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Assessing the Relationships between Internet Addiction, Depression, COVID-19-Related Fear, Anxiety, and Suspicion among Graduate Students in Educational Administration: A Structural Equation Modeling Analysis

Turgut Karakose

Department of Educational Sciences, Faculty of Education, Kutahya Dumlupinar University, 43100 Kutahya, Turkey; turgut.karakose@dpu.edu.tr

Abstract: This study aims to examine the relationships between Internet addiction, depression, COVID-19-related fear, anxiety, and suspicion in graduate students. A total of 482 students pursuing a master's degree in educational administration participated in the study, which was designed according to the relational survey model. The data of the study were collected using online questionnaires, and the proposed hypotheses were tested and analyzed using structural equation modeling (SEM). The results of the study revealed that COVID-19-related suspicion positively and significantly predicted COVID-19-related fear and anxiety. In this context, the increased suspicion of graduate students due to COVID-19 also increased their fear and COVID-19-related anxiety, and this increased the possibility that they would exhibit depressive behaviors. However, a positive and significant relationship was found between COVID-19-related suspicion and depression. This result confirms that the increased suspicion of the participant students due to COVID-19 led to an increase in their depression scores. SEM results have shown a positive relationship between fear and anxiety related to COVID-19 and Internet addiction, and that the increase in students' anxiety and fear levels also increases their Internet addiction levels. In addition, the results of the study revealed that depression has a negligible indirect effect on the relationship between COVID-19-related fear, anxiety, and suspicion and Internet addiction. In conclusion, the proposed hypothetical model is confirmed after having examined the relationships among depression, Internet addiction, COVID-19-related fear and anxiety, and suspicion.

Keywords: COVID-19; coronavirus; depression; Internet addiction; fear; anxiety; suspicion; graduate student; education; structural equation modeling

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1. Introduction

Viral diseases have always posed a serious threat to public health. The World Health Organization (WHO) designated the Severe Acute Respiratory Syndrome (SARS), which emerged in 2003; Influenza, a type of H1N1 virus in 2009; the Middle East Respiratory Syndrome (MERS) in 2012; and the Ebola virus, which emerged in 2014, as pandemic diseases [1]. COVID-19 has become a growing source of fear following its rapid global spread. Therefore, studying the extent and significance of fear of COVID-19 may help to determine the appropriate actions to be taken in both public health and education [2]. Due to its socioeconomic and psychological impact following the initial outbreak, COVID-19 soon became recognized as a pandemic and global health crisis. This virus, for which there is still no definitive treatment, has triggered psychological problems throughout the global population, irrespective of whether or not an individual has been infected. In this regard, COVID-19 created an immediate, widespread, and long-term effect on people's daily lives, their well-being, as well as their mental and, for many, their physical health too [3–5]. Lifestyle changes related to the COVID-19 pandemic have significantly impacted public

health around the world, with people forced to face situations they had never previously experienced. As a result, the number of people suffering from health problems such as stress, anxiety, insomnia, and depression [6] has reached a serious level worldwide. In addition to all these negative effects caused by COVID-19, the duration of Internet use of people who had to stay at home due to curfews has increased. This situation has led to another serious problem, which is regarded as Internet addiction not only for children and youngsters, but also for adults. In fact, Internet addiction has been studied by researchers from all over the world for a couple of decades. It is a well-known fact that there are many people who are unable to regulate themselves and whose online time management is problematic. However, the COVID-19 pandemic has caused Internet addiction to emerge as a more common problem.

Undoubtedly, the education sector has also been substantially affected by the COVID-19 pandemic, with students, parents, school administrators, and teachers all having to adapt. Due to the widespread enforced closure of schools during the initial phase of the pandemic, teachers and students had to continue their educational activities remotely from home. Undoubtedly, this was not an easy process for any of the stakeholder groups in education [7]. During this challenging and critical time, teachers had to resolve many complex issues, both in their professional and personal lives [8,9]. The responsibility of adapting to the new normal that has emerged with COVID-19, maintaining communication, making quick and accurate decisions, and performing tasks within a flexible working model placed significant pressure on teachers [10]. Issues such as strengthening social interaction and communication among staff, creating a safe learning environment, providing learning resources, demonstrating leadership under pressure, instilling optimism, and making data-based decisions have become prominent strategic features for post-pandemic educational management [11]. As can be seen, the pandemic (COVID-19) has directly impacted educational processes, not only in terms of students, but also in terms of scope, content, teachers, and educational management. This emerging new situation makes it necessary to examine the psychological stress experienced by teachers, school administrators, and students during the COVID-19 pandemic. In reviewing the relevant literature, only a limited number of studies have examined the impact of COVID-19-related processes on teachers, school administrators, and students. Furthermore, we kept in mind that there might be some differences both in the perception of the pandemic between youngsters and adult students, and a possible impact of the described COVID-19-related processes within the educational system. Thus, the sample of this research comprised graduate (adult) university students (31–40+ y.o.). Another distinguishing feature of the participants was that all the graduate students also worked as teachers or school administrators in the education system. We assumed that these multidimensional features of the participants in the sample will facilitate a more comprehensive assessment of the effects of COVID-19. In the current study, the relationships between depression, Internet addiction, COVID-19-related fear, anxiety, and suspicion amongst graduate students were examined in depth using structural equation modeling (SEM).

2. Theoretical Background

2.1. COVID-19-Related Fear and Anxiety

Human beings, by nature, always strive to feel safe. They try to steer clear of all kinds of events and situations that are unfamiliar, or that they do not know, or believe may threaten their very existence. Fear, one of the most basic emotions, occurs when an individual senses danger [12–16]. In this context, the rapid spread of the COVID-19 virus and the lack of definitive treatment led many to perceive it as a threat to their lives. It has also been emphasized in the literature that people's positive emotions decreased, while their negative emotions increased due to COVID-19 [17]. It has been stated that COVID-19 is the source of many negative emotional states such as fear, stress, and anxiety, and that this emergent situation has been researched in numerous studies [18–20].

Anxiety describes a feeling of distress or sadness experienced by an individual, namely negative moods in which the individual feels tense and overstimulated, and in which their fear levels increase to constitute anxiety. However, it varies as to which environments trigger which type of anxiety [21,22]. When people are faced with a negative situation that they believe they are unable to cope with or control, they can experience feelings of inadequacy and helplessness [23]. As a result of the necessary but often severe measures, quarantine practices, and restrictions introduced in response to the global spread of COVID-19, the occurrence of psychological problems such as fear, panic, and anxiety increased among those affected [24,25]. In addition, the discovery that the virus was highly contagious in the early days of the pandemic and that the mortality rate among those infected was very high led to widespread anxiety on a global scale [26]. One of the reasons for people's anxiety was the many uncertainties associated with the pandemic [27]. Employees were found to experience anxiety related to their careers [28], whilst students worried about staying away from their friends, taking classes online, and coping with quarantine practices that restricted their movement and daily life [29].

2.2. COVID-19-Related Suspicion

The concept of suspicion encompasses various cognitive and precognitive states and "instinctive emotions" that result from events experienced by individuals, the uncertainty of objects or people. Suspicion can also arise from fear and danger. Suspicion is an inherently subjective, uncertain, and transient phenomenon [30]. The COVID-19 pandemic presented a new and unprecedented situation that brought about great uncertainty in its magnitude and impact. In this environment of uncertainty, people tend to exaggerate perceived threats and develop psychopathological symptoms [31,32]. Also in this context, one of the most important psychological symptoms that individuals experience is suspicion. Numerous studies on this topic [33–36] have reported finding a relationship between suspicion and numerous negative psychological states such as fear and anxiety.

2.3. Depression

Depression is defined as people not enjoying their work, turning away from others, and being generally dissatisfied with life. Depressed people suffer from repressed emotions and a slowing down of their physical and mental processes. Depression is also considered one of the most common forms of mental illness. Among many other factors, environmental, social, and genetic factors can also cause depression [37,38]. With the COVID-19 pandemic, the number of people showing symptoms of depression in the community has increased [39]. In the "new normal" that began with the pandemic, there were technology-based changes seen in the content and mode of education, and both students and teachers were expected to adapt rapidly. In particular, during the COVID-19 pandemic, the work–life balance of teachers and students was significantly disrupted, and the already difficult profession of teaching became even more stressful due to the urgency of delivering lessons via distance education [40–43]. In this context, the stress, anxiety, and depression of educational staff and students were seen to increase even more during this period.

2.4. Internet Addiction

The Internet is a tool used by almost everyone who wants to obtain new information, share personal and social experiences, and for personal enjoyment [44]. With the COVID-19 pandemic, the Internet has become an indispensable element of today's distance education, leading to increased time people spend using the Internet. This increased amount of time spent and the resulting cases of Internet addiction have also caused psychological problems [45,46]. In a study conducted by Dursun [47], it was concluded that young people attribute vital importance to the Internet; just as they would for food, air, and water to sustain daily life. It is believed that the intensive and unhealthy use of the Internet that began with the pandemic, and has continued since, will lead to an ongoing unhealthy lifestyle [48]. This situation makes it necessary to examine student Internet

addiction, which has increased with the COVID-19 pandemic, by assessing it along with other psychological effects.

2.5. Purpose of the Study and Hypotheses

The current study used structural equation modeling to examine the relationships between depression, Internet addiction, COVID-19-related anxiety, fear, and suspicion in graduate students.

Structural equation modeling (SEM) has the flexibility to model correlations between multiple variables, and causal correlations between variables are tested using SEM. In this context, it is considered a comprehensive method that combines various forms of analysis such as multiple regression, path analysis, and factor analysis. In addition, SEM allows the causal processes under investigation to be represented by a set of structural equations, which are then modeled visually in order to ensure that the structural correlations are not conceptualized [49–52]. In this context, the hypotheses developed in the case of the current study, and in line with the overall aim of the research, are presented as follows:

Hypothesis 1 (H1). *COVID-19-related suspicion has a significant effect on fear and anxiety associated with COVID-19.*

Hypothesis 2 (H2). *COVID-19-related fear/anxiety has a significant and positive effect on depression.*

Hypothesis 3 (H3). *COVID-19-related suspicion has a significant and positive effect on depression.*

Hypothesis 4 (H4). *COVID-19-related suspicion has a significant and positive effect on Internet addiction.*

Hypothesis 5 (H5). *COVID-19-related fear/anxiety has a significant and positive effect on Internet addiction.*

Hypothesis 6 (H6). *Depression has a significant and positive effect on Internet addiction.*

Hypothesis 7 (H7). *Depression has an indirect effect on the relationship between COVID-19-related suspicion and Internet addiction.*

Hypothesis 8 (H8). *Depression has an indirect effect on the relationship between COVID-19-related fear/anxiety and Internet addiction.*

Figure 1 shows an illustration of the study's hypothesized model of the relationships between the variables examined.

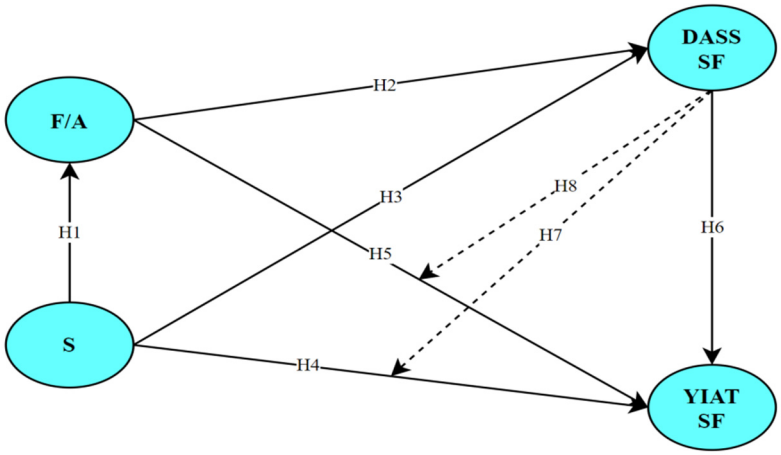

Figure 1. Hypothetical relationships of proposed conceptual model (F/A = COVID-19-related fear/anxiety; S = COVID-19-related suspicion; DASS SF = Depression; YIAT-SF = Internet addiction).

3. Materials and Methods

3.1. Study Design and Procedure

In this study, a descriptive correlational design was used to examine the relationships among depression, Internet addiction, COVID-19-related anxiety, fear, and suspicion among graduate students. In this design, the direct and indirect causal correlations between dependent and independent variables are analyzed [50,53,54], examining in detail the direct and indirect relationships between fear, anxiety, suspicion, and depression and Internet addiction related to COVID-19.

The data of the study were analyzed using IBM's SPSS Statistics software (v.22.0) and IBM's SPSS AMOS (v.22.0), with path analysis used in the structural equation modeling (SEM). In path analysis, causal correlations between variables can be uniquely identified, and is a method considered important in studying the direct and indirect effects of causal variables. In path analysis, there can be more than one dependent variable, and a variable can be both dependent and independent. In addition, path analysis allows for the simultaneous examination of more than one regression model and, therefore, indirect and direct effects can be measured simultaneously [55–58]. Correlation values, Cronbach's alpha coefficients, arithmetic mean, skewness, and kurtosis values of the scales used in the study were analyzed using IBM's SPSS software; whilst confirmatory factor analysis (CFA) of the scales, the goodness-of-fit values of the model, and testing of the hypothesized model were conducted using AMOS.

3.2. Participants

The study, conducted using SEM, aimed to achieve the sample size required for structural models. Since SEM is a set of tests that are considered sensitive to sample size, it is emphasized that a small sample size (e.g., $N < 200$) in SEM studies may cause certain problematic issues in the research. In this regard, it has been stated that sample sizes should be at least 10 times the number of items (variables) in a study [59–61]. Accordingly, a sample size of at least 310 data items is considered sufficient for the current study, which is based on a total of 31 variables (items).

The study was conducted during the 2021–2022 academic year with the participation of students pursuing a master's degree in Educational Administration at Kutahya Dumlupinar University's Graduate Education Institute. Data were collected electronically through Google Forms, and a total of 499 individuals were identified and sampled through simple random sampling during the study. From the analysis, 17 data (individuals) were excluded from the dataset because of extreme values, resulting in a revised final total of 482 data being subjected to analysis in the study. The sociodemographic characteristics of the participants are presented in Table 1.

Table 1. Participants' sociodemographic characteristics.

Variables	Description	*f* (*N* = 482)	(%)
Gender	Male	196	40.7
	Female	286	59.3
Age (years)	31–40	330	68.5
	41+	152	31.5
Daily Internet usage (hours)	1–2	48	10.0
	2–3	132	27.4
	3–4	178	36.9
	4–5	78	16.2
	5+	46	9.5
COVID-19 infected (family members)	Yes	272	56.4
	No	210	43.6
COVID-19 infected (self)	Yes	226	46.9
	No	256	53.1

3.3. Data Collection and Data Analysis

3.3.1. Measurements

Study data were collected using the COVID-19-Related Psychological Distress Scale (CORPD), the Depression Scale (DASS SF), the Short-form of Young's Internet Addiction Test (YIAT-SF), and a personal information form developed by the researchers. The scales used in the study were reviewed and their application was approved by the Kutahya Dumlupinar University's Graduate Education Institute, with legal permission granted for the study to be performed with graduate students (Permit: E-75621633-600-46904).

COVID-19-Related Psychological Distress Scale (CORPD)

The CORPD scale was developed by Feng et al. [62] and later adapted to the Turkish context by Ay et al. [33]. The scale consists of 12 items within two dimensions. The first dimension, fear, and anxiety (CORPD-Fear/Anxiety) consists of items 1, 2, 3, 4, and 6, whilst the second dimension, suspicion (CORPD-Suspicion), consists of items 5, 7, 8, 9, 10, 11, and 12. There are no reverse-coded items on the scale. The scale was created as a 5-point, Likert-type scale (1: *strongly disagree* to 5: *strongly agree*). The scores that can be obtained on the scale, therefore, range from 12 to 60. A high score on the scale indicates a high level of COVID-19-related psychological distress. The internal consistency coefficient of the total scale was found to be 0.880, whilst for the suspicion dimension (CORPD-Suspicion) it was 0.836, and 0.798 for the fear and anxiety dimension (CORPD-Fear/Anxiety). In this study, the internal consistency coefficient of the total scale was 0.908, the internal consistency coefficient of the suspicion dimension (CORPD-Suspicion) was 0.858, and the internal consistency coefficient of the fear and anxiety dimension (CORPD-Fear/Anxiety) was 0.856.

Depression Scale (DASS SF)

The 42-item Depression, Stress, and Anxiety Scale was first developed by Lovibond and Lovibond [63], and later reconfirmed by Henry and Crawford [64] as the 21-item Depression, Stress, and Anxiety Scale (DASS-21). In the current study, the short form 7-item Depression Scale (DASS SF) was used, which is a subscale of the DASS-21 scale. The DASS-SF scale was then adapted to the Turkish context by Yılmaz, Boz, and Arslan [65] as a 4-point, Likert-type scale. In their study, they confirmed the structure in the Turkish version of the 7-item scale, with the internal consistency coefficient of the Depression Scale calculated as 0.87. In the current study, the internal consistency coefficient was calculated as 0.89.

Short-Form of Young's Internet Addiction Test (YIAT-SF)

The YIAT-SF scale was adapted to the Turkish context by Kutlu et al. [66] as a 5-point, Likert-type instrument (1: *never* to 5: *always*), with 12 items in a single dimension. There are no reverse-coded items in the scale. The scores that can be obtained with the scale range from 1 to 5; therefore, the lowest score obtainable is 12 and the highest is 60. An increased score on the scale relates to an increase in Internet addiction. The internal consistency coefficient of the scale was reported as being 0.91 for university students and 0.86 for adolescents. In the current study, the internal consistency coefficient of the scale was calculated to be 0.87 for graduate students.

3.3.2. Data Analysis

After having secured the necessary permissions to conduct the study, the data were collected electronically and then analyzed using IBM's SPSS Statistics software (v.22.0) and IBM's AMOS software (v.22.0). The maximum likelihood method was used in the AMOS program for the structural equation modeling (SEM). Sample size, multicollinearity problem, normality, and extreme values were each investigated as conditions of SEM [60]. First, 17 data whose Z-score values of the variables were outside of the -1 to +1 parameters were excluded from the dataset as they were considered extreme values. Next, correla-

tion analysis was performed in order to determine if a multicollinearity problem existed between the variables. If correlation values are below 0.90, it may be assumed that no multicollinearity problem exists [67]. In the analysis conducted in the current study, correlations between each of the variables were examined and the correlation coefficients between the variables were all found to be below 0.90 (see Table 2). Based on these data examinations, it was determined that no multicollinearity problem existed between the variables. To further determine if a multicollinearity problem existed, the VIF and tolerance values of the independent variables were examined, and it was found that they did not cause any problems of multicollinearity (see Table 3). Another requirement for the analysis of SEM is whether or not the data are normally distributed. For this purpose, the kurtosis and skewness values of the variables were examined, and it was established that the dataset was normally distributed (see Table 4).

Table 2. Correlation values between scales.

Scale	CORPD-Fear/Anxiety	CORPD-Suspicion	DASS SF	YIAT-SF
CORPD-Fear/Anxiety	1.000	0.777	0.150	−0.038
CORPD-Suspicion		1.000	0.161	−0.074
DASS SF			1.000	−0.009
YIAT-SF				1.000

Table 3. VIF and Tolerance values of independent variables.

Scale	VIF	Tolerance
CORPD-Fear/Anxiety	2.527	0.396
CORPD-Suspicion	2.536	0.394
DASS SF	1.028	0.972

Table 4. Mean, standard deviation, skewness, and kurtosis values of the scales.

Scale	Min	Max	$\overline{X}$	*SD*	Skewness	Kurtosis
CORPD-Fear/Anxiety	5.00	25.00	18.11	4.36	−0.891	0.713
CORPD-Suspicion	5.00	35.00	22.73	5.73	−0.412	0.167
DASS SF	7.00	22.00	9.32	3.24	0.908	0.958
YIAT-SF	12.00	49.00	24.20	8.26	0.914	0.168

In the study, it was considered that: (a) the data were normally distributed; (b) the sample size was sufficient; (c) no multicollinearity problems were detected, with a Covariance Matrix and Maximum Likelihood method used in testing the measurement models and the structural model. In analyzing the data, the measurement models of the variables (CORPD Fear and Anxiety, CORPD Suspicion, Depression, and Internet Addiction) were first tested using Confirmatory Factor Analysis (CFA). Whether or not the measurement models were considered as being confirmed was examined using the Chi-square (χ^2)/*SD*, GFI, AGFI, CFI, RMSEA, IFI, and TLI (NNFI) fit indices. Finally, the validity of the proposed hypothesized model was tested with the specified fit indices, and diagrams created using Flowchart Maker and Online Diagram Software [68].

4. Results

The correlation values of the data collection instruments used in the current study are presented in Table 2. As seen, a statistically significant and positive (r = 0.777, $p < 0.01$) relationship exists between the values of the CORPD-Fear/Anxiety dimension and the CORPD-Suspicion dimension, as well as a statistically significant and positive (r = 0.150, $p < 0.01$) relationship between the values of the CORPD-Fear/Anxiety dimension and the DASS SF, and a statistically significant and negative (r = −0.038, $p < 0.01$) relationship between the values of the CORPD-Fear/Anxiety dimension and the YIAT-SF.

It was also found that a statistically significant and positive ($r = 0.161$, $p < 0.01$) relationship exists between CORPD-Suspicion and DASS SF, and a statistically significant and negative ($r = -0.074$, $p < 0.01$) relationship between CORPD-Suspicion and YIAT-SF. Finally, a statistically significant and negative relationship ($r = -0.009$, $p < 0.01$) was found to exist between DASS SF and YIAT-SF. The general analysis shows that the correlations between the variables vary between −0.074 and 0.777, indicating no existence of any multicollinearity problem.

In addition, the VIF and tolerance values of the independent variables in the measurement model are presented in Table 3.

According to Cokluk et al. [67], VIF values should be less than 10 and tolerance values should be greater than 0.10. The data in Table 3 show that no multicollinearity problem exists between the variables examined in the current study.

Finally, it was investigated whether or not the data were normally distributed, and the mean, standard deviation, skewness, and kurtosis values of the variables in the measurement model are presented in Table 4.

In this context, the skewness value for the CORPD-Fear/Anxiety dimension was found to be −0.891 and the kurtosis value 0.713; whilst the skewness value for the CORPD-Suspicion dimension was −0.412 and the kurtosis value 0.167. For the DASS SF scale, the skewness value was 0.908 and the kurtosis value was 0.958; whilst for the YIAT-SF scale the skewness value was 0.914 and the kurtosis value was 0.168. Considering these data, it may be stated that the skewness coefficients of the variables were established as being within acceptable limits and that the data showed a distribution that was considered normal.

On looking at Table 4, it can be seen that the total scores of the CORPD-Fear/Anxiety dimension varied from 5 to 25, and that the participants' opinions had an average score of $\overline{X} = 18.11$ ($SD = 4.36$). This may be interpreted that the COVID-19 pandemic caused fear and anxiety among the study's participants. The total score of the CORPD-Suspicion dimension ranged from 5 to 35, and it can be seen that the participants' opinions had an average score of $\overline{X} = 22.73$ ($SD = 5.73$). This finding may be interpreted that the COVID-19 pandemic caused a slightly higher than average level of suspicion among the study's participants. The total scores obtained on the DASS SF scale ranged from 7 to 22, and it can be seen that the participants' opinions had a mean score of $\overline{X} = 9.32$ ($SD = 3.24$). This may be interpreted that the COVID-19 pandemic caused a recognizable level of depression among the participants, albeit to a low level. The total scores obtained from the YIAT-SF scale ranged from 12 to 49, and the total score of the participants' opinions had an arithmetic mean of 24.20 ($SD = 8.26$); a value that is considered close to the mean level. In this case, it may be stated that the participants' Internet addiction increased as a result of the COVID-19 pandemic. Examination of the kurtosis and skewness values of the dataset revealed the study's data to be normally distributed.

Structural Model

Confirmatory factor analyses of the measurement instruments used in SEM studies must be reconstructed according to the dataset under examination. For this purpose, the structural validity of the scales used in the current study was reanalyzed, and the values for the average variance extracted (AVE) and composite reliability (CR) are presented in Table 5, and the fit indices in Table 6. The relevant literature emphasizes that CR values should exceed an acceptable value of 0.70 for all factors, and that the AVE value should exceed 0.50 for all variables [69–71].

Table 5. Reliability and convergent validity results.

Constructs	Cronbach's Alpha	CR	AVE
CORPD-Fear/Anxiety	0.86	0.86	0.57
CORPD-Suspicion	0.86	0.87	0.52
DASS SF	0.89	0.88	0.54
YIAT-SF	0.88	0.95	0.88

Table 6. Confirmatory factor analysis results.

Scale	χ^2/SD	GFI	AGFI	IFI	TLI	CFI	RMSEA
CORPD-Fear/Anxiety	1.098	0.996	0.986	1.000	0.999	1.000	0.015
CORPD-Suspicion	3.590	0.978	0.944	0.979	0.960	0.979	0.073
DASS SF	3.501	0.979	0.947	0.983	0.967	0.986	0.072
YIAT-SF	3.804	0.936	0.902	0.946	0.930	0.946	0.076

Table 5 shows that the Cronbach Alpha values range from 0.86 to 0.89, and that the AVE values are above 0.50 and CR values above 0.70 for each construct, which indicates the consistency of the constructs. According to these results, it can be concluded that convergent validity was achieved.

The CORPD-Fear/Anxiety dimension consists of five items, and the measurement model was tested with first-level CFA (see Table 6). All paths related to the scale dimension's five items were found to be statistically significant at the 0.01 level, with the fit indices having values of χ^2/SD = 1.098, GFI = 0.996, AGFI = 0.986, IFI = 1.000, TLI = 0.999, CFI = 1.00, and RMSEA = 0.015. The CFA results obtained demonstrate that the values for χ^2/SD, GFI, IFI, TLI, CFI, and RMSEA are within the range of a perfect fit.

The CORPD-Suspicion dimension consists of seven items. In the first level CFA, all paths except for Item 7 were found to be statistically significant at the 0.01 level. Moreover, the fit indices' values of GFI = 0.978, AGFI = 0.944, IFI = 0.979, TLI = 0.960, and CFI = 0.979 (see Table 5) were in perfect agreement, whilst the values of χ^2/SD = 3.590 and RMSEA = 0.073 were within acceptable limits.

The YIAT-SF is a one-dimensional scale consisting of 12 items, and the measurement model was tested with first-level CFA. It was found that all paths related to the 12 items of the scale were statistically significant at the 0.01 level. As seen, YIAT-SF scale's fit indices' values were χ^2/SD = 3.804, GFI = 0.936, AGFI = 0.902, IFI = 0.946, TLI = 0.930, CFI = 0.946, and RMSEA = 0.076 (see Table 5). From these CFA results, the values of χ^2/SD, GFI, IFI, TLI, CFI, and RMSEA can be said to be within an acceptable range.

The proposed hypothesized model was investigated using SEM. The direct relationship between the dimensions of CORPD-Fear/Anxiety, CORPD-Suspicion, along with depression and Internet addiction were examined using SEM. In addition, the mediating effect of the CORPD-Fear/Anxiety and CORPD-Suspicion dimensions on depression and Internet addiction were also examined. Prior to the model being tested, modifications were applied to the measurement model in order to increase the values of the fit indices of the scales. Other than these modifications, no other changes to the model were deemed necessary. The standardized path coefficient between the CORPD-Fear/Anxiety dimension and depression was found to be 0.11, whilst between CORPD-Fear/Anxiety dimension and Internet addiction, it was 0.20. The standardized path coefficient between the CORPD-Suspicion dimension and depression was 0.05, and between CORPD-Suspicion and Internet addiction, it was 0.15. All other paths were found to be statistically significant at the 0.01 level.

When the fit indices of the hypothesized model were examined, values were revealed as being χ^2/SD = 2.406, GFI = 0.898, AGFI = 0.896, IFI = 0.919, TLI (NNFI) = 0.910, CFI = 0.919, and RMSEA = 0.054. The fit indices of the model show that the values for GFI, AGFI, and RMSEA were within an acceptable range, whilst the values for χ^2/SD, IFI, TLI, and CFI were in perfect agreement. It can be concluded, therefore, that the proposed hypothesized model can be considered as confirmed. The final SEM resulting from the analysis is presented in Figure 2.

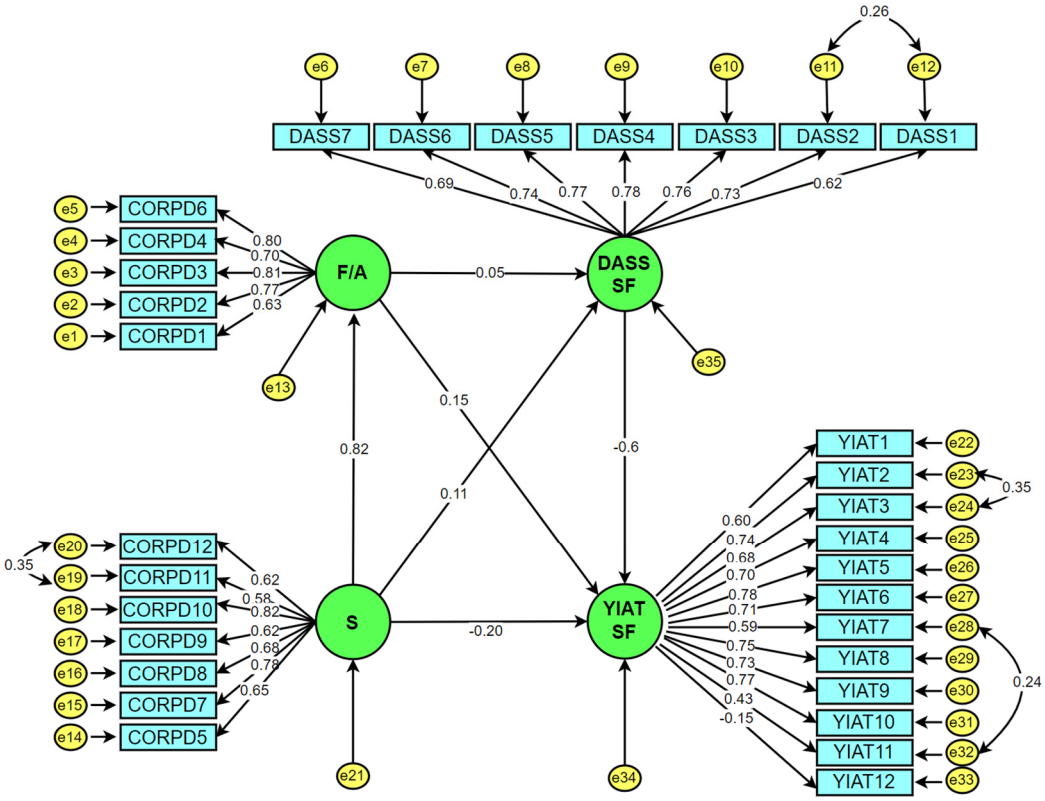

Figure 2. Results of final hypothesized model.

As can be seen from Figure 2, the standardized regression coefficient between the CORPD-Suspicion and CORPD-Fear/Anxiety dimensions was found to be 0.82. This value means that the participants' fear and anxiety levels increased with their increased suspicion due to COVID-19. Suspicion due to COVID-19 explained 67.24% of the variance of fear and anxiety caused by COVID-19. Kline (2011) reported that an effect size of about 0.10 is considered small, whilst an effect size of about 0.30 is medium, and an effect size of about 0.50 is large. Accordingly, the standardized regression coefficient between the two variables indicates a large effect size. This result indicates that COVID-19-related suspicion positively and significantly predicts COVID-19-related fear and anxiety.

The standardized regression coefficient between the CORPD-Suspicion dimension and depression was found to be 0.11, indicating that a positive relationship exists between CORPD-Suspicion and depression. Suspicion caused by COVID-19 explained the 1.21% variance in depression. In other words, suspicion caused by COVID-19 positively and statistically significantly predicted the participants' depression. It can be seen that the standardized regression coefficient between the CORPD-Suspicion dimension and Internet addiction is −0.20. This result shows that a negative relationship exists between suspicion caused by COVID-19 and Internet addiction. The CORPD-Suspicion dimension explained the 4% variance of Internet addiction. In other words, the standardized regression coefficient between both variables shows the existence of a small effect size.

The standardized regression coefficient between the CORPD-Fear/Anxiety dimension and depression was calculated as being 0.05. COVID-19-related fear and anxiety explained about 1% of the variance in depression. This result indicates that a positive and statistically significant relationship exists between COVID-19-related fear and anxiety and depression, and shows that fear and anxiety of COVID-19 have little influence on depression. Given these data, it can be said that an increase in the level of COVID-19-related fear and anxiety increases the likelihood that individuals will exhibit depressive behaviors. However, the standardized regression coefficient between depression and Internet addiction was calculated as being −0.06. This result shows that a negative relationship exists between

depression and Internet addiction. That is, the standardized regression coefficient between the two variables indicates the presence of a small effect size.

The standardized regression coefficient between COVID-19-related fear and anxiety and Internet addiction was calculated as 0.15. This value shows that COVID-19-related fear and anxiety explain a 2.25% variance in Internet addiction. This indicates that a positive relationship exists between COVID-19-related fear and anxiety and Internet addiction. Considering these results, it may be said that the increase in anxiety and fear level of individuals due to COVID-19 increases their Internet addiction level.

However, it was seen that depression (0.07 * 0.08 = 0.0056) had an indirect effect of 0.56% on the relationship between CORPD-Suspicion and Internet addiction of individuals during the pandemic. Similarly, an indirect effect of depression (0.04 * 0.14 = 0.0056) on the relationship between COVID-19-related fear and anxiety and Internet addiction was found to be negligible at the level of 0.56%.

5. Discussion

The study's results showed that COVID-19-related suspicion positively and significantly predicted COVID-19-related fear and anxiety. In other words, the increased suspicion of the graduate students who participated in the study due to COVID-19 also significantly increased their anxiety and fear related to COVID-19. This result is not surprising when compared to that of previous research on infectious diseases that have presented a significant threat to global human health [72]. Emerging pandemics are seen as unavoidable situations that trigger psychological effects that deeply affect many segments of society [73]. Many studies have found that negative emotional states such as fear, anxiety, and stress have been prevalent among people due to the COVID-19 pandemic [74–76]. One of the reasons for fear is the risk of coming into contact with a person infected with COVID-19 [77]. Although the COVID-19 virus has a generally more lethal outcome for older adults than in young people, anxiety and fear caused by COVID-19 are shown to be prominent in studies of university students who are predominantly in the younger age bracket [78,79]. For example, in the study conducted by Didin, Yavuz, and Yazici [80], it was reported that students between the ages of 14 and 33 years old were moderately anxious, with students having experienced negative emotions such as anxiety and stress due to COVID-19.

The results of the current study revealed a positive and statistically significant relationship between COVID-19-related fear and anxiety and depression, albeit with a small effect. In this context, it can be concluded that the increased anxiety and fear levels of the participating graduate students due to COVID-19 increased the likelihood that they would exhibit depressive behaviors. These results are also consistent with the findings of other studies on this topic to be found in the literature. In a study conducted with university students by Spatafora et al. [81], fear of infection and depressive symptoms were examined. A relationship was found to exist between depressive symptoms and fear of COVID-19 infection, whereby the participant students were afraid of becoming infected themselves as well as for those they were in regular contact with. Parlapani et al. [82] stated that a relationship exists between the psychological impact of pandemics on the general population and the virus type. COVID-19 and its known deadly effects, unknowns regarding the structure of the virus, the rapid transmission of the disease, and the resulting uncertainty have created a serious level of chaos [83,84]. In this environment of chaos and anxiety, it is often emphasized that students can exhibit symptoms of depression. In a study conducted by Timurtaş, Avci, Ayberk, Demirbüken, and Polat [85], more than half of the participants exhibited mild symptoms of depression.

The results of the current study revealed a positive and significant relationship between COVID-19-related suspicion and depression. A similar result was also reported in the research conducted by Tsang, Avery, and Duncan [86]. Accordingly, increased suspicion due to COVID-19 also increases the likelihood of exhibiting depressive symptoms. One of the groups most affected by the limitations that have arisen with the emergence and spread of COVID-19 has been university students. In another study Luo, Zhong, and Chiu [87]

reported that more than a quarter of Chinese university students showed depressive symptoms during the COVID-19 outbreak. The higher prevalence of COVID-19-related depressive symptoms among university students points to this group being more vulnerable under pandemic conditions [88,89]. This situation makes it necessary to immediately take and implement the necessary measures to reduce the psychological impact of the COVID-19 pandemic on university students.

In the current study, a positive relationship was found between COVID-19-related anxiety and fear and Internet addiction. This result shows that increased anxiety and fear level in graduate students due to COVID-19 increased their Internet addiction level. The onset of quarantine practices related to the pandemic and the fact that many jobs are able to be undertaken from home using a computer has also increased worldwide Internet usage. Even people's shopping habits have changed, with many purchases being made via online shopping websites. This situation has led to a marked increase in the use of the Internet [5]. Many studies have found a very close relationship between anxiety, depression, and Internet addiction caused by COVID-19 [90,91]. Duan et al. [92] stated that smartphone usage and Internet addiction problems have increased with the pandemic. In Turkey, it was found that the number of social media users increased by six million in 2021 compared to the previous year, whilst it was emphasized that this emerging situation was likely related to COVID-19 [93].

Finally, the results of the current study showed that depression had a negligible indirect effect on the relationship between COVID-19-related suspicion and Internet addiction among the participating graduate students. Also within the scope of the research, depression was found to have a negligible indirect effect on the relationship between COVID-19-related fear/anxiety and Internet addiction among the participants. When these results are evaluated holistically, it is clear that the relationships between fear, anxiety, Internet addiction, and depression caused by COVID-19 have significantly impacted people's psychological well-being [94,95]. In this context, it is clear that for both university students and the general public, normalization following the COVID-19 pandemic will not be easy. For this reason, policymakers have the important task of implementing protective health, education, and social policies during the remainder of the pandemic and into the new normal.

6. Conclusions

In the current study, the relationships between Internet addiction, depression, COVID-19-related fear and anxiety, and suspicion in graduate students were investigated using structural equation modeling (SEM). The results of the study showed that COVID-19-related suspicion increased the participants' level of COVID-19-related fear and anxiety. In this context, the increased level of fear, anxiety, and suspicion of the participant graduate students due to COVID-19 could have caused increases in their level of depression.

According to the results of this research, it may be said that the increased fear and anxiety of graduate students due to COVID-19 can lead to increased levels of Internet addiction. However, the research results also revealed that depression has a negligible indirect influence on the relationship between COVID-19-related suspicion and Internet addiction, and on the relationship between COVID-19-related fear and anxiety and Internet addiction. As a result, it may be stated that the fit indices of the hypothesized model proposed according to the SEM are at an acceptable level, and that the model is confirmed after having examined the relationships among depression, Internet addiction, COVID-19-related fear and anxiety, and suspicion in graduate students.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

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