



Development of Social Distancing Phobia Scale and Its Association with Anxiety and Perceived Stress

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Abstract

The aim of the present study is to develop the social distancing phobia scale and is to determine the role of generalized anxiety disorder of the individual in predicting social distancing phobia and perceived stress. The sample of the study consists of 1260 people selected according to the convenience sampling method. Social distancing phobia scale, generalized anxiety disorder, perceived stress scale, and positive negative emotion scale were used in the study. As a result of the analysis, this scale consists of 17 items with three factors including “physiological, emotional, and behavioral response.” With its psychometric properties in assessing the three-sub-dimensional construct of the social distancing phobia scale, this scale will help to provide a better understanding of the emotions and psychological or psychiatric disorders during the COVID-19 pandemic. In addition, generalized anxiety disorder was found to significantly predict perceived stress and social distancing phobia.

Keywords COVID-19 · Social distance · Phobia · Social distancing phobia

Introduction

The COVID-19 virus, which emerged in Wuhan, China, in December 2019, affected people around the world. In addition, due to the very high infection rate of COVID-19, individuals should continue to follow three basic rules: mask, social distance, and hygiene (Gabutti et al., 2020; Shahbaz et al., 2020). Social distance is one of the concepts that emerged with the pandemic. Especially due to the asymptomatic nature of the pandemic, social distance may cause the individuals to make excessive efforts to protect themselves and to develop fear of the virus (Fernandez et al., 2020). This fear can reach the maximum level when individuals go out. Individuals may even experience an extreme and unrealistic fear of not being able to maintain social distance with other people in social life (Üstün & Özçiftçi, 2020). For this reason, excessive effort to be protected from the virus can be effective in the emergence of unrealistic fears in some individuals (Duan & Zhu, 2020). Thus, phobia reveals avoidance behaviors in the person and significantly affects their life and restricts the

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people socially (Wu et al., 2009). So the social distance is the most important rule among these three rules because individuals are responsible for using a mask and paying attention to hygiene rules. However, the social distancing rule is not a rule that individuals can achieve only by obeying alone. Social distancing is a rule that other people must follow in social life (Canatan, 2020; Chen et al., 2020; Finkelstein et al., 2010)

During the COVID-19 pandemic era, it was found that the epidemic had serious negative effects (stress, anxiety disorder, depressive symptoms, and obsessive behaviors) on the mental health of the individual (Cai et al., 2020; Duan & Zhu, 2020; Fardin, 2020; Huang & Zhao, 2020; Mertens et al., 2020; Nasir et al., 2021). In a study, it was found that the social distancing rule causes obsessive–compulsive behaviors in households and that the pandemic lasts longer than expected causing excessive and unwarranted fear in the household (Yurtkulu and Akçay, 2021). Therefore, fear of COVID-19 important of most studied and frequently observed negative psychological effects in humans during the pandemic period (Gonzalez-Sanguino et al., 2020; Guan et al., 2020; Hui et al., 2020; Naeem et al., 2020; Pakpour & Griffiths, 2020). These problems begin with fear and anxiety, and feeling these problems, excessively, can be effective in the deterioration of the individual's mental health (Abdullah et al., 2020; Ahorsu et al., 2020; Oral and Gunlu, 2021; Gunlu, 2021). Thus, this situation prepares the ground for the formation of involuntary extreme fear in the individual (Dubey et al., 2020). The long duration of the fear that occurs involuntarily is effective in experiencing the phobic situation. Therefore, stress, anxiety, and depression disorders are considered among psychological disorders that are effective in accelerating the emergence of some phobias (Duan & Zhu, 2020).

Phobia is an individual's excessive anxiety and anxiety about a situation or object (APA, 2013). Phobia is included in the class group of anxiety and anxiety disorders in DSM-V. Phobia is the involuntary intense fear and avoidance behavior of an individual even though individual knows that individual should not be afraid (Fernandez et al., 2020). Phobias are divided into three groups as against a certain object (insect, snake, etc.), against a certain situation (elevator, indoor space, height, etc.), and against a certain phenomenon (social phobia, etc.) (Isaac & Mataix-Cols, 2004). Phobias that arise against a particular object or situation are also considered in the specific phobia category (Sadock, & Sadock, 2005). In order for the fear developed against a situation or object to be defined as a phobia, it needs to continue for a longer period than the usual and temporary fear. In addition, an individual's experience of disproportionate fear and anxiety in the face of a situation is sufficient for the individual to be described as a phobia (APA, 2013).

Individuals' disorders such as fear, panic, anxiety, depression, and obsession increase in epidemics such as H1N1, SARS, and MERS (Hu et al., 2020; Kim, & Song, 2017; Li, et al., 2020; Tausczik et al., 2012). Indeed, COVID-19 pandemic era and its anxiety symptoms increase phobic reactions (Paol, et al., 2020). However, it is known that in pandemics, individuals' phobic reactions are triggered in major natural events (Furedi, 2014; Witthauer et al., 2016). During the SARS and MERS era, people were extremely afraid of infection, and even phobic reactions may be seen in some individuals (Jeong, et al., 2016). Researchers emphasize that even though the pandemic is under control, psychological disorders will continue to be seen in individuals until a certain period of time has passed (Duan, & Zhu, 2020; Ornell et al., 2020; Steinberg, & Daniel, 2020). Due to the asymptomatic feature of COVID-19, the stress and anxiety of the individual may increase because the individual does not know whether they carry the virus (Aslan, 2020; Gunlu et al., 2021; Güven, 2020; Kissler et al., 2020). Many countries and regions have seen increases in the number of cases as social distance policies have been relaxed. Some doctors believed that social distance policies may be needed for up to several years (Lonergan & Chalmers, 2020). Due to

the over-protection behavior from the virus, the effort to keep the distance between people and their surroundings is increasing. For this reason, people can experience intense fear and take the process out of their control. This attitude can lead towards a phobic situation. COVID-19 is the longest-running virus among the types of coronavirus seen from the past to date and affects the whole world. The continuing effect of COVID-19 and the fact that the third wave is experienced show that perceptions about COVID-19 need to be examined in depth. Thus, previous researchers developed and validate varied scales measuring (such as Fear of COVID-19 Scale (Ahorsu et al., 2020), COVID-19 Anxiety Scale (Biçer et al., 2020)). In addition, the most effective ways in psychological health are the activation of the necessary prevention and intervention services without deteriorating health (Gao et al., 2020).

Social Distancing Phobia

It has been observed that the COVID-19 pandemic has caused some individuals to have excessive fears; so these individuals need to constantly control the distance between other people on the street because these people have been experienced excessive stress and tension in maintaining social distancing with people in shopping and markets in order not to bring viruses to the house (Pakpour et al., 2020). This sometimes comes to such a level that the functionality of the individual may be impaired. Although the individuals are aware of the extreme situation, they cannot act. This situation leads the individual towards the phobic situation (Lee et al., 2016). It is suggested by the researcher to define this situation as “social distancing phobia.” “Sodisphobia” is a term abbreviated for the social distancing phobia suggested by the researcher. However, it is suggested that people with social distancing phobia should be named “sodisphobic.” It can be defined as people who experience excessive anxiety of getting virus while using common areas in social life. Since the individual has the behavior of constantly controlling his environment due to social distancing phobia, he does not fully focus on the task that he has to do at that time. It may cause adverse effects (Dixit, et al., 2010).

When the literature is reviewed, no concept has been found to be used in defining this phobic tendency experienced during the pandemic period. As the theoretical basis of the social distancing phobia has been explained above, it is thought that the individuals is concerned about not being able to maintain the physical distance between themselves and the other people with a momentary absenteeism (Kıyıcı, 2021). The individual does not need to be in contact for social distancing phobia to occur because the virus can be transmitted by approaching any infected person in cases where social distancing cannot be maintained without touching. Therefore, based on the current research data, it is thought that the phobia experienced in pandemic situations can be conceptualized with the concept of social distancing phobia. In addition, when the relevant literature is scanned, it is seen that the DSM-V-specific phobia diagnostic criterion can also be used for social distancing phobia (Arpaci et al., 2020). The symptoms used in the definition of social distancing phobia include excessive anxiety, heart palpitations, dry mouth, dizziness, feeling of losing control, do not be in panic, sweat, excessive hygienic behavior when touching others because they have been infected, do not be afraid of other people, and not going out of the house to avoid contact with other people (DSM-V).

An important problem observed in infectious diseases is that the individuals tried to protect themselves from something they do not see. This situation seems to be a very difficult process for people. Therefore, it is important to determine the phobic tendencies of

individuals in these periods (Labrague & Santos, 2021). However, in the literature review, it was seen that there was no scale developed on social distancing phobia during the COVID-19 period and previous epidemic periods. In the literature, only one study used the concept of social distancing phobia. Social distancing phobia was used for the first time in a study by Gunlu (2021). In the study conducted by Gunlu, it was determined that the participants felt extremely stressed and tense when they were shopping or in environments where other people were present. In the event that this process is excessive, this situation may disrupt the functionality of the individual, as the process in which the individual is running escapes from control. Although the individual knows that this situation is unrealistic fear and anxiety, he cannot overcome the phobic tendency towards the virus. This situation is also expressed as somesphobia (Gunlu, 2021). And so, it is observed that a scale measuring phobic tendency is needed to meet this need in the literature. One aim of this research is to develop the social distancing phobia scale. Another aim of this research is to examine the role of generalized anxiety disorder of the individual in predicting social distancing phobia and perceived stress. determination of the level of prediction. With this scale, which has been added to the literature, it is thought that the current research is important in terms of determining the level of phobia experienced in individuals regarding compliance with social distancing and contributing to the planning of prevention and intervention programs necessary to comply with this rule in a healthy and conscious manner.

Methods

Design

This research was carried out to determine the psychometric properties of the sodisphobia scale developed to measure social distancing phobia. In addition, the study also examined whether generalized anxiety disorder significantly predicted perceived stress and social distancing phobia. Data were analyzed with SPSS 27 and AMOS 24 programs. In the analysis of the research data, correlation analysis, face validity, convergent, and discriminant validity, Kaiser–Meyer–Olkin Values for EFA, descriptive statistics, CFA for determining factor structure, measurement model, and finally multiple linear regression analysis were used in the prediction phase.

Participants

Participants in study 1, study 2, and study 3 were determined according to the convenience sampling method. Convenience sampling is a non-random sampling method in which the sample to be selected from the population is determined by the judgment of the researcher. In convenience sampling, data is collected from the population in the easiest, fastest and most economical way (Aaker et al., 2007; Malhotra, 2004). This method was preferred due to the COVID-19 pandemic. Participants were reached via the “Google online form” due to the pandemic. For this purpose, the survey link was sent to the participants through different communication channels, and the survey was filled in. The percentage of answering the questionnaire was determined as 85%. Since the current study is a three-stage study, a different sample group was used at each stage. Accordingly, a total of 1260 people were reached, 444 in study 1, 495 in study 2, and 321 in study 3 (Table 1).

Table 1 Demographic characteristics of the samples

Gender	Study 1		Study 2		Study 3	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Female	235	52.92	272	54.9	171	53.3
Male	209	47.08	223	45.1	150	46.7
Total	444	100	495	100	321	100

Study 1 is the sample of the Turkey's 35 provinces (five from each region) that constitutes a total of 444 people. 59.9% ($n=265$) of the participants were female, and 40.1% ($n=179$) were male. Their ages are between 18 and 55, and the average age is 27.36. Study 2 is the sample of Turkey's 35 provinces (five from each region) that constitutes a total of 444 people. 54.9% ($n=272$) of the participants were female, and 45.1% ($n=223$) were male. Their age is between 18 and 55, and the average age is 32.36. Study 3 is the sample of the Turkey's 35 provinces (five from each region) with a total of 321 subjects. 53.3% ($n=171$) of the participants were female, and 46.7% ($n=150$) were male. Their ages are between 18 and 55, and the average age is 29.23. Among the sample groups, the sample appearance and criterion validity in study 1 were used in the exploratory factor analysis (EFA) process, the sample group in study 2 was used in the confirmatory factor analysis (CFA) process, and finally, the sample group in study 3 was used in the process of testing the predictor role.

Data Collection Tools

Demographic questions were asked using a brief personal information questionnaire and social distancing phobia (sodisphobia) scale, generalized anxiety disorder test-7 (GAD-7), positive negative affect scale (PANAS), and perceived stress scale (PSS-10). These scales are explained in detail in there.

Personal Information Form

It is a form prepared by the researcher to obtain information about the participants' age, gender, education level, place of residence, profession, and whether they have been diagnosed with psychiatric disorders in the last six months.

Social Distancing Phobia (Sodisphobia) Scale

The sodisphobia scale is a self-report instrument with a 5-point Likert-type scale to assess the levels of social distancing phobia. The participants indicate their level of agreement with the statements using a five-item (always, very often, sometimes, rarely, and never) Likert-type scale. A total score is ranging from 17 to 85. In addition to the overall total score of the scale, the scores obtained in the subscales range from 4 to 20 for physiological response, from 8 to 40 for emotional response, and from 5 to 25 for behavioral response. Higher scores indicated a greater social distancing phobia in the respected subscales and total scale. Cronbach alpha reliability was calculated as 0.93 for the scale total score, 0.92 for the physiological response, 0.88 for the emotional response, and 0.86 for the behavioral

response. The validity and reliability analyses of the scale are presented in detail in study 1 and study 2.

Generalized Anxiety Disorder Test-7 (GAD-7)

Generalized anxiety disorder test was developed by Spitzer et al. (2006) and adapted into Turkish by Konkan et al., (2013). The scale is scored in 4-point Likert type (0-nothing, 3-almost always). The scores obtained from the scale are 5, 10, and 15 respectively, as cut-off points for mild, moderate, and severe anxiety. The Cronbach alpha value was calculated as 0.85 in the adaptation study of the scale and 0.91 in the present study.

Positive Negative Affect Scale (PANAS)

Positive negative emotion scale (PANAS) was developed by Watson et al. (1988) and adapted into Turkish by Gençöz (2000). PANAS has two sub-dimensions: positive and negative emotion. In the scale, there are a total of 20 items, 10 items in each dimension. The items in the scale are scored in 5-point Likert type (“1-very little or no,” “5-a lot”). The lowest score that can be obtained from the scale varies between 10 and 50. The sub-dimensions of PANAS can be used alone. In the adaptation study, the Cronbach alpha value of the scale was calculated as 0.83 and 0.86 for the positive and negative emotion sub-dimensions, respectively. In the present study, the Cronbach alpha reliability of the scale was calculated as 0.85 and 0.81, respectively.

Perceived Stress Scale (PSS-10)

Perceived stress scale (PSS) was developed by Cohen et al. (1983) and adapted into Turkish by Eskin et al. (2013). PSS is a scale with 14 items and was developed to determine the level of individuals’ stressful situations. The scale is scored in 5-point Likert type (0-never, 4-very often). There are also two separate forms of PSS, 10 and 4 items. In the present study, the 10-item form of the PSS was used. Therefore, the scores that can be taken from the scale vary between 0 and 40. In the adaptation study, the Cronbach alpha reliability of the scale was calculated as 0.82; in the present study, the Cronbach alpha reliability value was calculated as 0.72.

Process

Research data were collected in February–March 2021 via the online Google form. Before starting the study, an application was made to Pamukkale University Social and Human Sciences Ethics Committee with a written petition. In the application, the research subject and documents were examined, and it was seen that it was in accordance with the general ethical rules during the relevant research and the necessary permission was granted with the number E-93803232–622.02–25,472. During the item development phase, related literature was reviewed. Specific phobia scales and DSM-V-specific phobia criteria in the literature were also taken into account.

Trans-cultural Process

In developing the scale, the points emphasized by Hambleton and Jong (2003) regarding the trans-cultural process were adhered to. Accordingly, for the main purposes of the study, the effects of cultural differences that are not related to the subject have been minimized as much as possible. An appropriate instruction was prepared for cultures (Appendix), and the language of the culture in question was used in instruction, rules, and articles (Scholz, 2011). In addition, in the development of the test, the selected test techniques, item formats, test structure, and procedures were chosen at a level that would be suitable for everyone. However, a systematic way was followed in terms of both language and psychology for the correct functioning of the testing process (Coster & Mancini, 2015). While the scale is used in different studies, a pilot application was made to predict possible problems and to prepare appropriate materials and teachings to solve these problems (Jesus & Valente, 2016).

Questionnaire Development and Pilot Study

In the scale development study, the first process was examined in detail in the related literature. As a result of the examination, it was decided which questions should be included in the question pool (Sakib et al., 2020). In this context, a total of 24 items including emotions, thoughts, and behaviors experienced on social distancing were prepared. While preparing the questions, based on the studies in the literature, expressions that could be items of the scale were used. The created item pool was examined by 3 academicians working in the field in terms of structure, content, comprehensibility, and similarities. As a result of this examination, 4 items were removed from the item pool due to clarity and similarity. The pilot implementation of the remaining 20-item scale was carried out with 103 participants. As a result of the analyses performed after the pilot implementation, three items whose loadings were greater were 0.40 removed from the scale, since it was not included in any sub-dimension in the explanatory factor analysis, and the study continued with 17 items. The scale is scored in 5-point Likert type (1-never, 5-always). The validity and reliability analyses of the scale are presented in detail in study 1.

Results

Study 1

Appearance Validity

It is the expert opinion taken from people working in the field to determine whether the items in the appearance validity measurement tool are related to the subject to be researched (Büyükoztürk, 2016). In the present study, for face validity, opinions were taken from three researchers who are in the field. An item list was sent to these researchers.

According to Büyükoztürk et al. (2013), the evaluations from experts in item suitability calculation should be calculated separately for each item, and the items to be included in the scale should be ≥ 0.90 . In line with this recommendation, items that should not be

Table 2 Conformity ratios of items in the scale

Item	Appropriate (%)
M1	93.3
M2	93.3
M3	96.6
M4	100.0
M5	96.6
M6	96.6
M7	100.0
M8	93.3
M9	93.3
M10	100.0
M11	100.0
M12	100.0
M13	96.6
M14	96.6
M15	96.6
M16	93.3
M17	93.3
M18	90.0
M19	90.0
M20	90.0

Table 3 Correlation coefficients between variables

	PANAS-negative emotions
Sodisphobia scale (total score)	0.22**
Physiological response	0.21**
Emotional response	0.19**
Behavioral response	0.18**

included in the scale were determined. The suitability levels of the items of each expert's feedback were calculated, and the values obtained are presented in the Table 2. Thus, unrelated or similar items (total 4 items) were removed from the scale form.

As seen in the Table 2, the scale form was made ready for application with the remaining 20 items.

Convergent and Discriminant Validity

PANAS, developed by Watson et al. (1988) and adapted into Turkish by Gençöz (2000), was used in the criterion validity study of the social distancing phobia scale. As a result of the analysis made with the data collected from 444 participants in the present study, the Cronbach alpha internal consistency reliability coefficient of PANAS was found as 0.85 for positive and 0.81 for negative. The correlation analysis made to determine the criterion-related validity of sodisphobia is shown in Table 3.

As seen in the Table 3, the correlation coefficients between the sodisphobia scale total score and the scores in the sub-dimensions and the PANAS-negative emotion scores of the participants ranged from 0.18 ($p < 0.01$) to 0.22 ($p < 0.01$). In other words, as the scores of the sodisphobia scale in general and its sub-dimensions increase, the scores in negative mood also increase. On the other hand, there was no relationship between the sodisphobia scale total score and the scores obtained from its sub-dimensions and positive emotion scores.

Exploratory Factor Analysis

Exploratory factor analysis (EFA) was conducted to determine the construct validity of the scale. Before EFA, the Kaiser–Meyer–Olkin (KMO) value was checked to make the analyses. It is necessary to fulfill the condition that KMO value should be 0.60 and ironed (Worthington & Whittaker, 2006). The KMO value obtained was found to be 0.92, and therefore, it was determined that it provided the necessary condition for the analysis. In addition, Bartlett sphericity test was performed, and it was found that the data showed a significant difference ($\chi^2 = 4974.02$, $sd = 136$, $p < 0.001$). In the analysis made to determine the number of factors, it was seen that there is a three-factor structure with an eigenvalue above 1. Descriptive statistics are reported in Table 4.

As seen in Table 4, kurtosis and skewness coefficients ranged within the threshold values ± 2 , and therefore, the data was normally distributed. The items in each factor, the variance explained by the factors, and eigenvalues are shown in Table 5.

As seen in Table 5, it is seen that the factor loads of the items of the scale are at an acceptable level. According to the results obtained, it is seen that the scale is three-dimensional. Eigenvalues were found to be 0.85 for emotional response, 0.86 for behavioral response, and 0.85 for physiological response. The Cronbach alpha reliability values were calculated as overall reliability of the scale 0.93 and 0.87 in the behavioral response sub-dimension, 0.94 in the emotional response sub-dimension, and 0.98 in the physiological response sub-dimension.

Study 2

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was conducted to determine whether the three-factor model determined as a result of EFA was verified (study 2). Study 2 was conducted with 495 participants. While doing CFA, path diagram, goodness of fit criteria, and correction suggestions were taken into consideration. Chi-square fit in CFA (X^2) and the ratio of chi-square to degrees of freedom, incremental fit index (IFI), normed fit index (NFI), comparative fit index (CFI), well-being fit index (GFI), adjusted goodness fit index (AGFI), root mean square error (RMR), and root mean square error (RMSEA) are among the most commonly used values (Bayram, 2016). In the present study, these values were evaluated for CFA.

CFA results performed for the social distancing phobia scale are presented in Fig. 1. It is seen that the standardized factor loads of the scale vary between 0.64 and 0.88. In cases where the values of the model do not have acceptable or good fit values, the program suggests some modifications (Şimşek, 2007). In the present study, it was determined that some values did not have acceptable or good fit values in the first step, and

Table 4 Statistics of sodisphobia scale items

Items	Mean	S.D	Skew	Kurt
M1. When I go outside, my heart beats faster when the distance between me, and someone is less than one meter	2.38	1.28	0.54	-0.79
M2. When I go out, I get excited when the distance between me, and someone is less than a meter	2.38	1.25	0.57	-0.69
M3. When I go out, and approach a person less than a meter away, my stomach hurts	1.74	1.11	1.43	1.09
M4. When I go out, and get less than a meter away from a person, my chest narrows	1.93	1.19	1.19	0.45
M5. When I go out, and someone I don't know coughs less than a meter away, I'm afraid I'll catch a virus	3.66	1.29	-0.61	-0.76
M6. When I go out, I worry about trying to keep my social distance with other people	3.03	1.36	0.01	-1.18
M7. The thought of keeping social distance with other people when I go out stresses me out	2.74	1.37	0.07	-1.17
M8. The thought of trying to maintain social distance with other people makes me uneasy	2.64	1.41	0.35	-1.17
M9. Trying to keep my social distance when I enter crowded environments worries me	2.82	1.37	0.17	-1.16
M10. When I go out, I immediately worry when the distance between me, and someone is less than a meter	2.89	1.34	0.12	-1.14
M11. When I go out, I get scared when the social distance between me, and someone is less than one meter	2.88	1.38	0.16	-1.21
M12. When I go out, I get worried when someone passes me very close (less than one meter)	2.91	1.31	0.14	-1.06
M13. When I go out, I take care to keep my distance so as not to approach a person less than one meter	4.05	1.19	-1.11	0.18
M14. When I go out, I make an effort to keep my social distance with other people	4.11	1.12	-1.12	0.35
M15. In my daily life, I do not have physical contact (shaking hands, hugging) with people other than my family	4.03	1.21	-1.04	0.02
M16. I avoid meeting my friends in closed areas to maintain social distance	3.75	1.27	-0.71	-0.56
M17. I do not accept guests in my house to maintain social distance	3.58	1.29	-0.48	-0.88

Table 5 Factor structure of sodisphobia scale

Item	Factor loads			Corrected item total
	Emotional response	Behavioral response	Physiological response	
M1			0.74	0.67
M2			0.70	0.66
M3			0.84	0.53
M4			0.76	0.58
M5	0.67			0.63
M6	0.71			0.63
M7	0.81			0.72
M8	0.78			0.69
M9	0.78			0.68
M10	0.71			0.79
M11	0.69			0.78
M12	0.61			0.75
M13		0.74		0.55
M14		0.73		0.51
M15		0.75		0.39
M16		0.81		0.54
M17		0.74		0.47
Described variance	46.36	13.44	7.54	
Eigenvalue	7.88	2.29	1.28	
Cronbach alpha	0.92	0.85	0.87	

the model suggested some modifications. While making modification process, Byrne (2010) suggests starting the process with the substances that can provide the highest improvement. In line with this suggestion, the correction suggestions in the error variances of the items were taken into consideration while performing the procedure. While these modifications were being made, the process was started with the items that were thought to have the highest effect of the modification between the two substances. After the first modification, the model was processed, and some values of the model were found to be below acceptable values. The modification process was continued, and the second modification was made, the model was run again, and it was seen that the acceptable values were not reached. There upon, third and fourth modifications were made, and the model values were reached to good fit and acceptable fit values. As a result, four modifications were made in the first sub-dimension (m3 and m4) and in the second sub-dimension (m6 and m7; m8 and m9, m10, and m11) modifications (Fig. 1). It is understood that these modifications made as expected strengthen the model. The fit indices obtained after the modification are shown in Table 6.

Looking at the results (Table 6) obtained after the modification process, it is seen that the sodisphobia scale has acceptable compliance (X^2/sd , RMSEA, SRMR, CFI, and AGFI) and good adaptation values (GFI and NFI).

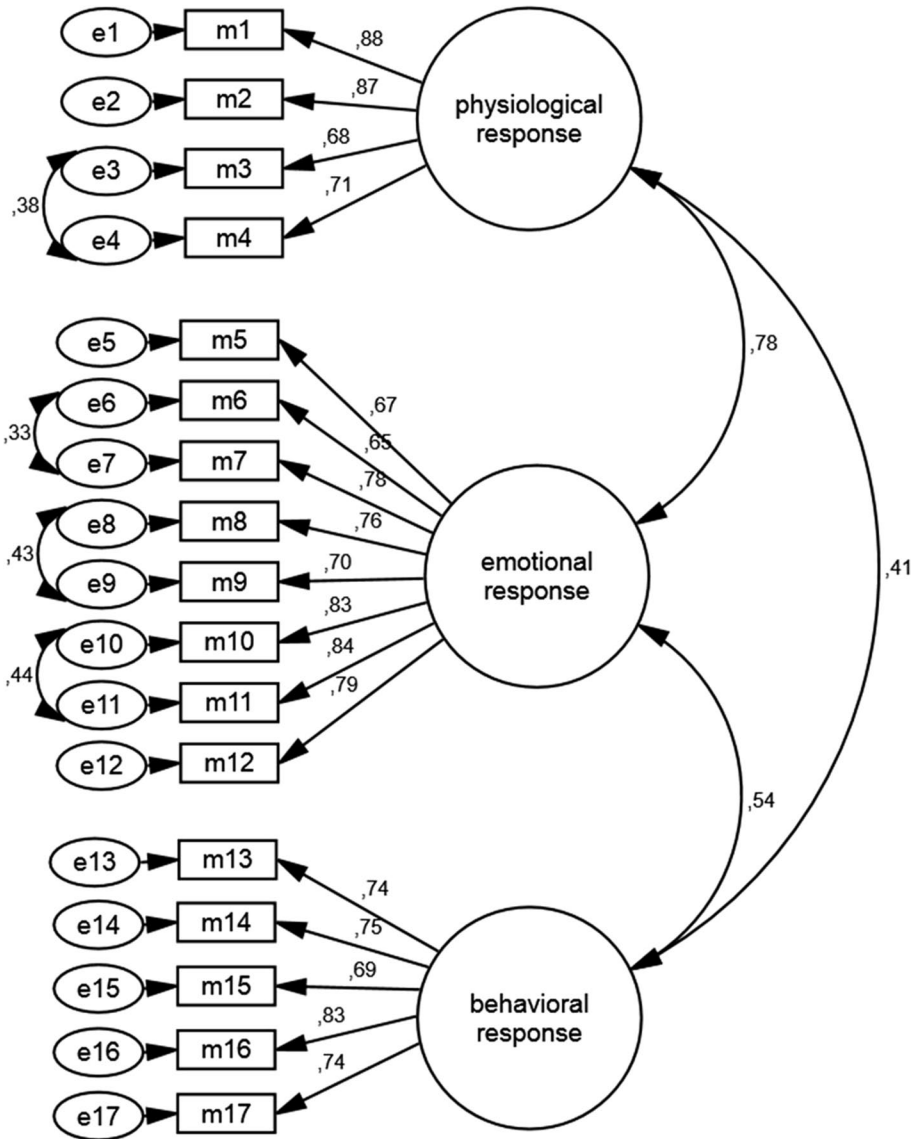


Fig. 1 Sodisphobia scale path diagram and factor loads

Multicollinearity Test

The multicollinearity problem is the situation in which there is an exact or nearly complete linear relationship between one or more of the independent variables for each observation in the structural equation model. This situation seriously affects the least squares estimator, which has the smallest variance between linear and unbiased estimators (Kennedy, 2003). Looking at Fig. 1, it is seen that there is no multicollinearity connection problem between the sub-dimensions of the variable.

Table 6 Confirmatory factor analysis results of sodisphobia scale

Measurement	Good fit	Acceptable fit	Values	Comment
X^2/sd	≤ 3	$\leq 4-5$	3.39	Acceptable fit
RMSEA	≤ 0.05	0.06–0.08	0.07	Acceptable fit
SRMR	≤ 0.05	0.06–0.08	0.06	Acceptable fit
GFI	≥ 0.90	0.89–0.85	0.91	Good fit
NFI	≥ 0.95	0.94–0.90	0.93	Good fit
CFI	≥ 0.97	≥ 0.95	0.95	Acceptable fit
AGFI	≥ 0.90	0.89–0.85	0.88	Acceptable fit

Reliability

Cronbach alpha reliability coefficients determined for sodisphobia was calculated as 0.93 for the scale total score, 0.92 for the sodisphobia sub-dimension 1, 0.88 for the sub-dimension 2, and 0.86 for the sub-dimension 3. In addition, the reliability of the scale was calculated with the Cronbach alpha value as well as the McDonalds Omega value (physiological response = 0.88; emotional response = 0.93 and behavioral response = 0.86). It can be stated that the Omega values show that the scale is a reliable measurement tool. Corrected item-total correlation was also used in order to internal consistency coefficient analysis and obtains more findings about the reliability of the scale. The values obtained are presented in Table 7, between 0.55 ($p < 0.001$) and 0.68 ($p < 0.001$) for subscale 1 and 0.63 ($p < 0.001$) and 0.78 ($p < 0.001$) for subscale 2. For subscale 3, values between 0.41 ($p < 0.001$) and 0.56 ($p < 0.001$) were obtained.

Table 7 Sodisphobia scale corrected item-total correlations and Cronbach alpha internal consistency coefficient values

Items	Corrected item total	Cronbach alpha
M1	0.67	0.87
M2	0.66	
M3	0.53	0.92
M4	0.58	
M5	0.64	
M6	0.63	
M7	0.72	
M8	0.69	
M9	0.65	
M10	0.78	0.85
M11	0.78	
M12	0.75	
M13	0.52	
M14	0.51	
M15	0.41	
M16	0.56	
M17	0.50	
Cronbach alpha 0.93		

Table 8 Correlation values between variables statistics

Variables	1	2	3
1.Sodisphobia	-		
2. Common anxiety disorder	28**	-	
3.Perceived stress	24**	64**	-

** $p < 0.01$.

Looking at the Table 8, between generalized anxiety disorder and sodisphobia ($r=0.28$, $p < 0.01$) and perceived stress ($r=0.64$, $p < 0.01$), a positive significant relationship was found between perceived stress and sodisphobia ($r=0.24$, $p < 0.01$).

Table 9 Results of multiple linear regression analysis

Predictive variables	<i>B</i>	SH _B	β	<i>t</i>	<i>p</i>	Regression results
1. Sodisphobia	0.051	0.017	0.134	3.060	0.002*	$R=0.648$
2. Perceived Stress	0.571	0.042	0.603	13.720	0.000*	$R^2=0.420$
						$F=115.222$
						Durbin-Watson = 1.768

* $p < 0.01$.

Study 3

Relationships Between Sodisphobia, Generalized Anxiety Disorder, and Perceived Stress

In this part of the study, correlations between sodisphobia, generalized anxiety disorder, and stress were included (Table 8) and then whether sodisphobia and stress predicted generalized anxiety disorder (Table 9) was tested.

Multiple linear regression analysis was conducted to examine the predictive role of generalized anxiety disorder, sodisphobia, and perceived stress. According to the results, it was determined that generalized anxiety disorder significantly predicted sodisphobia and perceived stress (FReg = 115.222, $p < 0.01$). The R^2 value obtained was found to be .42. According to the relevant R^2 value, it explains 42% of the total variance observed for sodisphobia, perceived stress, and generalized anxiety disorder.

Discussion, Conclusion, and Suggestions

For the purpose of the present study, it can be stated that the “social distancing phobia (sodisphobia) scale,” which was developed to determine the level of sodisphobia of individuals during the pandemic period, is a valid and reliable scale. According to the research findings, it was determined that the sodisphobia scale is a valid and reliable scale in terms of its psychometric properties. The psychometric properties of the scale are summarized below. Sodisphobia scale is scored in a 5-point Likert type and consists

of 17 items, three-sub-dimensional sodisphobia scale as a guide to assess the level of phobic behaviors during this COVID-19 pandemic era.

Scholars had argued that under certain conditions, the dimensionality and item structure of the scale are found to be sample specific (Henson and Roberts, 2006). Thus, there is always a need to test the psychometric properties of the sodisphobia scale. Given this, first, develop a scale and test it on the pilot sample. And then scale tested on the sample-1, while validated the results on a much larger sample-2. Finally, the role of the individual's generalized anxiety disorder in predicting social distancing phobia and perceived stress was examined in sample-3. The overall findings of the scale suggest that the three-sub-dimensional sodisphobia scale is the best fit to capture individuals' physiological, emotional, and behavioral response, among the general populations.

As a result of EFA performed during the scale development process, it was observed that the scale items had high values in the sub-dimensions of the scale. High factor loadings (>0.30) show that the item has a strong relationship with those factors (sub-dimension) (Tabachnick and Fidell, 2012). As can be seen, in the present study, it was determined that the values of all items were well above this value. The first dimension of the scale, "physiological response" sub-dimension, includes the physiological reactions seen in individuals due to the uncertainty of not being able to maintain social distancing in the presence of the virus. In this sub-dimension, symptoms such as increased heart rate, excitement, and chest tightness were observed during compliance with the social distancing rule. The second sub-dimension is the "emotional response" sub-dimension. Emotional reactions such as fear, stress, restlessness, and anxiety are observed in this sub-dimension. The third sub-dimension is the "behavioral response" sub-dimension. In this sub-dimension, behavioral responses such as avoiding closed spaces and avoiding physical contact while obeying the social distancing rule were observed.

The sample group of 495 participants was used in the analyses performed for CFA. In the literature, the most frequently used and preferred values in the current research are $X^2/$ sd, IFI, NFI, CFI, GFI, AGFI, RMR, and RMSEA (Schumacker & Lomax, 2010). In the model obtained, it is seen that these values meet the acceptable or good fit values. The Cronbach alpha internal consistency reliability coefficient values of the scale were calculated as 0.93 for the overall scale and 0.87, 0.92, and 0.85 for the physiological, emotional, and behavioral response sub-dimensions, respectively. Cronbach alpha values of 0.70 and above indicate that they are acceptable values in terms of reliability. Therefore, it can be stated that the scale in the present study satisfies the reliability condition.

According to the results of the correlation analysis conducted to determine the criterion-related validity of the scale, it is seen that the total score and sub-dimensions of the sodisphobia scale and its relations with the PANAS-negative emotion dimension are positive and significant as expected. However, it was not found to be related to PANAS-positive emotion. Another result obtained in the present study is that there is a positively significant relationship between generalized anxiety disorder, perceived stress, and social distancing phobia. In addition, according to the results of multiple linear regression analysis, it was determined that generalized anxiety disorder significantly predicted perceived stress and social distancing phobia. In a study, it was determined that being in contact with someone infected with COVID-19 increases the anxiety and stress of individuals (Brooks et al., 2020). In some studies in the literature, it is stated that an unwarranted fear and anxiety occurred during the pandemic period. It has been determined that this fear and anxiety are seen at higher levels due to factors such as who is the carrier of the disease and who is not (Li, et al., 2020; Wang, et al., 2020) and fear of contamination and infecting loved ones (Haider et al., 2020). Studies have shown that the stress and anxiety levels of individuals

increased significantly during the pandemic era and that stress and anxiety were positively correlated with each other (Lee et al., 2016; Liu, et al., 2020; Wang, et al., 2020). In the present study, it is thought that obtaining similar results to the research results in the literature is important in terms of showing that the study gives reliable results.

In conclusion, the findings of this study, “social distancing phobia scale,” had better standardized factor loadings and internal consistency, acceptable convergent, discriminant validity, and confirmed dimensionality. In addition, this scale (sodisphobia scale) was developed to reveal individuals’ phobic tendencies and attitudes towards social distancing. It has been determined that the “sodisphobia scale” is a valid and reliable measurement scale. The sodisphobia scale can shed light on the theoretical and practical studies of many psychological symptoms and diagnoses that may be related to the effort to adapt to social distancing.

Strengths and Limitations

The current research has some strengths. The importance of social distancing is clearly and frequently expressed by healthcare professionals. However, these extreme reminders may cause various psychological problems in some individuals. The currently developed measurement scale eliminates this deficiency in the literature. In addition, the use of different sample groups while developing the scale is another strength of the study. However, there are some limitations of the study. The majority of the sample consists of women. For this reason, it could not be controlled whether there is an effect of gender on the results obtained. In addition, the fact that the age group is in the young and adult groups is another limitation of the study. The research sample was reached via e-survey. For this reason, although the necessary information about the research is explained in the directive, it can be stated as a limitation that the participants do not have an opportunity to immediately ask questions and get feedback.

Suggestions

Experts who will do research on this subject in the future can make the following suggestions: Since sodisphobia will be a new subject from the literature, there is a wide range of study areas. For example, studies can be conducted to determine the relationship of sodisphobia with different variables. In addition, the mediating effect can be tested with various variables that may have a mediating effect in the meaning of sodisphobia.

Appendix

Social Distancing Phobia Scale Items*

1. When I go outside, my heart beats faster when the distance between me and someone is less than one meter.
2. When I go out, I get excited when the distance between me and someone is less than a meter.
3. When I go out and approach a person less than a meter away, my stomach hurts.
4. When I go out and get less than a meter away from a person, my chest narrows.
5. When I go out and someone I don’t know coughs less than a meter away, I’m afraid I’ll catch a virus.

6. When I go out, I worry about trying to keep my social distance with other people.
7. The thought of keeping social distance with other people when I go out stresses me out.
8. The thought of trying to maintain social distance with other people makes me uneasy.
9. Trying to keep my social distance when I enter crowded environments worries me.
10. When I go out, I immediately worry when the distance between me and someone is less than a meter.
11. When I go out, I get scared when the social distance between me and someone is less than one meter.
12. When I go out, I get worried when someone passes me very close (less than one meter).
13. When I go out, I take care to keep my distance so as not to approach a person less than one meter.
14. When I go out, I make an effort to keep my social distance with other people.
15. In my daily life, I do not have physical contact (shaking hands, hugging) with people other than my family.
16. I avoid meeting my friends in closed areas to maintain social distance.
17. I do not accept guests in my house to maintain social distance.

*The participants indicate their level of agreement with the statements using a five-item Likert-type scale. Answers included “always,” “very often,” “sometimes,” “rarely,” and “never.” The minimum score possible for each question is 1, and the maximum is 5. A total score is ranging from 17 to 85. In addition to the overall total score of the scale, the scores obtained in the subscales range from 4 to 20 for physiological response, from 8 to 40 for emotional response, and from 5 to 25 for behavioral response. High scores obtained from the scale indicate that the individual has a high level of social distance phobia.

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Declarations

Ethics Approval All procedures performed in studies involving human participants were in accordance with the ethical standards and with the Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study. We did not receive any financial support for the research, authorship, and/or publication of this article.

Conflict of Interest The authors declare no competing interests.

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