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Investigating the Relationships between Obsessive Compulsive Symptoms (OCS) and Depression Symptoms and Intolerance of Uncertainty in Turkish Adolescents during Covid-19

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Abstract:

Introduction: This study aims at examining the direct and indirect mediating role of the intolerance of uncertainty (IU) variable in the relationship between COVID-19-induced OCS and depression in a Turkish adolescent sample.

Methods: The sample consists of 427 people (248 females, 179 males) between the ages of 14-18, living in Turkey and selected by convenient sampling method. The data were collected through the COVID-19 Obsessive Compulsive Disorder (OCD) Scale, Depression, Stress and Anxiety Scale (DASS-21) and Intolerance of Uncertainty Index-A for Children (IUI-A-C).

Results: The findings show that COVID-19-induced OCS have strong predictive effects on depression symptoms. The findings also revealed that IU directly and indirectly mediates the relationship between COVID-19 OCD and depression symptoms, as well as its negative predictive effect for depression symptoms.

Discussion: It can be said that OCS caused by COVID-19 trigger depressive symptoms in adolescents. In addition, it can be thought that IU, with its mediator effect, may play a triggering role in the emergence of COVID-induced OCS. Another research finding is that IU may be an important transdiagnostic construct for depressive symptoms.

Limitations: The current study has also some limitations. First, the study was carried out as a cross-sectional study. The fact that the sample group is non-clinical and a clinical group is not included can be considered as second delimitation. Third, the current study just used scales to evaluate the students' self-report. At this point, a different perspective can be developed by taking the opinions of the parents.

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Conclusions: The results show that COVID-19-induced OCS increase depressive symptoms in Turkish adolescents and IU has a mediating effect in this relationship. In addition, the results provide important data for the treatment of mental symptoms related to the pandemic.

Key words: intolerance of uncertainty (IU), adolescent, COVID-19, OCS, depression, mediation.

Introduction

Emerged in Wuhan, China as of December 2019 and affected the whole world in a short time, the new type of coronavirus (COVID-19) disease has become an important test for people of all ages in the last century by creating a serious epidemic effect (WHO, 2022). The rapid increase in the epidemic's transmission and death rates has pushed countries to take precautions such as curfews, suspending education and social activities, and canceling many activities involving social interaction (Silva et al. 2021; Banerjee, 2020). Almost three years after the beginning of the epidemic, the physical and medical impact of COVID-19 seems to have decreased compared to the past, with the development, use and dissemination of vaccines, one of the most important means of protection from the virus, adherence to the measures and the slowdown in the transmission rate (Sharma et al., 2020; Murray, 2022). In addition to the decrease in the physiological effects of the pandemic, the intense anxiety and stress experienced by people due to the epidemic has been interpreted as a psychological secondary effect, and this has triggered some mental problems in humans (Shah et al., 2021; Rodríguez-Rey et al., 2020). At this point, obsessive compulsive disorder (OCD) and its associated symptoms can be shown as one of the mental problems caused by the pandemic and affecting individual's daily life functionality (Kumar & Somani, 2020; Banarjee, 2020; Khosravani et al., 2021).

1 Literature review

1.1 Obsessive Compulsive Disorder and COVID-19

Obsessive Compulsive Disorder (OCD) is defined as a mental disorder that includes sub-dimensions such as cleanliness, order, control and hoarding (APA, 2013). Giving excessive importance to cleanliness, engaging in cleaning behaviours in the form of repetitive rituals, repetitive thoughts and avoidance behaviours, including fear of contamination and disease, can be shown among the characteristics that define the cleaning dimension of OCD (Reuven et al., 2014; Abramowitz & Jacoby, 2015). Perpetual supervision and control of the physical environment, repetitive control attempts to provide security for the individual himself/herself or his/her relatives, and to protect from people,

situations or disturbances that s/he thinks will harm can be shown among dysfunctional intellectual and behavioural controlling actions and compulsive controlling behaviors (Bloch et al., 2008; Salkovskis, 1999). Hoarding, another OCD symptom dimension, is characterized by an obsessive tendency to hoard belongings, garbage, or things that they think they will need in the future, and to worry about the absence of these items (Abramowitz et al., 2008; Samuels et al., 2002). It is noteworthy that the definitions regarding the symptoms of OCD mentioned above and the behaviours that occur and are frequently observed during the pandemic are similar. Emphasis on hand hygiene and social distancing to protect against the virus seems to have similar content with the individuals' responses exhibiting compulsive cleaning and controlling behaviours (Jayakumar et al., 2022; Jassi et al., 2020). As a matter of fact, the mentioned rules, such as hand hygiene and social distancing, can increase the severity of symptoms in people with OCD and they can also trigger OCD symptoms (Rajkumar, 2020; Jassi et al., 2020). Intense anxiety, uncertainty and fear of contamination caused by the pandemic have caused people to purchase and stock more of these products with the supply of necessary materials, such as masks, disinfectants, food and medicine in addition to their cleaning behaviours. It is stated that this may exacerbate the symptoms of people with existing hoarding symptoms and may also cause hoarding symptoms to occur (David et al., 2021; Banerjee, 2020).

1.2 OCD caused by COVID-19 and its relationship with depression

It is suggested that the OCD reactions that occur as a result of the effect of the pandemic may also pave the way for other psychological disorders and may have a triggering effect (Wheaton et al., 2021; Jassi et al., 2020). Depression is one of the most common of these disorders (Mrklas et al., 2020; Seçer & Ulaş, 2021). There are research results reporting that reasons, such as decreased physical activity and mobility during the pandemic, strict quarantine measures, frequent exposure to social media news about COVID-19, sudden and compulsory decrease in socialization, and restriction of activities that provide social interaction, cause depressive symptoms in individuals (Rosa-Alcázar et al., 2021; Nissen et al., 2020). In addition to these, it can be shown that the emergence of depression symptoms, or an increase in the severity of existing depression symptoms as a result of triggering obsessive symptoms due to fear of COVID-19. In this context, it can be stated that OCS caused by the pandemic carry the risk of maintaining its effects in individuals even though COVID-19 has reduced its physiological effects. In addition, it can be suggested that such psychological symptoms may continue to have psychological effects in the future considering that developing obsessive symptoms is an important risk factor for depression in individuals (Seçer & Ulaş, 2021).

1.3 COVID-19-induced OCS, depression, and IU as a transdiagnostic structure

Some of the individuals' psychological factors may pose a risk for mental problems such as OCD, depression or anxiety disorders that occur due to the COVID-19 (Salari et al., 2020; Jassi et al., 2020; Lee, 2020). In this context, intolerance of uncertainty (IU) can be shown as one of the psychological and cognitive vulnerability factors observed in individuals (Carleton, 2016; Holaway et al., 2006). Intolerance of uncertainty is defined as the intense anxiety about the unknown and the tendency to perceive potentially negative events as unacceptable (Carleton et al., 2007; Dugas et al., 2001). Inability to tolerate ambiguous situations can cause cognitive, behavioral and emotional reactions, characterized by symptoms of many anxiety disorders, such as anxiety, avoidance, and distress (Ladouceur et al., 2000; Meeten et al., 2012; Carleton et al., 2012). It is thought that IU may be an important risk factor in the emergence of pandemic-related mental problems considering that situations, such as not knowing the exact cause of the emergence of the COVID-19 virus, fear of infection, uncertainty about the course of the epidemic and its ending, economic uncertainties awaiting countries and individuals in the future, and the possibility of food shortages after the pandemic, cause anxiety, fear and intense stress in individuals (Satici et al., 2020; Bakioğlu et al., 2021; Rettie & Daniels, 2021). Thence, it is thought that intolerance of uncertainty may have a negative effect on the symptoms of OCD and depression, among the mental problems observed in adolescents during the COVID-19 and may be an important sustaining factor in the long-term chronicity of the symptoms and the emergence of other psychological reactions.

This study aims at revealing the relationships between OCS and depressive symptoms observed in Turkish adolescents and examining the mediator role of IU as a transdiagnostic factor for OCD and depressive symptoms. Identifying the relationships between these variables may help mental health professionals working for the treatment of COVID-19-induced OCS and depression symptoms in adolescents in their intervention practices. It is also thought that the study will contribute to the increase of awareness about the transdiagnostic structure of IU in mental disorders. In this context, answers to the following research questions were sought:

1. Are OCS caused by COVID-19 an important predictor of depression symptoms?
2. Is IU a significant predictor of depression symptoms?
3. Does IU have a mediating role in the relationship between COVID-19-induced OCS and depression symptoms?

2 Method

2.1 Participants

The study was conducted with 427 adolescents aged between 14 and 18 (average = 16.11, SD = 1.29). 58.07% of the participants are females and 41.93% are males. In the study, the participants were selected among high school students studying in Yozgat using convenient sampling method, and in this context, 427 participants were reached. In the convenient sampling method, the researcher starts with the most accessible study group and works on a situation that will provide the highest savings (Büyüköztürk et al., 2013). The students included in the sample were chosen by their school counselors and school principals.

2.2 Research tools

2.2.1 COVID-19 Obsessive Compulsive Disorder (OCD) Scale

This scale was adapted to Turkish culture by Seçer & Ulaş (2021) in order to measure OCD symptoms developing during the COVID-19, with reference to the Florida Obsession Compulsion Scale (Storch et al., 2007). The self-reported 4-point Likert-type scale has 17 items and 3 sub-dimensions, and also has frequency and density questions with 5 items independently. The increase in the scores obtained from the scale indicates the high level of OCD symptoms caused by COVID. In this study, another dimension was developed for the 5-item frequency and density questions in addition to the scale's 3 dimensions, and its psychometric properties were re-examined. The model fit was ensured as (X^2/Sd: 3.15, RMSEA: .071, RMR: .054, SRMR: .055, CFI. : .91, GFI: .97) (Tabachnick & Fidell, 2013; Hooper et al., 2008). The Cronbach's Alpha reliability values of the scale were .91 for the total scale, .85, .79, .73 for the sub-dimensions, and .80 for the frequency and intensity dimensions, respectively.

2.2.2 Depression, Stress and Anxiety Scale (DASS-21)

This scale, which was shortened by Brown et al. (1997) and stated that the 42-item long form (Lovibond & Lovibond, 1995) of the Depression, Stress and Anxiety Inventory (DASS-42) has the validity to perform the same measurement, was adopted to Turkish culture by Yılmaz et al. (2017). It is a self-report, 4-poing Likert scale with 21 items and 3 sub-dimensions. In this study, depression symptoms were measured by using 7 items in the scale developed to identify depression symptoms. High scores obtained from the scale indicate high levels of depression symptoms. During the study, the psychometric properties of the 7 items describing the symptoms of depression were re-examined, and it was determined that the model fit was achieved as (X^2/Sd: 3.50, RMSEA: .077, RMR: .055, SRMR: .050, CFI: .91, GFI: .99) (Tabachnick & Fidell, 2013; Hooper et al., 2008). The Cronbach's Alpha reliability value of the scale was .92.

2.2.3 Intolerance of Uncertainty Index-A for Children (IUI-A-C)

Developed to evaluate the tendency of children and adolescents to see uncertainty as acceptable and intolerable (Rifkin & Kendall, 2020), it was adapted from the adult form of the Intolerance of Uncertainty Index (IUI-A) (Gosselin et al., 2008; Carleton et al., 2010). The language structure of the scale has been simplified in order to facilitate the self-report of young people. It is scored from 1 (never) to 4 (always), and high scores indicate an increased degree of intolerance of uncertainty. The scale was adapted to Turkish culture as part of the current study. Within the adaptation process, the psychometric properties of the scale were examined after linguistic validity and pilot studies (Cronbach's Alpha value is .94). The construct validity of the scale was analyzed with 402 high school students aged 14-18 using confirmatory factor analysis (CFA). The results obtained from the CFA revealed that the form of the scale, consisting of 14 items and one dimension, fits well in the Turkish culture (X^2/Sd: 2.97, RMSEA: .068, RMR: .036, SRMR: .040, CFI: .98, GFI: .93). Internal consistency, two-half reliability and test-retest reliability analyzes were carried out to maintain the reliability of the scale. The internal consistency of the form was .90, the two-half reliability was .86, and the test-retest reliability was .85. Related results show that the scale is reliable in Turkish culture.

2.3 Data collection

During the data collection, first, the permission of the parents was obtained through the school administrators following the research permission was obtained for the institutions. After the permission of the parents, the measurement tools were applied only to volunteered students in the presence of the school counselors. Participants were informed that they could stop filling out the scales at any point and the results would remain confidential. The application took 10 minutes on average, and the process took 10 days in total. The data were collected by two experts in the field of psychological counseling.

2.4 Procedure and data analysis

After the data collection, the data related to the scales were transferred to the computer environment, and, missing data analysis was first conducted with SPSS 22 software, and 5 data sets containing 5% missing data (Enders, 2022; Graham, 2009) were excluded as recommended. Secondly, skewness and kurtosis and Mahalanobis calculations were made for extreme value analysis, and it was decided to exclude 6 people's data found to violate parametric conditions from the data set. After these processes, the analysis was repeated to confirm the assumptions of normality values and it was decided to perform the analysis with a total of 416 data sets.

Confirmatory measurement and structural equation models were tested with LISREL 8.8 software within structural equation modeling (SEM) to answer the research questions. SEM was tested by developing three different models. Model I tested whether COVID-19-induced OCS were a direct predictor of depression. Intolerance of uncertainty (IU) was included in Model II to test whether COVID-19-induced OCS predict depression both directly and with IU. In Model III, the full mediator role of IU between these variables was tested. Ratio of chi-square value to degrees of freedom (X^2/Sd), CFI (Comparative Fit Index), NFI (Normed Index of Fit), GFI (Goodness of Fit Index), SRMR (Standardized Root Mean Square Residual) and RMSEA (The Root Mean Square Error of Approximation) values, frequently used criteria in structural equation models, were used to evaluate the goodness of fit for the confirmatory measurement with the established models (Tabachnick & Fidell, 2013). $X^2/Sd \leq 5$, acceptable fit $\geq .90$ and perfect fit $\geq .95$ for CFI and NFI, acceptable fit $\geq .85$ and perfect fit $\geq .90$ for GFI, acceptable fit $\leq .08$ and perfect fit $\leq .05$ for SRMR and RMSEA criteria are considered in the evaluation of goodness of fit criteria (Kline, 2015; Tabachnick & Fidell, 2013). Verification of the proposed measurement model is considered as a prerequisite for testing structural equation models (Schumacker & Lomax, 2004). In this sense, a two-stage approach was adapted in the data analysis process. In the first stage, the confirmatory measurement model was applied for the compatibility of the determined models. Goodness-of-fit measures (X^2/Sd: 2.87, CFI: .98, NFI: .98, GFI: .99, SRMR: .020, RMSEA: .066) obtained from the measurement models show that the model fits well and is validated (Tabachnick & Fidell, 2013). In the second stage, the predictive effects of COVID-19-induced OCS on depression symptoms and the mediator role of IU between these variables were tested.

2.5 Ethical processes

Research permission for the study was obtained from the Research Permission Commission of the Ministry of National Education (MoNE). (Date: 15.03.2022, No: 2022/605.01-E.5488725)

3 Results

After the measurement model was verified, 3 different models were tested in order to find answers to the research questions. Model I, developed to answer the first research question, tested the direct predictive effect of COVID-19-induced OCS on depressive symptoms. In Model I, COVID-19-induced OCS were expected to have negative predictive effects on depressive symptoms. The relevant findings are presented in Figure 1.

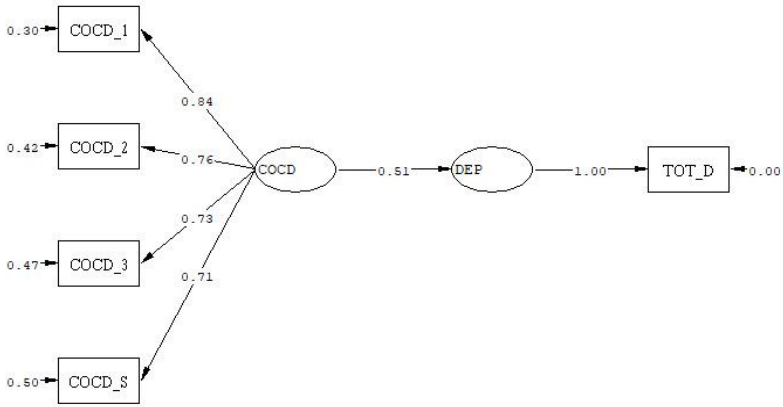

Figure 1. Structural equation modeling (SEM) results for Model I.

Considering the goodness of fit values (X^2/Sd: 2.78, CFI: .98, NFI: .98, GFI: .99, SRMR: .024, RMSEA: .065), it can be said that the variables had significant relations with the observed variables ($p<0.01$). Since the scale of depressive symptoms is one-dimensional and it can cause error variances defined as Heywood Case in SEM applications, the error variance of the observed variable of the latent variable was fixed to 0 to avoid such cases, as suggested by Chen et al. (2001). Model I shows that COVID-19-induced OCS predicted depressive symptoms ($\beta= .51$, $p<0.01$). This finding suggests that depressive symptoms will increase as the OCS caused by COVID-19 increase.

Following the validation of the research question of Model I, mediation relations were examined. At this stage, IU was included in the model as a second stage to examine the parameter values of the direct and indirect relationships between the predictor variables and the predicted variable, and whether IU mediated the relationship. In order to reveal the indirect relationships for the mediation relationship, a partial mediator model was established and the predictive relationships between the variables were determined. The related relationship was tested as Model II, and the related findings are presented in Figure 2.

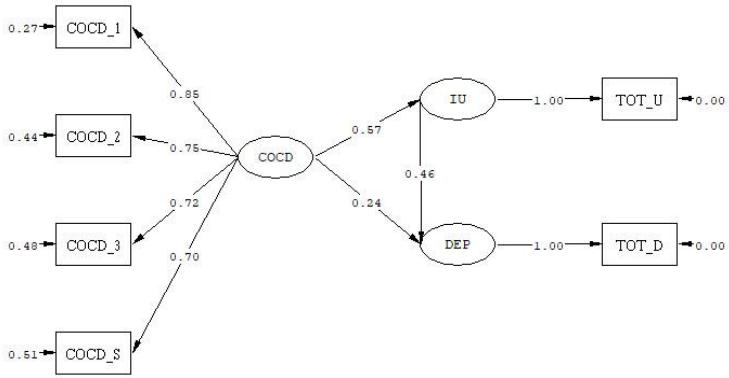

Figure 2. Structural equation modeling (SEM) results for Model II.

Considering the findings in Figure 2, changes were observed in the parameters in Model I after IU was included in the model. When the fit indices of the tested model were examined, it was concluded that the model gave a good fit (X^2/Sd: 3.95, CFI: .99), NFI: .98, GFI: .98, SRMR: .029, RMSEA: .073). Since the scale for the IU variable is unidimensional, the error variance of the observed variable for the latent variable was fixed at 0, as was the case with depressive symptoms. When Figure 2 was examined, it was found that the latent variable of COVID-19-induced OCS predicted IU latent variable (β= .57, p<0.01) and depression latent variable (β= .24, p<0.01). The IU variable included in the model as a mediator was found to predict depression symptoms (β= .46, p<0.01). In Model I, the correlation coefficient between the COVID-19-induced OCS variable and the depression variable (β= .51, p<0.01) showed a significant decrease (β= .24, p<0.01) with the addition of the IU variable. This change can be considered as a strong sign for the partial mediation relationship of IU in the relations between the variables.

The full mediation role developed to reveal the existence of a direct relationship over IU was tested by removing the path representing the relationships between COVID-19-induced OCS and depression symptoms. The findings regarding the full mediation relationship expressed as Model III are shown in Figure 3.

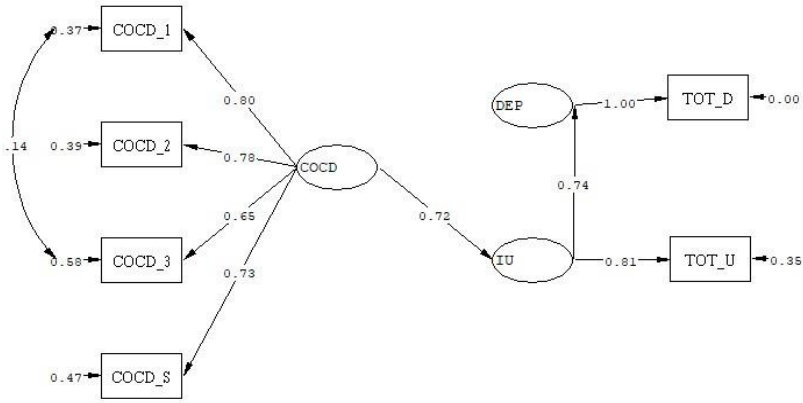

Figure 3. Structural equation modeling (SEM) results for Model III.

Parameter values (X^2/Sd: 3,91, CFI: .99, NFI: .98, GFI: .96, SRMR: .040, RMSEA: .086) of Model III established to determine the full mediator role of IU between COVID-19-induced OCS and depression symptoms indicate that the tested model and the full mediator role of IU are confirmed. Examining the Figure 3, it is seen that OCS caused by COVID-19 predicted IU (β=.72, $p<0.01$) and IU predicted depression symptoms (β=.74, $p<0.01$). Considering Model II, removing the path (β=.24, $p<0.01$) representing the relationship between COVID-19-induced OCS and depression from the model has led to significant changes in statistical values and path coefficients, as seen in Model III. This shows that IU acts as a full mediator and that COVID-19-induced OCS may be an important risk factor in triggering depressive symptoms.

4 Discussion

The results obtained within Model I in the study showed that OCS caused by COVID-19 have direct predictive effects on depression symptoms in Turkish adolescents. Transmission of disease and the related fears caused by the pandemic have revealed that people can increase their avoidance and cleaning behaviours and it triggers OCS, such as contamination and infection anxiety and compulsive hand washing (Mrklas et al., 2020; Jassi et al., 2020). The unusual behaviour and thought patterns and psychological stress developed by these OCS due to COVID-19 can intensify over time, disrupting the person's mental well-being and triggering depressive symptoms (Seçer & Ulaş, 2021; AlHusseini et al., 2021). The fear of infection and avoidance behaviours not only trigger OCS but they can also lead to secondary consequences such as sleep problems, anger and anxiety, triggering depressive symptoms (Shigemura et al., 2020; Ornell et

al., 2020; Xiang et al., 2020). In this context, considering the results obtained from the study and other supported research findings, it is thought that regarding depression symptoms together in the assessment and treatment of COVID-19-induced OCS in adolescents can provide important data to mental health professionals. Another result obtained from the study suggests that IU has predictive effects on depression symptoms, determined after including the IU variable in Model II. IU is shown as one of the cognitive frailty factors for anxiety and depression disorders, and it is stated that the inability to tolerate uncertainty can trigger depressive symptoms in adolescents (Hong & Cheung, 2015; Carleton et al., 2012; Boelen, 2010). It is thought that negative cognitive, emotional and behavioral reactions in the face of uncertainty can negatively affect the mental well-being of the individual and increase depressive symptoms by decreasing the tolerance of uncertainty. In addition, studies show that depression has a strong relationship with intolerance of uncertainty (McEvoy & Mahoney, 2012). In addition to the aforementioned research findings, it was emphasized that uncertainties caused by the pandemic can trigger depression and anxiety in individuals, and it was suggested that reducing uncertainties would contribute positively to depression, anxiety and stress levels (Bakioğlu et al., 2021). It is thought that situations, such as uncertainties regarding the COVID-19, not knowing the end time of the disease, constant presence of the possibility of infection, and the lack of knowledge of the biopsychosocial effects of the disease, may also trigger anxiety and depression in individuals.

Model III shows that the direct predictive effect of COVID-19-induced OCS on depression symptoms decreases following the inclusion of the IU variable to the model. This can be interpreted that IU variable has a direct and indirect mediation effect. Uncertainty situations are shown as one of the biggest factors that anxiety and fear due to the pandemic play a role in triggering OCS (Tull et al., 2020; Asmundson & Taylor, 2020), which suggests that IU may have an important mediating effect for depression triggered by OCS. The frequently changing symptoms of COVID-19 and the uncertainties regarding the infection and the timing of the virus seem to have led to the development of protective and avoidant behaviours in individuals, thus triggering some potential OCS (Kumar & Somani, 2020; Shafran et al., 2020). The repetitive handwashing and avoidance behaviours can increase the stress level in OCS, and the existence of uncertainties also shows that depressive symptoms can be triggered as a secondary mental problem (Mazza et al., 2020; Rosa-Alcázar et al., 2021). This suggests that IU may have indirect and direct effects on depression caused by COVID-19-induced OCS.

5 Delimitations and future research

One of the delimitations of this study is that the participants were selected by convenient sampling method. The fact that the sample group is non-clinical and a clinical group is not included can be considered as another delimitation. The findings were created based on the reports of the adolescent group without taking the observations of the participants' parents. And only Turkish adolescent sample was used in the study. For future studies, including adolescents' parents in the process, selecting participants from different cultures for the sample, choosing wide application methods, conducting research with more participation, and obtaining more detailed results with longitudinal studies on the mediation effects will make significant contributions to the literature.

Conclusion

The uncertainties and increased stress experienced during the pandemic seem to have triggered some mental disorders such as OCD and depression in individuals. Exaggerated attempts to find certainty will continue to be a detrimental risk factor for mental health, despite the fact that the disturbing aspect of uncertainty has always existed for the human species. The findings of the current study also seem to support the aforementioned issues. In this sense, raising awareness regarding IU's mediating effect in reducing OCS and depression triggered by the pandemic process in adolescents will provide important data for experts in the field of mental health.

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