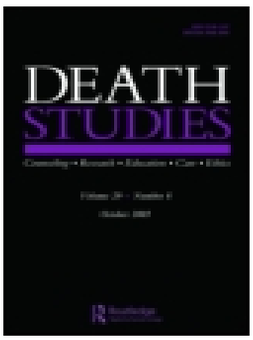

Death Studies

ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/udst20

Adaptation and evaluation of COVID-19 related Psychological Distress Scale Turkish form

Tuğba Ay , Deniz Oruç & Asil Ali Özdoğru

To cite this article: Tuğba Ay , Deniz Oruç & Asil Ali Özdoğru (2021): Adaptation and evaluation of COVID-19 related Psychological Distress Scale Turkish form, Death Studies, DOI: 10.1080/07481187.2021.1873459

To link to this article: https://doi.org/10.1080/07481187.2021.1873459

Published online: 16 Jan 2021.

DEATH STUDIES
https://doi.org/10.1080/07481187.2021.1873459

Routledge
Taylor & Francis Group

Adaptation and evaluation of COVID-19 related Psychological Distress Scale Turkish form

Tuğba Ay[a], Deniz Oruç[b,c], and Asil Ali Özdoğru[d]

[a]Department of Clinical Psychology, Gebze Technical College, Turkish Ministry of National Education, Kocaeli, Turkey; [b]Department of Molecular Neuroscience, Üsküdar University, İstanbul, Turkey; [c]Department of Clinical Psychology, Public Health Agency, Turkish Ministry of Health, İstanbul, Turkey; [d]Department of Psychology, Üsküdar University, İstanbul, Turkey

ABSTRACT

This study aimed to adapt COVID-19 Related Psychological Distress Scale (CORPD) into Turkish and evaluate its psychometric properties. Participants were assessed across the CORPD Turkish form, Symptom Checklist-90-Revised anxiety subscale, Fear of COVID-19 Scale, and the Brief Resilience Scale. Exploratory and confirmatory factor analyses confirmed a two-factor model in different subsamples, with satisfactory reliability. The total and subscale scores of the CORPD Turkish Form were positively correlated with anxiety and fear of COVID-19, and negatively correlated with resilience. The findings suggest that the CORPD Turkish form is a valid and reliable measure to assess the COVID-19 related psychological distress.

The first of COVID-19 cases in Turkey were officially reported on 11 March 2020. The number of patients rapidly increased, reaching 425,628 as of 19 November 2020 and resulting in a total of 11,820 deaths (Republic of Turkey Ministry of Health, 2020). Turkey, like all other countries, has struggled with the pandemic, and took many precautions to stop the spread of coronavirus. Among these measures, crowded areas such as schools, shopping centers, entertainment centers, gyms, and movie theaters were closed (Satici et al., 2020). Shopping areas for basic needs were not included in the scope of measures. In Turkey, the government proposed to remain in voluntary quarantine to protect the elderly and those with chronic disease. These circumstances pose a risk for individual mental health (Satici et al., 2020).

Studies show that social measures reduce anxiety from COVID-19 (Milman et al., 2020). In addition to this, other research shows a relatively high prevalence of mental health issues but these mental health issues are not correlated with the control precautions of quarantine but correlated with the effects on casual life. Instead, the dissatisfaction with control measures significantly predict their negative psychological outcomes (Zhu et al., 2020). In the light of the results of these studies, it can be said that the measures taken differ according to the psychological conditions of people and their effect on daily life.

Social isolation rules have consequences such as stress factors stemming from the pandemic and difficult living conditions due to job loss and decrease in income. The rules have reduced the likelihood of coronavirus anxiety despite these negative consequences. It seems that the thought of reducing the risk of contamination by contributing to the measures is formed. The measures create a sense of control in the pandemic process. Therefore, mental health practitioners recommending social isolation measures will be seen as a way to alleviate coronavirus anxiety (Milman et al., 2020).

The virus affects the majority of the population psychologically, socially, economically, and politically (Arpaci et al., 2020). Some of psychological effects include traumatic stress, anxiety, and depression (Zandifar & Badrfam, 2020). On the other hand, fear of coronavirus is a new psychological syndrome (Ahorsu et al., 2020). In determining possible risk factors for diseases, the focus is on the etiological role of biological, social, and environmental factors. However, less attention is paid to the etiological role of psychological characteristics such as stress, cognition, and personality. High level of psychological distress (depression and anxiety) is thought to impair various

CONTACT Tuğba Ay psktugbaay@gmail.com Department of Clinical Psychology, Gebze Technical College, Turkish Ministry of National Education, Kocaeli, Turkey.

aspects of not only innate but also adaptive immunity. Experiencing stress for a long time because of the lockdown measures could also lead to a raise in psychological distress by decreasing sources of support (e.g. family), which increases the significance of personal resources like relational variables and self-efficacy (Losada-Baltar et al., 2020).

Panic and fear of coronavirus can cause positive cases and their families to be stigmatized and excluded in daily life. In such a situation, people may experience problems such as adjustment disorders and depression that threaten mental health. In short, coronavirus-induced crisis and panic can pose a threat to mental health (Zhang et al., 2020). The results of the study conducted by Lin (2020) show that people who are not yet infected are afraid of being with people who are COVID-19 positive. Studies have shown that the rise of coronavirus fear can lead to illogical and unsharp thoughts (Ahorsu et al., 2020).

On the other hand, resilience is the ability to recover from a downturn to a previous state of relative well-being (Carver, 2010). Roots of the construct of resilience are in two perspectives of literature. Coping is a concept that has psychological aspects, as well as the physiological effects of stress (Tusaie & Dyer, 2004). At the early days of the pandemic, experts suggested methods to save physical health. With the spread of COVID-19, they began to underline the importance of supporting mental health (Bakioğlu et al., 2020).

Various scales have been developed to measure the effects of pandemics on human-beings. Some of these scales have been adapted to different cultures. The COVID-19 Phobia Scale has been developed in Turkey by Arpaci et al. (2020). In addition, The Fear of COVID-19 Scale (Ahorsu et al., 2020) was adapted to Turkish culture by Bakioğlu et al. (2020). These scales are important in terms of measuring COVID phobia and fear. However, there is no known scale measuring the effects of the pandemic in Turkey in relation to psychological distress and suspicion.

The COVID-19 Related Psychological Distress Scale (CORPD) is the first known scale developed specifically to assess the psychological distress of healthy people who are not infected with COVID-19. The CORPD study found that the psychological distress associated with COVID-19 includes not only fear and anxiety, but also suspicion. The goodness of fitness values of the original CORPD scale were RMSEA = 0.07, RMR = 0.06, AGFI = 0.90, NFI = 0.91, GFI = 0.93, CFI = 0.93, TLI = 0.90. This study aims to adapt CORPD scale developed by Feng et al. (2020) into Turkish and investigate the relationship between anxiety, fear of COVID-19, and resilience.

Method

Participants

There were 813 participants who completed the online survey. However, participants ($n = 33$) with unreliable and extreme values were excluded, yielding a final sample of 780 adult participants. Among them, 543 (69.6%) were women, 185 (23.7%) were over 45 years old, 771 (98.8%) were Turkish nationality, 9 (1.2%) were non-native Turkish speakers, 666 (85.4%) had above high school degree, 453 (58.1%) were married, 453 (58%) had a monthly income of more than 4500 TL, 411 people (52.7%) were from metropolis, 147 (18.8%) had chronic illness, 353 (45.3%) had children to support and 93(11.9%) had dependent seniors in the family. The mean age of the total sample was 36.82 years ($SD = 11.74$). The sample was randomly split into two subsamples of approximately equal size in order to perform exploratory and confirmatory factor analyses in separate samples and two different samples were used to assess the validity and reliability of CORPD in the process of its adaptation into Turkish. Sociodemographic information of the samples is summarized on Table 1.

Measures

Demographic Questionnaire

A demographic information form was designed by the researchers to gather personal information from participants. Participants were asked to report their age, sex, education level, residency, marital status, monthly income, the presence of chronic illness, and whether they had children and dependent elderly to support in their family.

COVID-19 related psychological distress

The COVID-19 Related Psychological Distress Scale (CORPD) was developed by Feng et al. (2020) to measure the level of psychological distress in uninfected people. The scale has 14 items and contains two dimensions: suspicion, and anxiety and fear. Items in the scale are scored on a five-point Likert-type scale. They range from 1 (Strongly disagree) to 5 (Strongly agree). Higher scores reflect higher severity of psychological distress. The scale had good internal reliability with Cronbach's α of 0.88. The Cronbach's α on the Anxiety and fear subscale was 0.74, and Cronbach's α on the Suspicion subscale was 0.87.

Table 1. Participant characteristics for two subsamples and the total sample ($N = 780$).

Baseline characteristics	Subsample 1		Subsample 2		Total sample	
	n	%	*n*	%	*N*	%
Sex						
Female	272	69.0	271	70.2	543	69.6
Male	122	31.0	115	29.8	237	30.4
Age						
<45	304	77.2	290	75.1	594	76.2
≥45	90	22.8	95	24.6	185	23.7
Missing	–	–	1	0.3	1	0.1
Nationality						
Turkish	387	98.2	384	99.5	771	98.8
Others	7	1.8	2	0.5	9	1.2
Place of living						
Village	11	2.8	10	2.6	21	2.7
Town	98	24.9	107	27.7	205	26.3
City	67	17.0	76	19.7	143	18.3
Metropolis	218	55.3	193	50.0	411	52.7
Highest level of education						
≤High school	51	12.9	63	16.3	114	14.6
>High school	343	87.1	323	83.7	666	85.4
Marital status						
Married	220	55.8	233	60.4	453	58.1
Not in a marriage	174	44.2	153	39.6	327	41.9
Monthly income						
0−2.325 TL (Min. wage)	77	19.5	90	23.3	167	21.4
2.326−4.500 TL	79	20.1	81	21.0	160	20.5
4.501−7.000 TL	139	35.3	139	36.0	278	35.6
7.001−10.000 TL	58	14.7	39	10.1	97	12.4
10.001 TL and above	41	10.4	37	9.6	78	10.0
Chronic illness						
Yes	70	17.8	77	19.9	147	18.8
No	324	82.2	309	80.1	633	81.2
Supporting children or not						
Yes	179	45.4	174	45.1	353	45.3
No	215	54.6	212	54.9	427	54.7
Dependent senior or not						
Yes	47	11.9	46	11.9	93	11.9
No	347	88.1	340	88.1	687	88.1

To translate the CORPD, we followed the process recommendations in the literature (Güngör, 2016; Sousa & Rojjanasrirat, 2011). The scale was forward translated from English to Turkish by two independent academics from psychological counseling field, one of whom obtained doctoral degree in an English-speaking country, and two independent English language experts, one of whom was a bilingual person. The authors compared translations and reached a consensus. After that, the Turkish form was back-translated to English by two independent English language experts, one of whom was a bilingual. In the final stage, all three researchers discussed any semantic differences by reviewing all items in Turkish and English.

Anxiety

The Symptom Checklist 90-R (SCL-90-R) is a 90-item multidimensional instrument designed to screen for a broad range of psychological problems by Derogatis and Cleary (1977). Each of the 90 items is scored on a 5-point Likert scale of distress, ranging from 0 (not at all) to 4 (extremely). The scale has nine primary symptom dimensions: Somatization, Obsessive-Compulsive, Interpersonal Sensitivity, Depression, Anxiety, Anger-Hostility, Phobic Anxiety, Paranoid Ideation and Psychoticism. The validity and reliability of the Turkish version of the scale was investigated by Dağ (1991). Cronbach's α of the Turkish version of the SCL-90-R was 0.97. The SCL-90-R anxiety subscale was used in this study and it consists of 10 items associated with excessive anxiety and panic attacks. Cronbach's α for the current total sample was 0.91.

Fear of COVID-19

The Fear of COVID-19 Scale (FCV-19S) was developed by Ahorsu et al. (2020) and adapted to Turkish language by Bakioğlu et al. (2020) and Satici et al. (2020). The FCV-19S is a 7-item self-report instrument to measure the severity of COVID-19 fear. Items in the scale are scored on a 5-point Likert scale ranging from 1 (Strongly disagree) to 5 (Strongly agree). Cronbach's alpha internal consistency coefficient of the original scale was 0.82. Cronbach's alpha for Turkish version was 0.88. The Cronbach's α for the current total sample was 0.86.

Resilience

The Brief Resilience Scale (BRS) was developed by Smith et al. (2008) and adapted to Turkish by Doğan (2015) to measure the level of individual resilience. The scale is a 6-item self-report instrument. Items in the scale are scored on a 5-point Likert-type scale. After the reverse items in the scale were coded, high scores indicate high psychological resilience. The internal consistency of the original scale was good, Cronbach's alpha ranging from 0.80–0.91. Cronbach's alpha of the Turkish version of the scale was 0.83. Cronbach's α for the current total sample was 0.85.

Procedure

After receiving the permission from its authors, the CORPD was translated from English to Turkish. University research ethics board and the Ministry of Health Scientific Research Platform in Turkey approved this study. The procedures of the study complied with the provisions of the Declaration of Helsinki regarding research on human participants. Participants were informed about the research and ethical considerations. Participants were recruited through email and social media platforms. The data were collected via Google Forms from August 27 to September 14, 2020.

Data analysis

Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were run to examine the factor structure of the CORPD. EFA and CFA require different samples from each other and, EFA is used to explore possible factors, whereas CFA is used to confirm the hypothesized factor structure (Kahn, 2006; Yaşlıoğlu, 2017). Due to the requirement that these two consecutive analyses should not be performed in the same sample, the total sample was randomly split into two subsamples of approximately equal size. First, EFA was run in order to explore factor structure of the scale, then CFA was performed for purpose of testing the hypothesized structure in a separate sample. Subsample 1 ($n = 394$) was used for EFA and Subsample 2 ($n = 386$) for CFA. The data analysis was performed using SPSS (v. 25) AMOS (v. 24). Before the analysis, the data were put through a data cleaning process. In this process, unreliable 14 cases were removed from the dataset due to careless responses in reverse coded items. Although there were reverse coded items in the survey package (e.g. "It does not take me long to recover from a stressful event," "I tend to take a long time to get over set-backs in my life"), some respondents consistently respond with the same answer (strongly agree "5") for all statements in the survey package and at the same time used randomly inappropriate numerical expressions in lexical questions in the sociodemographic questionnaire have been evaluated as careless responses. It was considered that these participants might have marked the statements without reading them. Careless responding can result in potentially erroneous factor results and, misreading items or responding without reading items will invalidate a protocol (Johnson, 2005; Meade & Craig, 2012). Assumption of normality of items before performing exploratory and confirmatory factor analyses was checked. In order to determine extreme values in the subsamples, item scores were standardized by calculating their z scores and Mahalanobis' distance. Five cases which were observed as univariate outliers were excluded from subsample 1. Fourteen cases which were determined as multivariate outliers by using Mahalanobis' distance ($p<.001$) were removed from subsample 2. We then examined to assess normality by computing skewness and kurtosis statistics. It was observed that each variable showed a normal distribution (George & Mallery, 2019). Cronbach α and Guttman Split-Half Coefficient were used to evaluate the internal consistency and reliability. Correlations between scores on the CORPD and SCL-90-R anxiety subscale, FCV-19S, and BRS were examined for further information about the construct validity of the CORPD in the total sample. Independent samples t test and one-way analysis of variance (ANOVA) were conducted to investigate score differences in different demographic groups.

Results

Exploratory factor analysis

We investigated the factor structure of the CORPD using Exploratory Factor Analysis (EFA) using subsample 1 ($n = 394$). In EFA, all 14 items on CORPD were subjected to principal components factoring and varimax rotation. Kaiser-Meyer-Olkin value was 0.90 and Bartlett's test of sphericity was significant, χ^2 (df = 91)=2074.19, $p<.001$, supporting a rationale for performing EFA. The number of factors to extract was based on eigenvalues greater than one rule and scree plot test. When the two-factor solution were examined, it was determined that item 1 had low factor loading and item-total correlation (<0.32). We evaluated statistically meaningful loadings by using the criteria that if the loadings are ±0.32, they are adequate, and if the loadings are ±0.50 or greater, they are considered practically significant (Peterson, 2000). Additionally, item 5 loaded on two factors at the same time. It was deemed appropriate to exclude these two items from the Turkish version of the CORPD.

After item 1 ("If I were infected with COVID-19, I might not be able to recovery from it") and item 5 ("When I see someone sneeze, I suspect s/he might be infected with COVID-19") were removed from the scale, the EFA was run. Kaiser-Meyer-Olkin value was 0.89 and Bartlett's test of sphericity was significant, χ^2 (df = 66)=1819.32, $p<.001$. The results yielded a two-factor solution with eigenvalues of 5.27 and 1.21. The total variance explained was accounted as 54.03%. As seen in Table 2, the factor loadings of the twelve items ranged between 0.563 and 0.794, suggesting that each item substantially contributes to the factor at good and excellent levels. In addition, items 2, 7, and 11 loaded on different factors from the original scale. We tested the model as we obtained from EFA.

Confirmatory factor analysis

We tested the model emerged from EFA of the CORPD by analyzing the second subsample of 386 participants. We performed CFA to estimate the two-factor measurement model using maximum likelihood estimation in AMOS. The hypothesized measurement

Table 2. Descriptive statistics and factor loadings for the 12 items of the CORPD ($n = 394$).

CORPD item	Mean	SD	Skew	Kurt	Item-total correlation	Factor loading 1	Factor loading 2
Factor 1: Suspicion							
10. When I see someone vomiting, I suspect s/he might be infected with COVID-19.	3.01	0.05	0.19	−0.73	0.551	**0.794**	
11. I fear to live nearby a COVID-19 isolation hospital.	3.05	0.06	−0.01	−1.21	0.521	**0.708**	
12. When I see someone coughing, I suspect s/he might be infected with COVID-19.	3.50	0.05	−0.60	−0.38	0.666	**0.706**	0.336
7. I fear to see the doctors and nurses who had worked in COVID-19 isolation wards.	3.16	0.06	−0.20	−1.06	0.564	**0.612**	0.281
9. When I notice someone running a fever, I suspect s/he might be infected with COVID-19.	3.88	0.04	−0.97	0.73	0.678	**0.602**	0.466
13. When I see someone without a mask, I suspect s/he might be infected with COVID-19.	2.86	0.05	0.15	−0.94	0.534	**0.592**	0.271
14. I suspect there were novel coronavirus in the air when there were people around.	3.13	0.05	−0.15	−0.92	0.626	**0.563**	0.427
Factor 2: Fear & anxiety							
4. When I see an increase in the number of COVID-19 patients on the news, I feel anxious.	4.01	0.05	−1.32	1.45	0.598		**0.793**
3. I'm afraid to travel to places hard-hit by COVID-19.	4.04	0.05	−1.22	0.97	0.596	0.200	**0.771**
6. I think frequent hospital visits would make it easier to be infected with COVID-19.	4.03	0.04	−1.22	1.49	0.538	0.211	**0.687**
8. I think frequent use of air, train, bus and other public transport would make it easier to be infected with COVID-19.	4.25	0.03	−1.14	1.46	0.546	0.246	**0.658**
2. When talking to a stranger, I would suspect that s/he might be infected with COVID-19.	3.68	0.05	−0.86	0.22	0.540	0.279	**0.612**
Eigenvalues						5.270	1.214
Explained variance (%)						27.430	26.603
Explained total variance						54.033	

Bold values indicate that the item loads highly on which factors.

Table 3. Fit indices for structural equation model of the CORPD Turkish form.

	Two factor model	Two factor modified model	Threshold
GFI	0.919	0.944	>0.90
AGFI	0.881	0.913	>0.90
RMR	0.057	0.050	<0.05
RMSEA	0.086	0.066	<0.06
CFI	0.916	0.953	>0.90
NFI	0.890	0.928	>0.90
TLI	0.896	0.938	>0.90
IFI	0.917	0.953	>0.90
PNFI	0.715	0.703	>0.50
PGFI	0.625	0.605	>0.50
SRMR	0.050	0.044	<0.05

model provided satisfactory model fit. The model showed the following fit indices: Chi-square fit value of χ^2=203.046, χ^2/df value of 3.83 for the model fit. The goodness of fitness values were RMSEA = 0.08, SRMR = 0.05, AGFI = 0.88, NFI = 0.89, IFI = 0.91, GFI = 0.91, CFI = 0.91, TLI = 0.89.

Following the modification suggestions, we drew covariances between error terms of item 6 and 8, 7 and 11, 9 and 13 which yielded an improved model. In the final model, we obtained a chi-square fit value of χ^2 = 134.196, χ^2/df value of 2.68 for the model fit. The goodness of model fit values were RMSEA = 0.06, SRMR = 0.04, AGFI = 0.91, NFI = 0.92, IFI = 0.95, GFI = 0.94, CFI = 0.95, TLI = 0.93 (Table 3). These values suggest a good-data fit level (Hu & Bentler, 1999).

The final model is specified in Figure 1. As illustrated in the figure, the standardized factor loadings ranged from 0.50 to 0.81 for the suspicion factor and from 0.66 to 0.74 for the fear and anxiety factor. All loadings were significant at p<.001. The correlation between the two dimensions was 0.82.

Reliability

We estimated internal consistency reliability using Cronbach's α and Guttman split-half coefficient across two subsamples and the total sample. Results are presented in Table 4. The reliability ranged from 0.75 to 0.83 for the suspicion dimension, from 0.64 to 0.83 for the fear and anxiety dimension, and from 0.80 to 0.88 for the total scale. There was a satisfactory internal reliability for the CORPD Turkish Form.

Correlations with Other Variables

In the criterion validity test, Pearson correlation coefficients were calculated between CORPD total and subscale scores and the total scores of SCL-90-R anxiety factor, FCV-19S, and BRS on the total sample. As seen as Table 5, the total and subscale scores of the CORPD were significantly positively correlated with SCL-90-R anxiety, FCV-19S, and significantly negatively correlated with BRS. Additionally, the 780

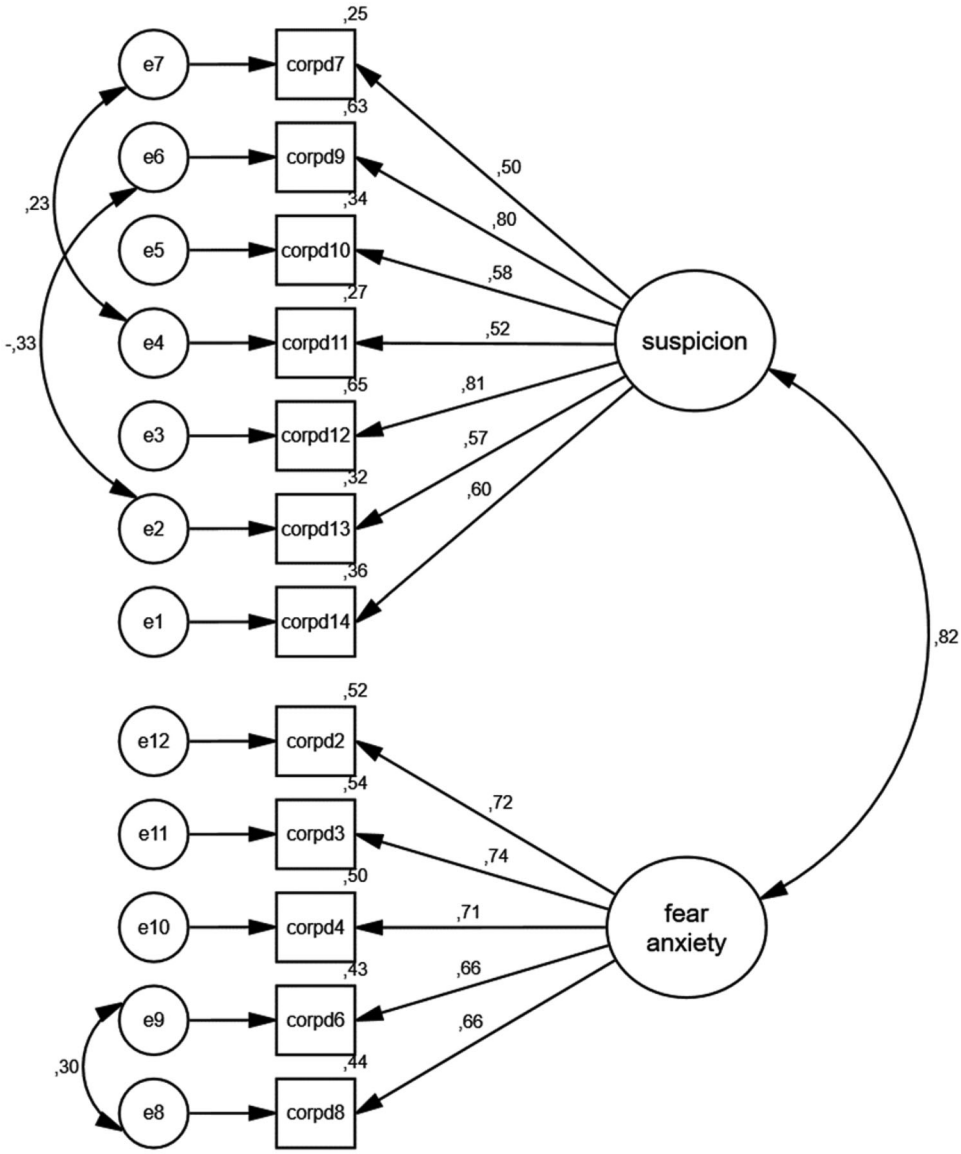

Figure 1. The standardized factor loadings for the final model.

participants were divided into a negative ($n = 715$) and a positive group ($n = 65$) based on the standard score of SCL-90-R anxiety scale. The score of anxiety below 2 points was defined as negative, and a score which was ≥ 2 points was defined as positive. Independent samples t test showed that there were statistically significant differences between the two groups in the scores of suspicion dimension ($M = 22.21$, $SD = 5.29$ vs. $M = 25.96$ $SD = 5.71$), $t(778) = 5.43$, $p < .001$ Cohen's $d = 0.68$), in the scores of the fear and anxiety dimension ($M = 19.91$, $SD = 3.55$ vs. $M = 21.33$, $SD = 3.84$, $t(778) = 3.08$, $p = .002$, Cohen's $d = 0.38$), and in the CORPD total scores ($M = 42.12$, $SD = 8.07$ vs. $M = 47.30$, $SD = 8.96$, $t(778) = 4.90$, $p < .001$, Cohen's $d = 0.60$). The results suggested that the CORPD Turkish Form has a good criterion validity.

Subgroup analysis

The independent samples t-test and one-way ANOVA were performed to measure the mean differences in subgroups on the full sample. There were statistically significant differences in CORPD total scores between sex and age subgroups ($p < .001$, $p = .035$) (see Table 6). There were no statistically significant differences among the subgroups in nationality, education level, marital status, residential area, monthly income level, having chronic illness or not, supporting children or not, and supporting seniors or not ($p > .05$).

Discussion and conclusion

We aimed to adapt the scale to evaluate the psychological distress of people not infected with COVID-19 and their negative impact on them. In general, the

Table 4. Internal reliability coefficients.

Scale/Dimension	Cronbach's α			Guttman split-half coefficient		
	Subsample1 (*n* = 394)	Subsample2 (*n* = 386)	Total sample (*n* = 780)	Subsample1 (*n* = 394)	Subsample2 (*n* = 386)	Total sample (*n* = 780)
CORPD total	0.880	0.883	0.881	0.806	0.832	0.819
Suspicion	0.836	0.811	0.824	0.793	0.759	0.776
Fear & anxiety	0.798	0.831	0.814	0.644	0.722	0.682

Table 5. Descriptive statistics and correlation analysis.

Variable	*N*	*M*	*SD*	Skew	Kurt	1.	2.	3.	4.	5.	6.	7.
1. CORPD total	780	42.55	8.27	−0.55	0.87	–						
2. CORPD suspicion	780	22.52	5.42	−0.24	0.15	0.946**	–					
3. CORPD fear & anxiety	780	20.02	3.59	−10.12	10.87	0.872**	0.666**	–				
4. SCL-90-R-anxiety	780	8.24	6.55	0.98	0.44	0.287**	0.284**	0.231**	–			
5. FCV-19S	780	18.19	5.52	0.25	−0.18	0.565**	0.528**	0.503**	0.542**	–		
6. BRS	780	20.40	4.63	−0.30	0.27	−0.175**	−0.174**	−0.139**	−0.435**	−0.409**	–	
7. Age	779	36.82	11.74	0.82	0.23	−0.069	−0.052	−0.081*	−0.098**	−0.029	0.211**	–

*Correlation is significant at the 0.05 level (2-tailed); **Correlation is significant at the 0.01 level (2-tailed).

Table 6. Scores of the CORPD in populations with different sociodemographic.

Variable	*N*	CORPD total score	*SD*	*t*	*p*
Sex					
Female	543	43.27	8.52	3.94	< .001
Male	237	40.89	7.40		
Age					
<45	594	42.94	8.10	2.11	.035
≥45	185	41.48	8.45		

results demonstrated that the CORPD had a two-factor structure, good internal consistency reliability, convergent and discriminant validity, and confirmation of sex and age differences. The two-factor structure obtained from EFA in subsample1 ($n = 394$) and tested via CFA in subsample 2 ($n = 386$) suggests that the Turkish version of CORPD is a 12-item multidimensional scale covering fear-anxiety and suspicion aspects related to COVID-19 psychological distress. Factor loadings of the scale items ranged between 0.50 and 0.81. Our results suggest that the Turkish version of the CORPD was slightly different from the original instrument CORPD (Feng et al., 2020). Although, each item substantially contributes to the factor at good levels in our findings, items 2, 7, and 11 loaded on different factors from the original scale. We interpreted that different factor loadings might be due to cultural differences.

The reliability findings of the current study were satisfactory and similar to the original scale. The Cronbach's α coefficient for the CORPD was 0.88, which was the same as the internal reliability score ($\alpha = 0.88$) obtained in the original investigation (Feng et al. 2020). Additionally, the Guttman split-half coefficient was calculated as 0.81 for the entire sample in our findings, which was similar to the Guttman split-half coefficient of the original scale (0.90).

Our validation findings show that total and subscale scores of the CORPD were significantly positively correlated with SCL-90-R anxiety, FCV-19S, and significantly negatively correlated with BRS. Psychological distress caused by COVID-19 was also associated with negative symptoms and fear of the disease (Feng et al., 2020). It was also seen that individuals with higher levels of resilience are more likely to deal with stressful events (Haktanir et al., 2016; Smith et al., 2017). These findings indicate that the CORPD Turkish form has expected convergence and divergence with related concepts providing support for the scale's construct validity.

Our study results show that there are statistically significant differences in subgroups of different sex and age. According to our study, females reported higher CORPD scores than men. Similarly, females had higher CORPD scores than males in the original research of the scale (Feng et al., 2020). Recent studies also showed that females suffered from a bigger psychological effect of the pandemic along with higher levels of anxiety, stress, and depression (Wang et al., 2020; Haktanir et al., 2020). In the study conducted by Yıldırım and Güler (2020), women's emotional risk, overall risk and severity in relation to coronavirus were significantly high. Evren et al. (2020) reported that women had higher COVID-19 anxiety scores than men. We found that participants who were aged below 45 years old reported higher CORPD scores. On the contrary, Feng et al. (2020) reported that 45 years old and above had higher CORPD scores than those below 45 years. Another study which was carried out in Turkey showed no significant difference in coronavirus fear scores among age groups (Haktanir et al., 2020).

In our study, there were no statistically significant differences among the subgroups in nationality, education level, marital status, residential area, monthly income level, having chronic illness or not, supporting children or not, and supporting seniors or not in our study. Similarly, the results of a recent study showed that there were not significant differences across chronic illness status, age levels, and educational level (Haktanir et al., 2020). However, Wang et al. (2020) found in their study in Pakistan that people with a high level of education, men and individuals over the age of 35, who make up the workforce, feel more anxious day by day due to the coronavirus. Additionally, Feng et al. (2020) found that CORPD scores differ according to education level, marital status, monthly income level, and having children to support or not. Though the married participants, those who had chronic illness, those who supported children, and those who supported dependent seniors reported high levels of COVID-19 related psychological distress, our analysis revealed that these differences were not statistically significant and that individuals reported similar levels of COVID-19 related psychological distress. Unequal sample sizes in some sub-groups might have caused the statistically non-significant difference.

In conclusion, the results provide primary evidence that the scale has promising reliability, validity, and psychometric properties in Turkish language. Nevertheless, our study has some limitations. The current study sample was drawn from the general Turkish population consisting of non-diagnosed people. It will be useful that future studies test the findings with various populations as well as infected patients and people with psychiatric diagnosis. Similarly, our study findings were limited to the adult population. It can be recommended that the future studies should also be carried out on children. Furthermore, our study was solely based on self-report measures. The self-report instruments might be affected by social biases. The results can be replicated and tested in longitudinal research.

ORCID

Tuğba Ay http://orcid.org/0000-0002-9147-3625
Deniz Oruç http://orcid.org/0000-0001-9088-6623
Asil Ali Özdoğru http://orcid.org/0000-0002-4273-9394

References

Ahorsu, D. K., Lin, C., Imani, V., Saffari, M., Griffiths, M. D., & Pakpour, A. H. (2020). The fear of COVID-19 scale: Development and initial validation. *International Journal of Mental Health and Addiction*, 1–9. https://doi.org/10.1007/s11469-020-00270-8.

Arpaci, I., Karataş, K., & Baloğlu, M. (2020). The development and initial tests for the psychometric properties of the COVID-19 Phobia Scale (C19P-S). *Personality and Individual Differences*, *164*, 110108–110106. https://doi.org/10.1016/j.paid.2020.110108

Bakioğlu, F., Korkmaz, O., & Ercan, H. (2020). Fear of COVID-19 and positivity: Mediating role of intolerance of uncertainty, depression, anxiety, and stress. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-020-00331-y

Carver, C. S. (2010). Resilience and thriving: Issues, models, and linkages. *Journal of Social Issues*, *54*(2), 245–266. https://doi.org/10.1111/j.1540-4560.1998.tb01217.x.

Dağ, I. (1991). Belirti Tarama Listesi (Scl-90-R)'nin Üniversite Öğrencileri için güvenirliği ve geçerliği [Reliability and validity of the Symptom Check List (SCL-90-R) for university students. *Türk Psikiyatri Dergisi*, *2*(1), 5–12.

Derogatis, L. R., & Cleary, P. A. (1977). Confirmation of the dimensional structure of the SCL-90: A study in construct validation. *Journal of Clinical Psychology*, *33*(4), 981–989. https://doi.org/10.1002/1097-4679(197710)33:4<981::AID-JCLP2270330412>3.0.CO;2-0.

Doğan, T. (2015). Adaptation of the Brief Resilience Scale into Turkish: A validity and reliability study. *The Journal of Happiness & Well-Being*, *3*(1), 93–102.

Evren, C., Evren, B., Dalbudak, E., Topcu, M., & Kutlu, N. (2020). Measuring anxiety related to COVID-19: A Turkish validation study of the Coronavirus Anxiety Scale. *Death Studies*. https://doi.org/10.1080/07481187.2020.1774969

Feng, L. S., Dong, Z. J., Yan, R. Y., Wu, X. Q., Zhang, L., Ma, J., & Zeng, Y. (2020). Psychological distress in the shadow of the COVID-19 pandemic: Preliminary development of an Assessment Scale. *Psychiatry Research*, *291*, 113202–113202. https://doi.org/10.1016/j.psychres.2020.113202.

George, D., & Mallery, P. (2019). *IBM SPSS statistics 26 step by step: A simple guide and reference* (pp.112–114). Routledge.

Güngör, D. (2016). Psikolojide ölçme araçlarının geliştirilmesi ve uyarlanması kılavuzu [A guide to scale development and adaptation in psychology]. *Türk Psikoloji Yazıları*, *19*(38), 104–112.

Haktanir, A., Lenz, A. S., Can, N., & Watson, J. C. (2016). Development and evaluation of Turkish language versions of three positive psychology assessments. *International Journal for the Advancement of Counselling*, *38*(4), 286–297. https://doi.org/10.1007/s10447-016-9272-9.

Haktanir, A., Seki, T., & Dilmaç, B. (2020). Adaptation and evaluation of Turkish version of the fear of COVID-19 scale. *Death Studies*. https://doi.org/10.1080/07481187.2020.1773026

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55. https://doi.org/10.1080/10705519909540118.

Johnson, J. A. (2005). Ascertaining the validity of individual protocols from Web-based personality inventories.

Journal of Research in Personality, *39*(1), 103–129. https://doi.org/10.1016/j.jrp.2004.09.009.

Kahn, J. H. (2006). Factor analysis in counseling psychology research, training, and practice: Principles, advances, and applications. *The Counseling Psychologist*, *34*(5), 684–718. https://doi.org/10.1177/0011000006286347.

Lin, C. Y. (2020). Social reaction toward the 2019 novel coronavirus (COVID-19). *Social Health and Behavior*, *3*(1), 1–2. https://doi.org/10.4103/SHB.SHB_11_20.

Losada-Baltar, A., Jiménez-Gonzalo, L., Gallego-Alberto, L., Pedroso-Chaparro, M. D. S., Fernandes-Pires, J., & Márquez-González, M. (2020). "We're staying at home". Association of self-perceptions of aging, personal and family resources and loneliness with psychological distress during the lock-down period of COVID-19. *The Journals of Gerontology: Series B*, *20*(20), 1–7. https://doi.org/10.1093/geronb/gbaa048.

Meade, A. W., & Craig, S. B. (2012). Identifying careless responses in survey data. *Psychological Methods*, *17*(3), 437–455. https://doi.org/10.1037/a0028085

Milman, E., Lee, S. A., & Neimeyer, R. A. (2020). Social isolation as a means of reducing dysfunctional coronavirus anxiety and increasing psychoneuroimmunity. *Brain, Behavior, and Immunity*, *87*, 138–139. https://doi.org/10.1016/j.bbi.2020.05.007.

Peterson, R. A. (2000). A meta-analysis of variance accounted for and factor loadings in exploratory factor analysis. *Marketing Letters*, *11*(3), 261–275. https://doi.org/10.1023/A:1008191211004.

Republic of Turkey Ministry of Health. (2020). *Türkiye'deki güncel durum.* Retrieved 19 November 2020 from https://covid19.saglik.gov.tr.

Satici, B., Gocet-Tekin, E., Deniz, M. E., & Satici, S. A. (2020). Adaptation of the Fear of COVID-19 Scale: Its association with psychological distress and life satisfaction in Turkey. *International Journal of Mental Health and Addiction*. https://doi.org/10.1007/s11469-020-00294-0

Smith, B. W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Jennifer Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*, *15*(3), 194–200. https://doi.org/10.1080/10705500802222972.

Smith, L. B., Lenz, A. S., & Strohmer, D. (2017). Differential prediction of resilience among individuals with and without a history of abuse. *Counseling and Values*, *62*(1), 106–122. https://doi.org/10.1002/cvj.12052.

Sousa, V. D., & Rojjanasrirat, W. (2011). Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: A clear and user-friendly guideline. *Journal of Evaluation in Clinical Practice*, *17*(2), 268–274. https://doi.org/10.1111/j.1365-2753.2010.01434.x.

Tusaie, K., & Dyer, J. (2004). Resilience: A historical review of the construct. *Holistic Nursing Practice*, *18*(1), 3–10. https://doi.org/10.1097/00004650-200401000-00002.

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International Journal of Environmental Research and Public Health*, *17*(5), 1729. https://doi.org/10.3390/ijerph17051729.

Yaşlıoğlu, M. M. (2017). Sosyal bilimlerde faktör analizi ve geçerlilik: Keşfedici ve doğrulayıcı faktör analizlerinin kullanılması [Factor analysis and validity in social sciences: Application of exploratory and confirmatory factor analyses. *Istanbul University Journal of the School of Business*, *46*, 74–85.

Yıldırım, M., & Güler, A. (2020). Factor analysis of the COVID-19 perceived risk scale: A preliminary study. *Death Studies*. https://doi.org/10.1080/07481187.2020.1784311

Zandifar, A., & Badrfam, R. (2020). Iranian mental health during the COVID-19 epidemic. *Asian Journal of Psychiatry*, *51*, 101990. https://doi.org/10.1016/j.ajp.2020.

Zhang, J., Wu, W., Zhao, X., & Zhang, W. (2020). Recommended psychological crisis intervention response to the 2019 novel coronavirus pneumonia outbreak in China: A model of West China Hospital. *Precision Clinical Medicine*, *3*(1), 3–8. https://doi.org/10.1093/pcmedi/pbaa006.

Zhu, S., Wu, Y., Zhu, C. Y., Hong, W. C., Yu, Z. X., Chen, Z. K., Chen, Z. L., Jiang, D. G., & Wang, Y. G. (2020). The immediate mental health impacts of the COVID-19 pandemic among people with or without quarantine managements. *Brain, Behavior, and Immunity*, *87*, 56–58. https://doi.org/10.1016/j.bbi.2020.04.045.