kara, A. (2017). Relationship between body image, psychological symptom level and interpersonal style: Alternative models. *Dusunen Adam the Journal of Psychiatry and Neurological Sciences*, 30, 170-180.
- Aslan, D. (2004). Beden algısı ile ilgili sorunların yaratabileceği beslenme sorunları. *STED*, 13(9), 326-329.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182.
- Busch, F. N. (2014). Clinical approaches to somatization. *Journal of Clinical Psychology*, 70(5), 419-427.
- Büyüköztürk, Ş. (2010). *Sosyal Bilimleri İçin Veri Analizi El kitabı*. Pegem Yayıncılık.
- Cash, T. F. (2002). A “negative body image”: Evaluating epidemiological evidence. In T. F. Cash & T. Pruzinsky (Eds.), *Body image: A handbook of theory, research, and clinical practice* (pp. 269–276). Guilford Press.
- Chong, C. S., Tsunaka, M., & Chan, E. P. (2011). Effects of yoga on stress management in healthy adults: A systematic review. *Alternative Therapies in Health and Medicine*, 17(1), 32.
- Cowen, V. S. (2010). Functional fitness improvements after a worksite-based yoga initiative. *Journal of Bodywork and Movement Therapies*, 14(1), 50-54.
- Diener, E., & Seligman, M. E. P. (2002). Very happy people. *Psychological Science*, 13(1), 81–84. <https://doi.org/10.1111/1467-9280.00415>
- Diener, E., Lucas, R. E., & Oishi, S. (2002). Subjective well-being: The science of happiness and life satisfaction. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (Vol. 2, pp. 63-73). Oxford University Press.
- Dülgerler, Ş. (2000). İlköğretim okulu öğretmenlerinde somatizasyon ölçeğinin geçerlik ve güvenirlik çalışması (Unpublished master’s thesis). Ege Üniversitesi Sağlık Bilimleri Enstitüsü, İzmir.
- Göcen, G. (2013). Psychological well-being and religious orientation in terms of positive psychology: A research about adults. *Toplum Bilimleri Dergisi*, 7, 97-130.
- Güleç, C. (2003). *Psikiyatri ve Psikoterapilerin ABC'si*. HYB Yayıncılık.
- Hathaway, S. R., & McKinley, J. C. (1943). *The Minnesota multiphasic personality inventory* (Rev. ed., 2nd printing). University of Minnesota Press.
- Hovardaoğlu, S. (1993). Vücut algısı ölçeği. *3P Psikiyatri Psikoloji Psikofarmakoloji Dergisi*, 1(Ek sayı 2), 26-27.
- Hudziak, J. J., Boffeli, T. J., Kreisman, J. J., & Battaglia, M. M. (1996). Clinical study of the relation of borderline personality disorder to Briquet's syndrome (hysteria), somatization

disorder, antisocial personality disorder, and substance abuse disorders. The American Journal of Psychiatry.

Lipowski, Z. J. (1988). Somatization: The concept and its clinical application. The American Journal of Psychiatry, 145(11), 1358–1368. <https://doi.org/10.1176/ajp.145.11.1358>

Karasar, N. (2021). Bilimsel Araştırma Yöntemi Kavramlar İlkeler Yöntemler. Nobel Akademik Yayıncılık.

Katz, J., & Farrow, S. (2000). Discrepant self-views and young women's sexual and emotional adjustment. Sex Roles, 42, 781-805.

MacKinnon, D. P., Fairchild, A. J., & Fritz, M. S. (2007). Mediation analysis. Annual Reviews of Psychology, 58, 593-614. <https://doi.org/10.1146/annurev.psych.58.110405.085542>

Negovan, V. (2010). Dimensions of students' psychosocial well-being and their measurement: Validation of a students' Psychosocial Well Being Inventory. Europe's Journal of Psychology, 6(2), 85-104.

Özdoğan, F., & Tüzün, İ. (2007). Kastamonu Eğitim Dergisi, 15(2), 639-650.

Tuzgöl Dost, M. (2005). Öznel iyi oluş ölçeği'nin geliştirilmesi: Geçerlik güvenirlik çalışması. Türk Psikolojik Danışma ve Rehberlik Dergisi, 3(23), 103-110.

Uskun, E., & Şabaplı, A. (2013). Lise öğrencilerinin beden algıları ile yeme tutumları arasındaki ilişki. TAF Preventive Medicine Bulletin, 12(5), 519-528.