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Development of The Pandemic Anxiety Scale

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ABSTRACT

It is aimed to develop a valid and reliable measurement tool that will help to evaluate anxiety related to pandemic in this study. Quantitative research method is conducted in this study. For data analysis, it is collected in two stages from 627 individuals aged 18 and older who lives in various regions and provinces of Turkey. Both construct validity and criteria validity are used to ensure validity. For construct validity, confirmatory factor analysis (CFA) and exploratory factor analysis (EFA) are conducted. Reliability of the tool is enabled by calculating Cronbach alpha internal consistency coefficient and item-total score correlation coefficients. As a result of the exploratory factor analysis, it is noticed that the Pandemic Anxiety Scale (PAS) explains 56.54% of the total variance, and the scale consists of 26 items gathered in four factors: contagion anxiety, somatic responses, psychosocial effects and dysfunctional beliefs. According to the confirmatory factor analysis, it can be said that the structure revealed in EFA has been confirmed. In the criteria validity analysis, it is concluded that PAS has a moderately positive relationship with the Anxiety Sensitivity Index-3 scale adapted to Turkish by Mantar (2008). In the internal consistency analysis conducted to find out the reliability of the scale and the result of the level on this scale is confirmed to be high. It is observed that item-total score correlation coefficients differ from .36 to .75. In consequence of validity and reliability analysis, it is realized that Pandemic Anxiety Scale is a valid and reliable measurement tool.

Key Words: Pandemic, anxiety, scale development

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Pandemi Kaygısı Ölçeği'nin Geliştirilmesi

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ÖZ

Bu araştırmada pandemiye bağlı olarak gelişen kaygıyı ölçecek geçerli ve güvenilir bir ölçme aracının geliştirilmesi amaçlanmıştır. Araştırmada nicel araştırma yöntemi kullanılmıştır. Veri analizi için iki aşamada Türkiye'nin çeşitli bölge ve illerinden 18 yaş ve üzeri 627 bireyden veri toplanmıştır. Geçerliliğin sağlanmasında yapı geçerliliği ile ölçüt geçerliliğinden yararlanılmıştır. Yapı geçerliliği için açımlayıcı faktör analizi (AFA) ile doğrulayıcı faktör analizi (DFA) yapılmıştır. Güvenilirliğin sağlanmasına yönelik ise Cronbach alfa iç tutarlık katsayısı ile madde-toplam puan korelasyon katsayıları hesaplanmıştır. AFA sonucunda Pandemi Kaygısı Ölçeği'nin (PKÖ) toplam varyansın %56.54'ünü açıkladığı, ölçeğin bulaşma kaygısı, somatik tepkiler, psikososyal etkiler ve işlevsiz inançlar olmak üzere dört faktörde toplanan 26 maddeden oluştuğu görülmüştür. DFA sonucunda da AFA'da ortaya konulan yapının doğrulandığı görülmüştür. Ölçüt geçerliği analizinde PKÖ'nün Mantar (2008) tarafından Türkçe'ye uyarlanan Anksiyete Duyarlılığı İndeksi-3 ölçeği ile orta düzeyde pozitif yönde anlamlı bir ilişkiye sahip olduğu sonucuna ulaşılmıştır. PKÖ'nün güvenilirliğini belirlemek amacıyla yapılan iç tutarlılık analizinde ölçeğin güvenilirlik düzeyinin yüksek olduğu tespit edilmiştir. Madde-toplam puan korelasyon katsayılarının ise .36 ile .75 arasında değiştiği görülmüştür. Geçerlilik ve güvenilirlik analizleri sonucunda, Pandemi Kaygısı Ölçeği'nin geçerli ve güvenilir bir ölçme aracı olduğu tespit edilmiştir.

Anahtar Kelimeler: Pandemi, kaygı, ölçek geliştirme

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Introduction

Pandemics are large-scale epidemics that affect lots of people in many countries and sometimes spread around the world. For a virus or bacteria to cause an epidemic, it must be an organism that most people do not have pre-existing immunity or can be easily transmitted from person to person and cause serious illness. Over the past century, there have been many pandemics of varying degrees of contagiousness and mortality. Examples include HIV / AIDS, different kinds of diseases like Spanish flu, Russian flu, Asian flu, Hong Kong flu, a second Russian flu epidemic, Swine flu and Zika virus outbreak (Taylor, 2019). In the last few months, the new type of coronavirus epidemic, which has serious consequences in countries where it occurs and negatively affects life, has had a worldwide impact and has been described as a pandemic. On 31st December 2019, China Country Office of the World Health Organization (WHO) reported cases of pneumonia (pneumonia) of unknown etiology in Wuhan, China's Hubei province. On 7th January 2020, the cause of the symptoms was defined as a new coronavirus (2019nCoV) that was not previously found in humans. Later, the term of the 2019-nCoV disease was changed into COVID-19, and the virus was named SARS-CoV-2 due to its close similarity to SARS CoV (Ministry of Health). The COVID-19 outbreak is a public epidemics that internationally aroused anxiety and it makes resilience difficult for many people. (Wang et al., 2020). Apart from the risk of death from contagious infection, the COVID-19 outbreak has had significant psychological effects on people (Li, Wang, Xue, Zhao & Zhu, 2020; Cao et al., 2020). Psychological reaction patterns to pandemics are complex. While some people are resistant to stress, other people suffer greatly when faced with threatening events such as a pandemic infection. For this reason, there are differences in people's reactions to pandemics. Some react with indifference or submission, while others show symptoms of fear or anxiety. Others develop emotional disturbances such as post-traumatic stress disorder. While some people recover from these emotional problems after the pandemic threat has passed, some people show persistent emotional reactions (Taylor, 2019).

In a study analyzing the anxiety among university students during the Severe Acute Respiratory Syndrome (SARS) epidemic in Hong Kong (Wong, Gao & Tam, 2007); the levels of anxiety of medical faculty students in a teaching hospital of a university affected by the epidemic, other students at the same university, and students of a university without a medical school 20 km away from this university were compared. When the results were viewed, it was seen that the anxiety level ranged from high to low in three groups as medical faculty students, other students from this university, and students from a different university 20 km away. Rubin, Amlôt, Page and Wessely (2009) did study with 997 adults aged 18 and over in England, Scotland and Wales on public perceptions, anxiety and behavioral changes regarding the swine flu epidemic. In their study, they reported that %24 of the participants were concerned about swine flu, and %2 of them were highly anxious. Wang et al. (2020) examined psychological reactions and related factors in the first phase of the COVID-19 outbreak among the general population in China. In their study, it was stated that more than half of the participants evaluated the psychological impact of the epidemic at a moderate or severe level. It can also be seen that approximately one third experienced the same level of anxiety. In the study conducted by Li et al. (2020), after the COVID-19 epidemic was declared in China on January 20, 2020, the effect of the epidemic on the psychological consequences before and after January 20 was examined. Following the research, it was noticed that negative feelings like anxiety, depression and anger started to be seen more frequently among people. Moreover, sensitivity to social risks increased while positive emotions and life satisfaction decreased after the COVID-19 epidemic broke out. In another study searching the psychological effects of the COVID-19 epidemic on university students in China, it has been reported that approximately 25% of university students experience anxiety due to the COVID-19 outbreak (Cao et al., 2020). The study (Choi, Hui & Wan, 2020),

which aimed to evaluate the anxiety level of people in Hong Kong during the outbreak period, concluded that fourteen percent of 500 participants were anxious. In a study conducted in Turkey by Özdin and Bayrak Özdin (2020), it is aimed to evaluate the level of depression, anxiety and health concerns as well as examining the factors affecting this level in Turkish population during the COVID-19 outbreak. The Hospital Anxiety and Depression Scale was used to identify the anxiety and depression levels of the participants in the study. In consequence of the research, it was stated that forty-five percent of the participants scored above the anxiety limit. In addition, being a woman, living in urban areas, and having a psychiatric illness in the past were determined to be risk factors for anxiety. When the findings in the literature are examined, it is observed that experiencing anxiety after the pandemic has an important place in the psychological effects of the epidemic.

Studies on recent outbreaks on what might be the predictor of pandemic anxiety provide an idea on this issue. Health anxiety, fear of contagion, sensitivity to disgust, intolerance to uncertainty, sensitivity to physical anxiety, dysfunctional beliefs, high-level perception of epidemic and death risk (Wheaton, Abramowitz, Berman, Fabricant & Olatunji, 2011; Blakey & Abramowitz, 2017; Blakey, Reuman, Jacoby & Abramowitz, 2015; Taha, Matheson, Cronin, & Anisman, 2013; Leung et al., 2005) were identified as important predictors of anxiety about the epidemic in their studies.

Although there are studies in the literature about the place of anxiety among the psychological consequences of the pandemic and the predictors of the anxiety that develops due to the pandemic, it has been observed that there is no measurement tool that measures the anxiety that develops due to the pandemic, and this process is performed with various measurement tools that measure anxiety in studies. For this reason, it was aimed to develop the Pandemic Anxiety Scale (PAS) in this study.

Methodology

Model

In this scale development, scanning design which is one of the quantitative research methods is used while developing a scale to determine the anxiety level that caused by pandemic in individuals. Quantitative research is a research method that examines the relationships between variables, analyzes the data that are quantified by measuring these variables with measurement tools through statistical processes (Creswell, 2017), and has purposes such as generalization, making predictions and explaining the causality relationship (Büyüköztürk, Kılıç Çakmak, Akgün, Karadeniz & Demirel, 2019). The survey design is used to describe the tendencies, attitudes or views across the universe in a quantitative or numerical manner with scales conducted on a sample which is chosen from the universe (Creswell, 2017, p.155) in order to determine certain characteristics of individuals representing a group (Büyüköztürk et al., 2019). It is a research design that explains trends in the data (Creswell, 2019) rather than explaining the cause and effect relationship.

Writing Items for The Pandemic Anxiety Scale and Creating An Item Pool

Before creating an item pool for PAS, a detailed literature review has been carried out on the anxiety that develops due to the pandemic. Based on the information in the literature, 76 items thought to be related to the anxiety developing due to the pandemic have been prepared. These items have been presented to the opinions of 6 different experts who are specialists in their fields. The feedback received from the experts has been evaluated with the Lawsche technique and 40 items have been removed from the measuring tool in the item pool, and a 36-

item application form has been created by making some changes in wording to ensure the compatibility of the other items in terms of grammar. A pilot study was conducted by applying the 36-item application form of the scale, which passed the expert opinion, to a small sample group. According to Connelly (2008), the current literature shows that the sample of pilot study size should be 10% of the projected target population. However, Hertzog (2008) warns that this type of question has no simple or direct answer as it is affected by many factors. Nevertheless, Isaac and Michael (1995) required 10-30 participants for the pilot study; Hill (1998) suggested 10 to 30 in his study; Julious (2005) and van Belle (2002) proposed 12; Treece and Treece (1982) suggested 10% of the target sample size. Accordingly, the 36-item application form of the scale was applied to 41 people as part of the pilot application. The data obtained from 41 people were entered into the SPSS 25 package program and the item-total score correlations of the items and the Cronbach alpha coefficient for the whole scale were calculated. The Cronbach alpha coefficient for the whole scale was calculated as .93. The Cronbach alpha coefficient of .70 and above is sufficient for reliability (Büyüköztürk, 2019), demonstrating that the reliability of the scale was high in the pilot study. It was observed that item-total correlation coefficients were between .35 and .71 in 34 of the 36 items, and respectively -.09 and -.40 in the 21st and 24th items. Based on the opinion that items with item-total correlation of .30 and above helps to discover individuals well, items lower than .20 should not be included in the scale (Büyüköztürk, 2019, p. 183), items 21 and 24 were removed from the scale. Thus, the application form with 34 items took its final form. Answering the items was structured as a five-point scale (1 = Never, 2 = Rarely, 3 = Occasionally, 4 = Mostly, 5 = Always) considering that it is more suitable for the structure of the scale.

Study Group

For exploratory factor analysis of the research, data was collected from 18 years and over 350 individuals who live various regions and provinces of Turkey. After data extraction, analysis was carried out with 323 data. Due to the results of the COVID-19 outbreak and the measures taken during the period when the data was collected in the study (May 26 - June 3, 2020), the data were collected via internet by using Google Forms. Demographic profile data about the individuals whose data was collected for exploratory factor analysis in the study are presented in Table 1:

Table 1. *Frequency and Percentage Values of Demographic Profile Data of Research Group for Exploratory Factor Analysis*

Variance	Frequency	%
Gender		
Female	154	47.7
Male	169	52.3
Age		
18-22	50	15.5
23-27	130	40.3
28-32	48	14.9
33-40	35	10.7
41-50	40	12.4
51-63	20	6.2
Educational Level		
Elementary Education (Primary or Secondary School) Graduate	14	4.3

Secondary Education (High School) Graduate	54	16.7
Associate Degree Graduate	20	6.2
Undergraduate Degree	194	60.1
Postgraduate Degree	41	12.7
Total	323	100

154 (47.7%) of the individuals participating in the study are female and 169 (52.3%) are male. The ages of the individuals vary between 18 and 63; 50 (15.5%) were between 18 and 22 years old, 130 (40.3%) were between 23 and 27 years old, 48 (14.9%) were between 28 and 32 years old, 35 (10.7%) were between 33 and 40 years old, 40 (12.4%) were between 41 and 50 years old and 20 (6.2%) were between 51 and 63 years old. Of the individuals participating in the study, 14 (4.3%) were elementary education (primary or secondary school) graduates, 54 (16.7%) were secondary education (high school) graduates, 20 (6.2%) were associate degree graduates, 194 (60.1%) have undergraduate degrees 41 (12.7%) of them have postgraduate degrees.

For confirmatory factor analysis in the study, data was collected from 18 years and older 277 individuals who live various regions and provinces of Turkey. After data extraction, analysis continued with 273 data. The data were gathered on the internet using Google Forms. The demographic information about the individuals whose data were collected for the confirmatory factor analysis in the study are presented in Table 2:

Table 2. *Frequency and Percentage Values of Demographic Information of the Research Group for Confirmatory Factor Analysis*

Variance	**Frequency**	**%**
Gender of Participants		
Female	146	53.5
Male	127	46.5
Age		
18-22	30	11
23-27	82	30
28-32	59	21.6
33-40	54	19.8
41-50	35	12.8
51-63	13	4.8
Educational Level		
Elementary Education (Primary and Secondary School) Graduate	8	2.9
Secondary Education (High School) Graduate	32	11.8
Associate Degree Graduate	26	9.5
Undergraduate Degree	169	61.9
Postgraduate Degree	38	13.9
Total	273	100

146 (53.5%) of the individuals participating in the study are female and 127 (46.5%) of them are male. The ages of the individuals vary between 18 and 63; 30 (11%) were between 18

and 22 years old, 82 (30%) were between 23 and 27 years old, 59 (21.6%) were between 28 and 32 years old, 54 (19.8%) were between 33 and 40 years old 35 (12.8%) were between 41 and 50 years old and 13 (4.8%) were between 51 and 63 years old. 8 (2.9%) of the individuals who participated in the study were elementary school (primary or secondary) graduates, 32 (11.8%) were secondary education (high school) graduates, 26 (9.5%) were associate degree graduates, 169 (61.9%) have undergraduate degrees and 38 (13.9%) of them have postgraduate degrees.

Data Collection Tool for The Criteria Validity of PAS (Pandemic Anxiety Scale)

Anxiety Sensitivity Index-3 (ASI-3): The original form of Anxiety Sensitivity Index-3, developed by Taylor et al., was adapted to Turkish by Mantar (2008). ASI-3, which consisting of 18 items in three sub-categories as physical symptoms, social symptoms and cognitive symptoms, was prepared in the five-point Likert type. It is graded as "0 = Very little, 1 = A Little, 2 = Some, 3 = Much, 4 = Very much". The lowest score that can be obtained from the scale is 0 and the highest one is 72. Individuals to whom the scale is applied are asked to answer the items by considering their experiences with the statements in each item or by thinking about how they would feel if they had no experience with that item. When the scale was adapted to Turkish, the study was conducted with a sample of 450 individuals, 300 patients diagnosed with anxiety disorder or major depression according to DSM-IV diagnostic criteria and 150 healthy individuals without any psychiatric disease. ASI-3 shows high internal consistency (Cronbach alpha coefficient = .93); when it is looked at each sub-factors, Cronbach alpha coefficient was .89 for physical symptoms, .88 for cognitive symptoms, and .82 for social symptoms. It has been shown that the consistency of all items of the scale with the whole scale is sufficient and the test-retest reliability is quite good ($r = .64$, $p < .001$).

This scale was equipped accordingly for the criteria validity study because it measures anxiety sensitivity described as an extreme fear against sensations and symptoms related to anxiety, which is believed to have harmful physiological and / or social consequences (Mantar, 2008, p. 11). Since anxiety sensitivity is a condition that increases anxiety, individuals who score higher in ASI-3 will also have higher scores in PAS than other individuals; Accordingly, it was thought that there would be a medium or high level correlation between the two scales.

Collecting Data for Validity and Reliability Analysis of PAS

During the period when the study was carried out, due to the results of the COVID-19 epidemic and the measures taken, data were collected on the internet by using Google Forms for the development of PAS. Individuals voluntarily participated in the study because the data was collected via Google Forms. The link created to collect data was shared only with individuals involved in the data collection process. During the data collection process, information collected from the data would be used only for the purpose of the research and that they would not be shared with anyone. This expression was stated to individuals about the purpose of the study. The data was collected in two stages. The first one is collecting data from individuals who are 18 and older living in Turkey's various regions and provinces for exploratory factor analysis, and data were collected from 350 individuals. It took about 5 minutes for the individuals to answer the items. Then, the data was collected from 50 individuals out of these 350 people for the criteria validity study using Google Forms. It took approximately 3-4 minutes for the individuals to answer the items on the scale. In the second stage, for confirmatory factor analysis data was collected via Google Forms from 277 individuals who are 18 and older living in Turkey's various regions and provinces. It took approximately 3-4 minutes for the individuals participating in the study to answer the items.

Data Analysis and Interpretation

In the studies of validity and reliability about the development of the Pandemic Anxiety Scale, structure validity and criteria validity were used to ensure validity. Confirmatory factor analysis was conducted with exploratory factor analysis for construct validity. Cronbach alpha coefficient was used for reliability. Both SPSS 25 package program and AMOS program were used for data analysis in the research.

Findings

Validity and Reliability Analysis of PAS

SPSS 25 and AMOS programs were used for the analysis of the data. First of all, the suitability of the data for factor analysis was examined. Since the data is collected by using Google Forms, there is no missing value in the data. Exploratory factor analysis (EFA) was applied with 323 data after examining the extreme values (-3, +3) and excluding 27 data from the analysis.

Before starting the analysis, the suitability of the number of EFA data with the factor analysis was tested with the Kaiser-Meyer-Olkin (KMO) sampling adequacy criterion. KMO coefficient values show suitability of the data matrix for factor analysis and give information about whether the data structure is suitable for factor extraction or not (Büyüköztürk, 2019, p.136). The KMO coefficient (Table 3), which was resulted as .91 from the analysis, meets the criterion that data set should be higher than .60 in order to be suitable for factor analysis (Büyüköztürk, 2019; Aslan, 2018; Yaşlıoğlu, 2017).

Table 3. *Values of KMO and Bartlett's Test*

Kaiser-Meyer-Olkin Sampling Adequacy		,913
Bartlett's Test of Sphericity	Chi-squared statistics	5510,382
	S. value	561
	p	,000

In Bartlett's test of sphericity, the result was p <.001. This statistically significant result shows the suitability of data set with factor analysis (Büyüköztürk, 2019; Yaşlıoğlu, 2017), as well as the normal distribution of the data (Büyüköztürk, 2019). In addition, the ratio of 323 data to the number of items (34) in the item pool is 9.50. It is seen that the proposal made for EFA to have the participant / item ratio greater than 5 (Büyüköztürk, 2019) is also met. Analyzes have shown that the data is suitable for EFA. For the criteria validity analysis of PAS, Pearson product-moment correlation coefficients were calculated between scales. For reliability analysis, both Cronbach alpha internal consistency coefficient and item-total score correlation coefficients were calculated in the study.

Findings Regarding The Construct Validity Analysis Results of The PAS

The construct validity of the scale was determined by EFA and CFA. Considering that the possible factors of the scale are related to each other during EFA, the direct oblimin approach was used (Büyüköztürk, 2019). Overlapping items (Büyüköztürk, 2019) that load more than one factor and load two factors with a difference of less than .10 were removed from the scale. As a result, a structure with 4 factors that explains 56.54% of the total variance was obtained. The factor load values of PAS are shown in Table 4.

Table 4. *Factor Load Values of PAS*

Factor Number	Item Number	Factor Load
First Factor		
	Item 1	.680
	Item 2	.668
	Item 3	.791
	Item 4	.692
	Item 5	.742
	Item 6	.765
	Item 7	.777
	Item 8	.653
	Item 9	.717
	Item 10	.652
Second Factor		
	Item 11	.612
	Item 12	.721
	Item 13	.685
	Item 14	.734
	Item 15	.755
	Item 16	.730
	Item 17	.747
	Item 18	.689
Third Factor		
	Item 19	.649
	Item 20	.806
	Item 21	.776
	Item 22	.720
Fourth Factor		
	Item 23	.678
	Item 24	.588
	Item 25	.723
	Item 26	.657

Table 4 shows that the factor loads of PAS vary between .588 and .806 and the scale consists of 4 factors. According to Büyüköztürk (2019), factor load values are expected to be .45 or higher, and this limit value can be reduced to .30 only for a small number of items in practice. According to the factor load values, it is seen that the scale comprises 4 factors and 26 items. The total variance amounts of PAS are shown in Table 5.

Table 5. *Total Variance Amounts Revealed*

	Sums of Inıtıal Eigenvalues			**Total Factor Loads**		
	(Initial Eigenvalues)			**(Extraction Sums of Squared Loadings)**		
		Variance			**Variance**	
Factors	**Total**	**%**	**Cum. %**	**Total**	**%**	**Cum. %**
1	8,818	33,914	33,914	8,818	33,914	33,914
2	3,019	11,611	45,526	3,019	11,611	45,526
3	1,643	6,320	51,846	1,643	6,320	51,846

4	1,221	4,696	56,542	1,221	4,696	56,542
5	1,040	4,002	60,544			
6	1,000	3,845	64,389			
7	,843	3,243	67,632			
8	,798	3,068	70,700			
9	,741	2,851	73,552			
10	,677	2,604	76,156			
11	,597	2,297	78,453			
12	,560	2,154	80,608			
13	,541	2,080	82,687			
14	,510	1,960	84,647			
15	,486	1,868	86,516			
16	,446	1,714	88,230			
17	,444	1,707	89,937			
18	,384	1,479	91,416			
19	,355	1,367	92,783			
20	,334	1,285	94,068			
21	,302	1,162	95,230			
22	,289	1,110	96,341			
23	,270	1,039	97,379			
24	,258	,991	98,371			
25	,218	,839	99,209			
26	,206	,791	100,000			

In order to accept a factor as a factor, the eigenvalue of that factor is expected to have a value of 1 and above 1 (Büyüköztürk, 2019). Looking at the values in Table 5, it is seen that the scale may have maximum 6-factor structure. However, when the 5 and 6 factor structures of the scale were tested according to EFA, it was seen there was no item under some factors. This situation contradicts the view that there should be at least 3 items in a factor (Velicer & Fava, 1998). For this reason, it was thought that it would be more appropriate to have a 4-factor structure of the scale.

It is seen that the Pandemic Anxiety Scale explains 56.54% of the total variance. In the light of these data, it was decided to include 26 of the 34 items in the scale. In this context, the first factor was named as Contagion Anxiety, the second factor as Somatic Reactions, the third factor as Psychosocial Impacts, and the fourth factor as Dysfunctional Beliefs. Contagion Anxiety includes situations that arouse concern and anxiety about being infected by the virus causing an epidemic. Somatic Reactions are related to the physiological changes observed as symptoms of anxiety due to the pandemic. Psychosocial Impacts are related to anxiety about the psychological, social and economic consequences of the pandemic. Dysfunctional Beliefs, on the other hand, are thoughts and beliefs that do not have a realistic basis regarding the pandemic process and cause the people to worry. The Contagion Anxiety factor with an eigenvalue of 8.82 includes 10 items and explains 33.91% of the total variance. Somatic Reactions factor with an eigenvalue of 3.02 includes 8 items and explains 11.61% of the total variance. The Psychosocial Impacts factor with an eigenvalue of 1.64 includes 4 items and

explains 6.32% of the total variance. The Dysfunctional Beliefs factor with an eigenvalue of 1.22 includes 4 items and explains 4.69% of the total variance.

In consequence of the confirmatory factor analysis, it was seen that the frame revealed in EFA was confirmed. This result also shows that the dimensions created by considering the literature are statistically verified. The model obtained with CFA is presented in Figure 1.

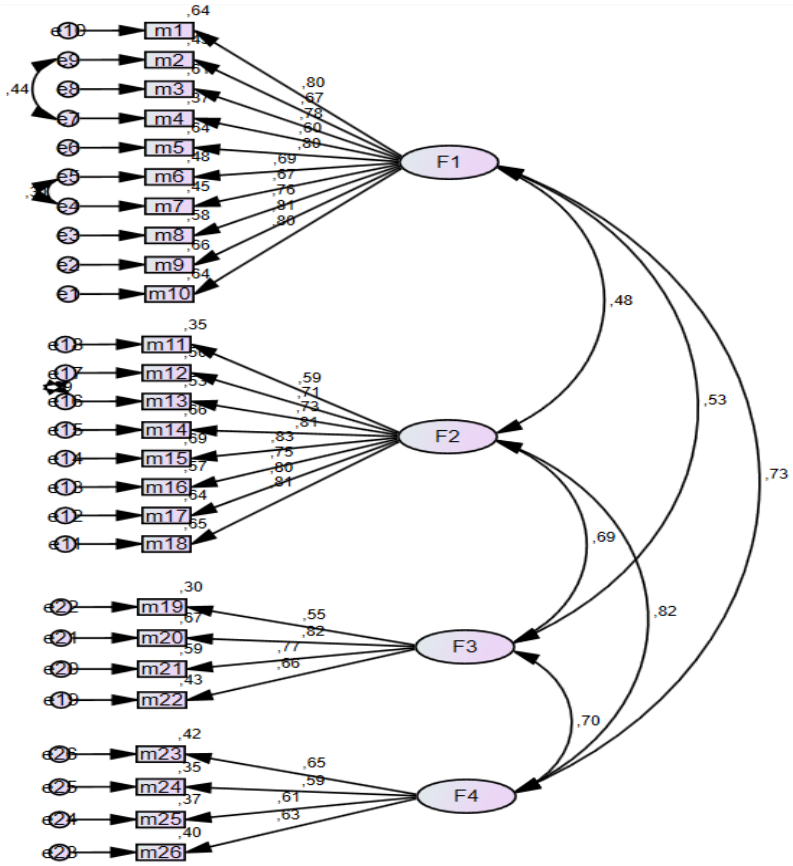

Figure 1. *The CFA Model of Pandemic Anxiety Scale*

When the model is tested, calculations in goodness of fit indices are shown in Table 6.

Table 6. *Values of the Model Goodness of Fit (MacCallum, Browne & Sugawara, 1996; Tabachnick & Fidell, 2007)*

Fit Index	Model Value	Good Fit	Acceptable Fit
$\chi 2$	679,705		
$\chi 2/d$	2,34	$0 \leq \chi 2/df \leq 2$	$2 \leq \chi 2/df \leq 5$
CFI	0,91	$0,95 \leq CFI \leq 1,00$	$0,90 \leq CFI \leq 0,95$
RMSEA	0,07	$0 \leq RMSEA \leq 0,05$	$0,05 \leq RMSEA \leq 0,08$
TLI	0,90	$0,95 \leq TLI \leq 1,00$	$0,90 \leq TLI \leq 0,95$
SRMR	0,09	$0 \leq SRMR \leq 0,05$	$0,05 < SRMR \leq 0,10$

As the fit indices of the PAS model are examined, it is seen that chi-square degrees of freedom, CFI, RMSEA, TLI and SRMR indicate acceptable fit. As a result, as seen in Table 6, according to CFA results, since all fit indices have acceptable values, it has been concluded that the models of the scale items with the relevant structure are appropriate.

Criteria Validity of PAS

In order to determine the suitability of criteria validity with PAS, the scales used to measure anxiety were examined and Anxiety Sensitivity Index-3, which was adapted into Turkish by Mantar (2008), was used.

Table 7. *Correlational Relationships Between Pandemic Anxiety Scale and Anxiety Sensitivity Index-3 (Mantar, 2008)*

Factor	Anxiety Sensitivity Index-3 Total
PAS Total	.417**

p**<.01

As figured in Table 7, the total score of the Pandemic Anxiety Scale was found to have a moderately positive significant relationship with the total score of the Anxiety Sensitivity Index-3 scale adapted by Mantar (2008) ($r = .417$; $p < .01$).

Findings Regarding The Reliability Analysis Results of The PAS

Total score of Cronbach alpha internal consistency coefficient of PAS was .92; The internal consistency coefficient of the Contagion Anxiety factor was .90; The internal consistency coefficient of the Somatic Reactions factor was .86; The internal consistency coefficient of the Psychosocial Effects factor was calculated as .81 and the internal consistency coefficient of the Dysfunctional Beliefs factor was calculated as .66. For reliability, an internal consistency coefficient of .70 or above is considered sufficient (Büyüköztürk, 2019). An internal consistency coefficient of .80 or higher indicates that the scale is considerably reliable (Aslan, 2018). Accordingly, it is noticed that the whole scale and the factors of Contagion Anxiety, Somatic Reactions and Psychosocial Effects are sufficient and highly reliable. Although the internal consistency coefficient of the Dysfunctional Beliefs factor (.66) is lower than .70 (Büyüköztürk, 2019) required to ensure reliability; since the Cronbach alpha internal consistency coefficient tends to increase as the number of items increases (Aslan, 2018; Yaşlıoğlu, 2017). It can be said that the low number of items (4 items) in the factor led to decrease in the internal consistency coefficient. In addition to this, based on the correlation of values between .61 and .80 with the internal consistency coefficient (Aslan, 2018); It is seen that the Dysfunctional Beliefs factor has a medium level of reliability even if it is not at the desired level, and has an internal consistency coefficient close to the expected value of .70 (Büyüköztürk, 2019). Although the Dysfunctional Beliefs factor shows moderate reliability, the values of other three factors pointing out a high level of reliability among the whole of the scale can be shown as evidence that PAS is a reliable measurement tool in measuring the anxiety that develops due to the pandemic.

The item-total score correlation coefficients of the scale regarding to what extent the items in the scale distinguish individuals are shown in Table 8. In Table 8, Pearson product-moment correlation coefficient results are given for item-total score correlation.

Table 8. *Item-Total Correlation Results of PAS*

Item Number	Item-total correlation coefficients
Item 1	.629
Item 2	.594
Item 3	.697
Item 4	.607
Item 5	.687

Item 6	.711
Item 7	.693
Item 8	.569
Item 9	.703
Item 10	.619
Item 11	.585
Item 12	.678
Item 13	.664
Item 14	.565
Item 15	.660
Item 16	.625
Item 17	.571
Item 18	.601
Item 19	.515
Item 20	.749
Item 21	.651
Item 22	.589
Item 23	.356
Item 24	.443
Item 25	.491
Item 26	.490

In Table 8, it is observed that the item-total score correlation coefficients on PAS vary between .36 and .75. If the item-total scores correlation coefficients have a positive value of .30 or above, it indicates that the items on the scale exemplify similar behaviors, distinguish individuals well and the internal consistency of the scale is highly great (Büyüköztürk, 2019). According to this criterion, it can be said that the substance discrimination of PAS is sufficient and its internal consistency is high in this context. PAS is a measurement tool developed to determine the anxiety levels of individuals aged 18 and over due to the pandemic. Validity and reliability analysis results show that PAS is a valid and reliable measurement tool.

Result and Discussion

In this study, Pandemic Anxiety Scale was developed to measure the level of anxiety about pandemic that started in January 2020. At the beginning of the research, the literature on pandemic and anxiety was reviewed, then information was obtained on emotional, cognitive, behavioral and physiological dimensions of anxiety experienced during the pandemic. After the detailed literature review, an item pool was created for each envisaged sub-dimension, and it was pre-evaluated by 2 experts. The item pool prepared after the first evaluation was presented to the opinion of 6 expert academicians, and the necessary procedures were carried out to finalize the item pool. After the trial form was created, the application was completed with 350 people in the first stage and 277 people in the second stage. The data obtained were subjected to exploratory factor analysis and confirmatory factor analysis, also the validity analyzes of the scale were completed. According to the analysis, it was seen that the scale includes 4 sub-dimensions: Contagion Anxiety, Somatic Reactions, Psychosocial Effects, and Dysfunctional Beliefs.

In another study conducted by Roy et al. (2020) with 662 participants in India, it was found that 80% of the participants experienced pandemic anxiety. In the scale form used, it was noted that pandemic anxiety was measured by symptoms such as having the idea of being infected in a paranoid manner, being anxious for their relatives and themselves, having difficulty in sleeping, fear, and washing hands frequently. Another research was conducted in Spain by Limcaoco, Mateos, Fernandez and Roncero (2020) on pandemic anxiety. In this study; the items related to anxiety were determined to be expected anxiety (a forward-looking measure), experienced anxiety (a retrospective measure), current anxiety (a current measure), perceived absolute sensitivity (a forward-looking precaution), perceived relative sensitivity (a forward-looking measure), and some suggestions for changing / unchanged behavior due to COVID-19 have been presented. It is seen that these suggestions are named as avoiding crowded places and hand cleaning.

Studies on recent outbreaks regarding the predictors of the anxiety that develops due to the pandemic provide an idea on this issue. Health anxiety, fear of contamination, sensitivity to disgust, intolerance to uncertainty, sensitivity to physical anxiety, dysfunctional beliefs, perceiving the risk of epidemic and mortality at a high level (Wheaton et al., 2011; Blakey & Abramowitz, 2017; Blakey et al., 2015; Taha et al., 2013; Leung et al., 2005) are considered as important predictors of anxiety due to the epidemic. In the Anxiety Sensitivity Scale conducted by Mantar (2008), it is noteworthy that anxiety is handled under 3 main headings: physical symptoms, cognitive symptoms and social symptoms. When these anxiety symptoms are analyzed, it is observed that Pandemic Anxiety Scale is substantially similar to the sub-dimensions and scale items of the studies in the literature.

Within the scope of the validity analysis of the scale, the scale's sensitivity to measure anxiety was also evaluated with a criterion. The criteria validity of the scale was determined to be used the Anxiety Sensitivity Index-3, which was adapted to Turkish by Mantar (2008). Following the analysis, it was understood that the Pandemic Anxiety Scale, which measures the anxiety about the pandemic, and the Anxiety Sensitivity Index-3 were moderately related. While the scale's handling of anxiety with physical, cognitive and social symptoms indicates the similarity between the two scales, it is seen that the scale developed in this study differs due to the fact that it measures a specific anxiety towards pandemic and the presence of Contagion Anxiety among its sub-dimensions. It is thought that this situation keeps the relationship between the two scales at a moderate level.

Reliability analyzes of the scale were carried out both for the whole scale and its sub-dimensions. Total score for Cronbach alpha internal consistency coefficient of the scale was .92; The score of internal consistency coefficient of the Contagion Anxiety factor was .90; The score of internal consistency coefficient of the Somatic Reactions factor was .86; The score of internal consistency coefficient of the Psychosocial Effects factor was .81 and the score internal consistency coefficient of the Dysfunctional Beliefs factor was calculated at .66. In the study by Griethuijsen et al. (2014) examining students' views on science, it was stated that the cronbach alpha coefficient was acceptable between .70 and .60 in three of the studies. Taber (2018) found that the alpha values of the cronbach alpha coefficient were excellent (0.93-0.94), strong (0.91-0.93), reliable (0.84-0.90), robust (0.81), quite high (0.76-0.95), high (0.73- 0.95), good (0.71-0.91), relatively high (0.70-0.77), slightly low (0.68), reasonable (0.67-0.87), adequate (0.64-0.85), medium (0.61-0.65), satisfactory (0.58-0.97), acceptable (0.45-0.98), adequate (0.45-0.96), unsatisfactory (0.4-0.55), and low (0.11). According to this table, when the reliability coefficients of the study are evaluated, it can be said that the total score of internal consistency coefficient of the scale is strong, the internal consistency coefficient of the Contagion Anxiety and Somatic Reactions sub-factors is reliable, the internal consistency

coefficient of the Psychosocial Effects sub-factor is strong, and the internal consistency coefficient of the Dysfunctional Beliefs factor is sufficient.

Item-total score correlation is a type of analysis that reveals the relationships between scale items in terms of their measured characteristics (Büyüköztürk, 2019). Büyüköztürk (2019) and Tavşancıl (2002) stated that the item total score correlation with a value of .30 and above is sufficient and these items can be considered good items. It was seen that the item-total score correlation coefficients of the PAS developed in this study ranged from .36 to .75. Considering the acceptable values in the literature, it can be said that these values are acceptable and the items in the scale are good.

When all the findings regarding the validity and reliability analysis of the scale are analyzed, it can be said that the scale is very powerful and useful in measuring pandemic-specific anxiety. The scale is also thought to be quite specific in measuring anxiety, especially for epidemic diseases.

Recommendations

This scale was developed in the early days of the COVID-19 epidemic, when people have higher anxiety. After the study was implemented, with the continuation of the epidemic and the widespread of vaccination opportunities, there may have been a change in the level of anxiety of people about the epidemic. For this reason, it is recommended to repeat the study and compare the findings with the previous results.

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