





## Intolerance of uncertainty and mental wellbeing: the mediating and moderating role of doomscrolling

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### ABSTRACT

Intolerance of uncertainty can adversely affect wellbeing. However, little is known about the role of doomscrolling in this relationship. The main objective of the present study was to investigate the associations between intolerance of uncertainty and mental wellbeing, as well as moderation and mediation analysis included doomscrolling. The sample comprised 432 participants aged between 18 and 55 years. The study data were collected through an online survey that included the Intolerance of Uncertainty Scale, Doomscrolling Scale, and Warwick-Edinburgh Mental Wellbeing Short Form. Mediation and moderation analyses were conducted with the PROCESS macro. The direct effect of intolerance of uncertainty on both doomscrolling and mental wellbeing was significant. Moreover, the direct effect of doomscrolling on mental wellbeing was significant. Also, an indirect effect of doomscrolling between intolerance of uncertainty and mental wellbeing was found. In addition, the moderator analysis showed that intolerance of uncertainty had an inverse impact on mental wellbeing at low and medium ) levels of doomscrolling. . The results of the present study suggest that intolerance of uncertainty is a risk factor for mental wellbeing and that doomscrolling enhances the risk.

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## 1. Introduction

Life brings many uncertainties. In recent years, the COVID-19 pandemic and the earthquakes that have hit Turkey are some indicators of this ambiguity. Tolerating ambiguity is critical to maintaining daily functioning and mental health. Intolerance of uncertainty, a personality tendency, is defined as having difficulty tolerating unpredictability and unfamiliarity (Carleton, 2016). A growing body of research indicates that intolerance of uncertainty has negative effects of on mental health. Previous studies have shown that intolerance of ambiguity increases depression and anxiety (McEvoy & Mahoney, 2012), hopelessness (Demirtas & Yildiz, 2019), and rumination (Yook et al., 2010). It also decreases cognitive flexibility (Demirtas & Yildiz, 2019), self-efficacy, optimism (Kandpal, 2022), and resilience (Sarıçam et al., 2020). In addition, Carleton (2016) highlighted the negative impact of intolerance of ambiguity on mental health in a uncertainty model. Therefore, intolerance of uncertainty, leading to the aforementioned undesirable consequences, appears to be negatively related to wellbeing.

Over the past few decades, researchers have offered different explanations of wellbeing. Researchers have conceptualized wellbeing as two main pillars: eudaimonic and hedonic (Coffey et al., 2016). Stewart-Brown et al. (2009) integrated these pillars into the concept of mental wellbeing. Here, they defined mental wellbeing as a concept that also included eudaimonic (e.g. life purpose, psychological functioning) and hedonic (e.g. life satisfaction and positive emotions) dimensions. Previous studies have reported intolerance of ambiguity as one of the antecedents of mental wellbeing. Accordingly, it has been found that intolerance of uncertainty is negatively related to life satisfaction (Karataş & Tagay, 2021), happiness (Deniz, 2021), psychological wellbeing (Geçgin & Sahraç, 2017), and subjective wellbeing (Turan, 2019). Moreover, like wellbeing more generally, intolerance of ambiguity has a negative effect on mental wellbeing (Satici, Saricali et al., 2022).

As aforementioned, existing studies have highlighted the relationship between intolerance of uncertainty and wellbeing. However, maladaptive behaviours performed to reduce the negative impact of intolerance of ambiguity on wellbeing are largely unexplored. Individuals may engage in specific behaviours to reduce the negative consequences caused by intolerance of uncertainty. According to the cognitive behavioural model of intolerance of ambiguity, individuals engage in dysfunctional behaviours to alleviate the negative outcomes that intolerance of ambiguity has on mental health. Although these behaviours provide gains in the short-term, they have negative consequences in the long-term (Hebert & Dugas, 2019). One of these dysfunctional behaviours may be the compulsive scrolling of bad news on social media (i.e., 'doomscrolling'). In recent years, with technological progress, individuals can instantly follow news disseminated on social media platforms to reduce uncertainty (Alfasi, 2021). In their review, Sezgin et al. (2020) reported that news follow-ups to reduce ambiguity contain negative content. Continuous scrolling of news with negative content may play a role in the

relationship between intolerance of uncertainty and mental wellbeing. Therefore, doomscrolling may negatively impact wellbeing.

### *1.1. Doomscrolling as a mediator and moderator*

Doomscrolling, as a new concept is the compulsive reading of sad and depressing news on social media (Sharma et al., 2022). Another definition of doomscrolling conceptualizes it a flow in social media that makes it difficult for individuals to get out of reading dark news (Ytre-Arne & Moe, 2021). Sharme et al. (2022) emphasised that personality tendencies lead to doomscrolling and doomscrolling has an adverse consequence on wellbeing. Accordingly, intolerance of ambiguity as a personality disposition may enhance doomscrolling. Moreover, compulsive scrolling of sad news may decrease wellbeing. No previous studies have examined the relationship between intolerance of uncertainty and doomscrolling. However, some studies show that individuals scroll continuously on social media platforms to alleviate uncertainty (Alfasi, 2021; Sun et al., 2022). Therefore, intolerance of ambiguity may be negatively related to doomscrolling.

In addition to the possibility of a relationship between intolerance of uncertainty and doomscrolling, individuals' continuous scrolling of sad news may negatively influence wellbeing. Doomscrolling is positively associated with depression, anxiety (Anand et al., 2022), and negative emotions (Buchanan et al., 2021), and negatively associated with optimism (Buchanan et al., 2021), life satisfaction, and psychological wellbeing (Shabahang et al., 2022). Moreover, doomscrolling has been found to have negative association with mental wellbeing (Satici, Gocet-Tekin et al., 2022). Brailovskaia et al. (2021) found that persistent following of COVID-19 information sources on social media increased stress symptoms in a study conducted with participants from eight countries (France, Germany, Poland, Russia, Spain, Sweden UK, and USA). In another study, the association between the category of reasons for using social media and anxiety symptoms was investigated. This includes categories such as

information seeking, social interaction, and spending time on social media. It was reported that information seeking (e.g., following world news) had the highest frequency among the reasons for social media use and information seeking was associated with symptoms of anxiety (Brailovskaia et al., 2020). In addition, a longitudinal study reported that continuous information-seeking on social media increased depression (Brailovskaia et al., 2022).

In addition to the aforementioned relationship between intolerance of ambiguity, doomscrolling, and mental wellbeing, according to Sharpe et al.'s (2020) doomscrolling model, intolerance of uncertainty is an antecedent of doomscrolling, and doomscrolling is negatively associated with wellbeing. Furthermore, the cognitive behavioural model of intolerance of uncertainty suggests that intolerance of uncertainty via dysfunctional behaviours causes mental health to deteriorate further (Hebert & Dugas, 2019). Moreover, Apprigh (2022) reported that difficulty in tolerating uncertainty increased doomscrolling, which led to helplessness and depression. In addition, Anand et al. (2022) pointed out the indirect role of doomscrolling in the intolerance of uncertainty brought about by the COVID-19 pandemic leading to psychological distress. Similarly, existing studies have found that intolerance of uncertainty increases doomscrolling (Salisbury, 2023; Sun et al., 2022) and doomscrolling decreases wellbeing (Shabahang et al., 2022; Satıcı, Gocet-Tekin et al., 2022). Therefore, doomscrolling may have an indirect effect on the relationship between intolerance of uncertainty and mental wellbeing. Moreover, according to the transdiagnostic model of intolerance of uncertainty, individuals engage in ruminative and compulsive behaviours to alleviate the negative outcomes of intolerance of ambiguity on mental health. This model suggests that the strength of the relationship between intolerance of uncertainty and mental wellbeing is moderated by doomscrolling. Moreover, a systematic review by Strasser et al. (2022) emphasised that the lack of tolerance for ambiguity increased psychological stress and that monitoring sad news contributed to this increase. Also, Rodrigues (2022) highlighted in a

review that the difficulty of tolerating uncertainty deteriorates wellbeing and doomscrolling exacerbates this deterioration. In addition, in a qualitative study conducted by Ytre-Arne and Moe (2021), participants with high intolerance of uncertainty reported that they were emotionally exhausted and that compulsive reading of upsetting news on social media played a key role in this exhaustion. Recent studies have reported that intolerance of ambiguity enhances compulsive scrolling (Alfasi, 2021; Sun et al., 2022) and decreases wellbeing in doomscrolling (Satici, Gocet-Tekin et al., 2022; Shabahang et al., 2022). In this context, doomscrolling may play a mediating and moderating role in the relationship between intolerance of uncertainty and mental wellbeing.

### *1.2. The present study*

In the past few years, the COVID-19 pandemic, for which the World Health Organisation (WHO) has reported 763 million cases worldwide (WHO, 2023) and two major earthquakes in February 2023, which struck eleven provinces in Turkey, affecting 13.5 million individuals according to the official state broadcaster (Turkish Radio Television, 2023), brought unprecedented challenges to humanity. These difficult times have shown that life is characterised by uncertainty and unpredictability. In recent years, adverse life events have led researchers to focus on the impact of the intolerance of ambiguity on mental health. The present study was grounded in the cognitive behavioural model of intolerance of uncertainty, the transdiagnostic model of intolerance of uncertainty, and the doomscrolling model. The present study was grounded in the cognitive behavioural model of intolerance of uncertainty, the transdiagnostic model of intolerance of uncertainty, and the doomscrolling model. More specifically, the cognitive behavioural model of intolerance of uncertainty and the transdiagnostic model of intolerance of uncertainty both highlight that the individual tries to alleviate the distress of intolerance of ambiguity with over-information seeking but ends up exacerbating the distress (Einstein, 2014; Hebert & Dugas, 2019). Likewise, the doomscrolling

model highlights that compulsive reading of gloomy news with the intention to tolerate uncertainty consequently deteriorates wellbeing (Sharpe et al., 2020). Based on these theories, the present study explored the role of doomscrolling in the impact of intolerance of uncertainty on mental wellbeing

The present study examined the relationship between intolerance of uncertainty, doomscrolling, and mental wellbeing. In addition, the present study's main aim was to explore both the mediating and moderating role of doomscrolling in the relationship between intolerance of ambiguity and mental wellbeing. This is a relatively new area of research and the empirical base quite clearly does not have a strong grounding for either mediation or moderation which is why we tested both as possible explanations. Although there is evidence in the literature indicating relationships between the variables in the present study, there are no previous studies examining the mediating and moderating role of doomscrolling in the effect of intolerance of uncertainty on mental wellbeing. Therefore, the present study addressed this knowledge gap by exploring the mediating and moderating effects. Therefore, the study contributes to the examination of the mechanism of the relationship between intolerance of uncertainty and mental wellbeing. Considering the importance of the study, a hypothetical model is presented in Figure 1, and five hypotheses are proposed. These are that: (i) intolerance of uncertainty would be negatively related to mental wellbeing (H<sub>1</sub>), (ii) intolerance of uncertainty would be positively associated with doomscrolling (H<sub>2</sub>), (iii) doomscrolling would be negatively related to mental wellbeing (H<sub>3</sub>), (iv) there would be a negative indirect effect from intolerance of uncertainty to mental wellbeing via doomscrolling (H<sub>4</sub>), and (v) doomscrolling would positively moderate the relationship between intolerance of uncertainty and mental wellbeing (H<sub>5</sub>).

## **2. Method**

### *2.1. Participants and procedure*

In the G\*Power analysis (Faul et al., 2007), a linear multiple regression fixed model  $R^2$  deviation from zero test was used to determine the sample size. It was taken into account that there were two predicted and two control variables in the present study. Consequently, 377 participants were required to display small and medium effect size in the study with four predictors ( $1-\beta= 0.95$ ,  $\alpha = 0.05$ ,  $f^2=0.05$ ). The sample in the present study comprised 432 participants. Of these, 305 were female (70.6%) and 127 were male (29.4%). Their ages ranged from 18 to 55 years ( $M_{age}= 33.31$ ,  $SD=9.68$ ). A total of 98 participants reported that they had low socioeconomic level (23%), 297 reported they medium socioeconomic level (69%), and 37 reported they had high socioeconomic level (8%). Participants were selected using convenience sampling and snowball sampling, and recruited via a web-based survey from 53 of the 81 provinces in Turkey. The survey link was shared on social media platforms (i.e., *Facebook* and *Instagram*). Individuals were also asked to share the link on their social media. Therefore, participants from different provinces of Turkey were reached. No incentive was given to the participants. All questions had to be answered for the online survey to be submitted. Therefore, there were no missing data. Informed consent was obtained from all participants. The inclusion criteria for the present study included (i) volunteering to participate, (ii) using social media platforms, (iii) being at least 18 years of age, and (iv) living in a province in Turkey. Those who did not meet these criteria were excluded from the study. Permission for the study was obtained from the Ethics Committee of University, and the Declaration of Helsinki was considered at each step.

## **2.2. Measures**

### **2.2.1. Doomscrolling Scale (DS)**

The DS (Sharma et al., 2022; Turkish version: Satici, Gocet-Tekin et al., 2022) was used to assess doomscrolling. There are two versions (15 items and 4 items). The four-item short-form was used in the present study. Items (e.g., “*I find myself constantly looking at negative news*”)

are rated on a 7-point Likert scale (1=*strongly disagree*, 7=*strongly agree*). Higher scores indicate greater doomscrolling. The factor loadings ranged from 0.63 0.84. Cronbach's alpha ( $\alpha=0.81$ ) and model fit ( $\chi^2=28.78$ , SRMR=0.04, NFI=0.94, CFI=0.95, and IFI=0.95) were acceptable.

### 2.2.2. *Intolerance of Uncertainty Scale (IUS-12)*

The IUS-12 (Carleton et al., 2007; Turkish version: Sariçam et al., 2014). The scale comprises 12 items with two dimensions (prospective anxiety and inhibitory anxiety). The items (e.g., "*Unforeseen events upset me greatly*") are rated on a five-point Likert scale (1=*not at all characteristic of me*, 5=*entirely characteristic of me*). Higher scores indicate greater intolerance of uncertainty. The factors loaded between 0.55 and 0.87. Cronbach's alpha ( $\alpha= 0.88$ ) and model fit ( $\chi^2= 147.20$ ,  $sd= 48$ , RMSEA=0.07, IFI=0.95, CFI=0.95, SRMR=0.05, GFI=0.94) were acceptable.

### 2.2.3. *Warwick-Edinburgh Mental Wellbeing Short Form (WEMWBS-SF)*

The WEMWS (Tennant et al., 2007; Turkish version: Demirtaş & Baytemir, 2019). The scale has 14 items (e.g., "*I've been feeling useful*") rated on a five-point Likert scale (1= *none of the time*, 5= *all of the time always*). Higher scores indicate greater mental wellbeing. Factor loadings ranged from 0.48 to 0.77. Cronbach's alpha ( $\alpha= 0.86$ ) and model fit ( $\chi^2/sd= 1.98$ , CFI=0.99, NFI=0.97, GFI=0.97, AGFI=0.94, NFI=0.97, GFI=0.97, RMSEA=0.06, SRMR=0.03) were acceptable.

## 2.3. *Statistical analysis*

Firstly, multivariate statistical assumptions were evaluated. Mahalanobis distance values less than 15 were considered for no outliers (Leys et al., 2018), and kurtosis and skewness values between +1.5 and -1.5 were taken into consideration for normality (Tabachnick & Fidell, 2001). The Cronbach's alpha ( $\alpha$ ), McDonald's omega ( $\omega$ ), and Guttman lambda ( $\lambda_6$ ) reliability



coefficients of the variables were above 0.70, indicating internal consistency. Durbin-Watson calculations between 1 and 3 indicate that there is no correlation between the residuals, and tolerance above 0.10 and VIF below 10 indicates that there is no multicollinearity problem (Field, 2016). Herman's single factor test cut-off score of less than 50% indicates that there is no common method bias (Podsakoff et al., 2003).

After multivariate statistical assumptions had been carried out, mediation and moderation analyses were performed. Mediation and moderation analyses were performed using PROCESS macro, model 1 and model 4 (Hayes, 2018). Covariates were assigned in the analyses. Significance was tested using bootstrapping (10,000 resamplings) with 95% confidence interval (Preacher & Hayes, 2008). In the present study, JASP 0.16 program was used in different reliability analyses and SPSS 23 program was used in other analyses.

### **3. Results**

#### ***3.1. Descriptive and correlation statistics***

There were significant relationships between all the variables (see Table 1). Intolerance of uncertainty correlated positively with doomscrolling ( $r = 0.329, p < 0.01$ ) and negatively with mental wellbeing ( $r = -0.255, p < 0.01$ ). Also, doomscrolling was negatively correlated with mental wellbeing ( $r = -0.296, p < 0.01$ ).

#### ***3.2. Statistical assumption tests***

In the present study, the Mahalanobis distance was 12.885, kurtosis was -0.338 to 0.134, and skewness was -0.315 to 1.038. Durbin-Watson was 1.955, tolerance was 0.892, and VIF was 1.121. All reliability coefficients were between 0.871 and 0.980, CR was between 0.923 and 0.950, and AVE was between 0.525 and 0.758. In addition, Herman's single factor test cut-off score was 32.508%. After all the assumptions were met, mediation and moderation analyses were conducted.

### **3.3. Mediation analysis**

In the analysis, gender and age were included as control variables (see Fig. 2). The total and direct effects of intolerance of uncertainty on mental wellbeing were significant:  $\beta = -0.236$ ,  $p < 0.01$  for the total effect;  $\beta = -0.166$ ,  $p < 0.01$  for the direct effect. Intolerance of uncertainty was also found to have a direct effect on doomscrolling ( $\beta = 0.315$ ,  $p < 0.01$ ). Moreover, the direct effect of doomscrolling on mental wellbeing was significant:  $\beta = -0.222$ ,  $p < 0.01$ . Doomscrolling mediated the relationship between intolerance of uncertainty and mental wellbeing:  $\beta = -0.081$ , 95% CI = [-0.127, -0.039] (see Table 2).

### **3.4. Moderation analysis**

Age and gender were included as covariates in this analysis. Doomscrolling was found to have a moderating effect between intolerance of uncertainty and mental wellbeing:  $\beta = 0.054$ , 95% CI = [0.003, 0.106] (see Table 3). The analysis indicated that the effect of intolerance of uncertainty on mental wellbeing for low and middle levels of doomscrolling was significant:  $\beta = -0.233$ ,  $p < 0.01$  for low level;  $\beta = -0.178$ ,  $p < 0.01$  for middle level. However, this effect was not significant at high level ( $\beta = -0.042$ ,  $p > 0.05$ ) (see Fig. 3).

## **4. Discussion**

The present study tested the mediating and moderating effects of doomscrolling on the relationship between intolerance of uncertainty and mental wellbeing. All the hypotheses (H<sub>1</sub> to H<sub>5</sub>) were supported. The first hypothesis was that intolerance of uncertainty would be negatively related to mental wellbeing. This finding is supported by Carleton's (2016) uncertainty model. According to this model, intolerance of ambiguity leads to negative consequences for mental health. Previous studies have indicated that intolerance of ambiguity increases psychological distress (Beck & Daniels, 2023) and decreases life satisfaction and happiness (Deniz, 2021; Karataş & Tagay, 2021). Satici, Saricali et al. (2022) reported a

negative relationship between intolerance of uncertainty and mental wellbeing. Intolerance of ambiguity also has negative outcomes on both the eudaimonic and hedonic wellbeing of the individual (i.e., it is negatively related to mental wellbeing). Intolerance of uncertainty causes individuals to panic and become anxious in the face of unforeseen life events. Since life is unpredictable, the inability of individuals to tolerate uncertainty leads them to experience negative emotions continuously (Carleton, 2016). Therefore, intolerance of uncertainty negatively affects mental wellbeing.

In the present study, intolerance of uncertainty was positively associated with doomscrolling. According to the transdiagnostic model of intolerance of uncertainty, individuals may engage in safety behaviors, reassurance seeking, rumination, and compulsive behaviors to alleviate ambiguity (Einstein, 2014). Consistent with this model, individuals may engage in compulsive scrolling of depressive news because of intolerance of ambiguity. Also, Buneviciene et al. (2021) emphasized the compulsive scrolling of sad news to tolerate uncertainty, seek reassurance, and fill the information gap. Sun et al. (2022) reported that intolerance of uncertainty was closely associated with continuous news scrolling. Intolerance of ambiguity may enhance individuals' doomscrolling because of the need to constantly read gloomy news to reduce their ambiguity. In particular, with the COVID-19 lockdown, individuals started to continuously read instant news on social media to tolerate ambiguity (Alfasi, 2021). Individuals who could not tolerate uncertainty continued to read adverse news on social media to reduce anxiety (Anand et al., 2022). Therefore, intolerance of uncertainty increased doomscrolling (Salisbury, 2023). In accord with previous aforementioned studies, the present study found that intolerance to uncertainty enhanced doomscrolling.

The hypothesis that doomscrolling was negatively related to mental wellbeing was supported. Continuous scrolling of dark news on social media may worsen mental health. In this context, doomscrolling is positively associated with psychological distress and negative affect (Anand

et al., 2022; Buchanan et al., 2021). Consistent with the findings of the present study, previous research has shown that doomscrolling has a negative relationship with mental wellbeing (Satici, Gocet-Tekin et al., 2022). Moreover, a review reported that constantly reading negative news on social media (i.e., doomscrolling), threatens mental health and wellbeing (Rodrigues, 2022). Other review reported that consumption of fake, misleading, distressing negative news on social media worsen mental and neurological health (Jones et al., 2021). Compulsive reading of dark news has a negative impact on mood. Indeed, the doomscrolling model has emphasised that doomscrolling is a negative antecedent of wellbeing (Sharma et al., 2020).

The most important contribution of the present study to the literature was demonstrating the mediating and moderating roles of doomscrolling between intolerance of uncertainty and mental wellbeing. Based on these findings, doomscrolling not only had an indirect effect between intolerance of ambiguity and mental wellbeing but also moderated the relationship. In other words, intolerance of uncertainty has negative effects on mental wellbeing through both the mediating and moderating roles of doomscrolling. Consistent with these findings, the doomscrolling model indicated that intolerance of uncertainty is closely associated with doomscrolling and that doomscrolling has a negative association with wellbeing (Sharme et al., 2020). Accordingly, intolerance of ambiguity, a personality tendency, may increase doomscrolling, and doomscrolling may decrease mental wellbeing. Therefore, doomscrolling may play an important role between intolerance of uncertainty and mental wellbeing. The present study's findings also supported the moderating role of doomscrolling in the cognitive behavioral model of intolerance of uncertainty. According to this model, dysfunctional behaviors intended to reduce the negative impact of intolerance of ambiguity on mental health are counterproductive (Hebert & Dugas, 2019). Recent studies have reported the negative outcome of doomscrolling on mental health as a dysfunctional behavior (Anand et al., 2022; Satici, Gocet-Tekin et al., 2022). Therefore, while tolerance of ambiguity was related to mental

wellbeing, doomscrolling played a moderating role in this relationship. Finally, in recent years, the COVID-19 pandemic triggered intolerance of uncertainty (Bavolar et al., 2023). One of the habits formed during this period was the distressing scrolling of news on social media to help tolerate uncertainty (Ytre-Arne & Moe, 2021). However, the constant reading of sad and depressing news on social media worsened mental health (Shabahang et al., 2022). For all these reasons, the present study showed that doomscrolling both mediated and moderated the relationship between intolerance of uncertainty and mental wellbeing.

#### *4.1. Limitations and implications*

The present study had some limitations and implications. The cross-sectional design was unable to determine causality between the study variables. Considering this limitation, similar cross-lagged longitudinal panel design studies should be conducted. In addition, experimental studies could be performed to examine the causal effect of intolerance of ambiguity on doomscrolling and mental wellbeing. The use of convenience sampling and snowball sampling meant that the participants were not representative of all Turkish adults. Therefore, in future studies, more representative samples of participants are needed. Other limitation was that all the data were self-report and such data are subject to well established methods biases. Therefore, further studies should use mixed methods designs. In the relationship between intolerance of uncertainty and mental wellbeing, variables other than doomscrolling may play mediating and/or moderating roles. For example, the mediating and moderating effects of such variables as fear of missing out, psychological distress, emotion dysregulation, psychological flexibility, and self-control could be investigated in future research. Although the instruments used in the present study showed satisfactory reliability, the use of different assessment tools may show different correlations between the variables. Therefore, in future studies, multiple instrument tools can be used to enhance the validity. The present study was only carried out in Turkish culture. Therefore, the findings need replicating in different countries and cultures.

The findings of the present study has a number of implications. Given, the findings, an intervention program for intolerance to uncertainty could be developed. Additionally, an intervention program for doomscrolling could be developed. Also, a psycho-education program could be prepared for individuals with high intolerance of uncertainty, addressing ways of accessing healthy information on social media to avoid doomscrolling. Accordingly, in the experimental study, it was reported that stopping feeding from sad news on social media increased wellbeing and decreased depression and anxiety (Lambert et al., 2022). Additionally, educators and mental health professionals can provide guidelines to improve individuals' ability to follow useful and accurate information on social media.

## **5. Conclusion**

In summary, the present study provides some clarity on how intolerance of uncertainty influence mental wellbeing through the validation of the mediation moderated model. The findings show intolerance of ambiguity has both direct and indirect effects on mental wellbeing, with the indirect effect being mediated by doomscrolling. The findings also show the relationship between intolerance of uncertainty and mental wellbeing is moderated by doomscrolling. Taken as a whole, the present study contributes to the literature by elucidating the key role of doomscrolling in influencing the severity and indirectness of the relationship between intolerance of ambiguity and mental wellbeing. Moreover, prevention and intervention programmes can be developed by taking into account the explanation of the relationship mechanism between intolerance of uncertainty and mental wellbeing through doomscrolling.

## References

- Anand, N., Sharma, M. K., Thakur, P. C., Mondal, I., Sahu, M., Singh, P., & Singh, R. (2022). Doomsurfing and doomscrolling mediate psychological distress in COVID-19 lockdown: Implications for awareness of cognitive biases. *Perspectives in Psychiatric Care*, 58(1), 170-172. <https://doi.org/10.1111/ppc.12803>
- Alfasi, Y. (2021). Attachment insecurity and social media fear of missing out: The mediating role of intolerance of uncertainty. *Digital Psychology*, 2(2), 11-18. <https://doi.org/10.24989/dp.v2i2.1957>
- Apprich, N. F. A. (2022). *Scrolling through the climate crisis: Exploring the impact of climate change related doomscrolling on helplessness and depression* [Master thesis]. University of Twente.
- Bavolar, J., Kacmar, P., Hricova, M., Schrötter, J., Kovacova-Holevova, B., Köverova, M., & Raczova, B. (2023). Intolerance of uncertainty and reactions to the COVID-19 pandemic. *The Journal of General Psychology*, 150(2), 143-170. <https://doi.org/10.1080/00221309.2021.1922346>
- Beck, E., & Daniels, J. (2023). Intolerance of uncertainty, fear of contamination and perceived social support as predictors of psychological distress in NHS healthcare workers during the COVID-19 pandemic. *Psychology, Health & Medicine*, 28(2), 447-459. <https://doi.org/10.1080/13548506.2022.2092762>
- Brailovskaia, J., Margraf, J., & Schneider, S. (2021). Social media as information source, stress symptoms and burden caused by Coronavirus (COVID-19): A cross-national investigation of predictors. *European Psychologist*, 26(4), 373-386. <https://doi.org/10.1027/1016-9040/a000452>

- Brailovskaia, J., & Margraf, J. (2022). The relationship between active and passive Facebook use, Facebook flow, depression symptoms and Facebook addiction: A three-month investigation. *Journal of Affective Disorders Reports*, *10*, 100374. <https://doi.org/10.1016/j.jadr.2022.100374>
- Brailovskaia, J., Schillack, H., & Margraf, J. (2020). Tell me why are you using social media (SM)! Relationship between reasons for use of SM, SM flow, daily stress, depression, anxiety, and addictive SM use—An exploratory investigation of young adults in Germany. *Computers in Human Behavior*, *113*, 106511. <https://doi.org/10.1016/j.chb.2020.106511>
- Buchanan, K., Aknin, L. B., Lotun, S., & Sandstrom, G. M. (2021). Brief exposure to social media during the COVID-19 pandemic: Doom-scrolling has negative emotional consequences, but kindness-scrolling does not. *PloS One*, *16*(10), e0257728. <https://doi.org/10.1371/journal.pone.0257728>
- Buneviciene, I., Bunevicius, R., Bagdonas, S., & Bunevicius, A. (2021). COVID-19 media fatigue: predictors of decreasing interest and avoidance of COVID-19-related news. *Public Health*, *196*, 124–128. <https://doi.org/10.1016/j.puhe.2021.05.024>
- Carleton, R.N. (2016). Into the unknown: A review and synthesis of contemporary models involving uncertainty. *Journal of Anxiety Disorders*, *39*, 30–43. <https://doi.org/10.1016/j.janxdis.2016.02.007>
- Carleton, R.N., Sharpe, D., & Asmundson, G.J. (2007). Anxiety sensitivity and intolerance of uncertainty: Requisites of the fundamental fears? *Behaviour Research and Therapy*, *45*(10), 2307-2316. <https://doi.org/10.1016/j.brat.2007.04.006>



- Coffey, J. K., Wray-Lake, L., Mashek, D., & Branand, B. (2016). A multi-study examination of well-being theory in college and community samples. *Journal of Happiness Studies*, 17(1), 187-211. <https://doi.org/10.1007/s10902-014-9590-8>
- Demirtaş, A., & Baytemir, K. (2019). Adaptation of Warwick-Edinburgh Mental Well-being scale short form into Turkish: Validity and reliability study. *Electronic Journal of Social Sciences*, 18(70), 654–666 <https://doi.org/10.17755/esosder.432708>
- Demirtas, A. S., & Yildiz, B. (2019). Hopelessness and perceived stress: The mediating role of cognitive flexibility and intolerance of uncertainty. *Dusunen Adam The Journal of Psychiatry and Neurological Sciences*, 32(3), 259. <https://doi.org/10.14744/dajpns.2019.00035>
- Deniz, M. E. (2021). Self-compassion, intolerance of uncertainty, fear of COVID-19, and well-being: A serial mediation investigation. *Personality and Individual Differences*, 177, 110824. <https://doi.org/10.1016/j.paid.2021.110824>
- Einstein, D. A. (2014). Extension of the transdiagnostic model to focus on intolerance of uncertainty: A review of the literature and implications for treatment. *Clinical Psychology*, 21(3), 280–300. <https://doi.org/10.1111/cpsp.12077>
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191. <https://doi.org/10.3758/bf03193146>
- Field, A. (2016). *Discovering statistics using IBM SPSS Statistics*. London: Sage.
- Geçgin, F. M., & Sahranç, Ü. (2017). The relationships between intolerance of uncertainty and psychological well-being. *Sakarya University Journal of Education*, 7(4), 739-756. <https://doi.org/10.19126/suje.383737>

- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). New York: The Guilford Press
- Hebert, E. A., & Dugas, M. J. (2019). Behavioral experiments for intolerance of uncertainty: Challenging the unknown in the treatment of generalized anxiety disorder. *Cognitive and Behavioral Practice, 26*(2), 421–436. <https://doi.org/10.1016/j.cbpra.2018.07.007>
- Jones, R., Mougouei, D., & Evans, S. L. (2021). Understanding the emotional response to Covid-19 information in news and social media: A mental health perspective. *Human Behavior and Emerging Technologies, 3*(5), 832-842. <https://doi.org/10.1002/hbe2.304>
- Kandpal, A. (2022). Intolerance of uncertainty, self-efficacy, optimism & emotions in young adults. *International Journal of Indian Psychology, 10*(2), 823-830.
- Karataş, Z., & Tagay, Ö. (2021). The relationships between resilience of the adults affected by the COVID pandemic in Turkey and COVID-19 fear, meaning in life, life satisfaction, intolerance of uncertainty and hope. *Personality and Individual Differences, 172*, 110592. <https://doi.org/10.1016/j.paid.2020.110592>
- Lambert, J., Barnstable, G., Minter, E., Cooper, J., & McEwan, D. (2022). Taking a one-week break from social media improves well-being, depression, and anxiety: a randomized controlled trial. *Cyberpsychology, Behavior, and Social Networking, 25*(5), 287-293. <https://doi.org/10.1089/cyber.2021.0324>
- Leys, C., Klein, O., Dominicy, Y., & Ley, C. (2018). Detecting multivariate outliers: Use a robust variant of the Mahalanobis distance. *Journal of Experimental Social Psychology, 74*, 150-156. <https://doi.org/10.1016/j.jesp.2017.09.011>
- McEvoy, P. M., & Mahoney, A. E. (2012). To be sure, to be sure: Intolerance of uncertainty mediates symptoms of various anxiety disorders and depression. *Behavior Therapy, 43*(3), 533-545. <https://doi.org/10.1016/j.beth.2011.02.007>

- Podsakoff, P., Mackenzie, S., Lee, J.-Y., & Podsakoff, N. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Preacher, K. J., & Hayes, A. F. (2008). Contemporary approaches to assessing mediation in communication research. In A. F. Hayes, M. D. Slater, & L. B. Snyder (Eds.), *The Sage sourcebook of advanced data analysis methods for communication research* (pp. 13–54). Sage Publications, Inc. <https://doi.org/10.4135/9781452272054.n2>
- Rodrigues, E. V. (2022). Doomscrolling threat to mental health and well-being: A review. *International Journal of Nursing Research*, 8(4), 127-130.
- Salisbury, L. (2023). On not being able to read: doomscrolling and anxiety in pandemic times. *Textual Practice*, 37(6), 887-918. <https://doi.org/10.1080/0950236X.2022.2056767>
- Sarıçam, H., Deveci, M., & Ahmetoğlu, E. (2020). The examination of hope, intolerance of uncertainty and resilience levels in parents having disabled children. *Global Journal of Psychology Research: New Trends and Issues*, 10(1), 26-39. <https://doi.org/10.18844/gjpr.v10i1.4398>
- Sarıçam, H., Erguvan, F. M., Akın, A., & Akça, M. Ş. (2014). The Turkish short version of the intolerance of uncertainty (IUS-12) scale: The study of validity and reliability. *Route Educational and Social Science Journal*, 1(3), 148-157. <https://doi.org/10.17121/ressjournal.109>
- Satici, S. A., Gocet Tekin, E., Deniz, M. E., & Satici, B. (2022). Doomscrolling Scale: Its association with personality traits, psychological distress, social media use, and wellbeing. *Applied Research in Quality Of Life*, 18, 833–847. <https://doi.org/10.1007/s11482-022-10110-7>

- Satici, B., Saricali, M., Satici, S. A., & Griffiths, M. D. (2022). Intolerance of uncertainty and mental wellbeing: Serial mediation by rumination and fear of COVID-19. *International Journal of Mental Health And Addiction*, 20(5), 2731-2742. <https://doi.org/10.1007/s11469-020-00305-0>
- Sezgin, D., Karaaslan, Y. S., & Ersoy, İ. (2020). The pandemic infodemic: The role of risk communication and media in a pandemic. *Gazi Medical Journal*, 31(2), 325-327. <https://doi.org/10.12996/gmj.2020.79>
- Shabahang, R., Kim, S., Hosseinkhanzadeh, A. A., Aruguete, M. S., & Kakabaraee, K. (2022). “give your thumb a break” from surfing tragic posts: potential corrosive consequences of social media users’ doomscrolling. *Media Psychology*. Advance online publication. <https://doi.org/10.1080/15213269.2022.2157287>
- Sharma, B., Lee, S. S., & Johnson, B. K. (2022). The dark at the end of the tunnel: Doomscrolling on social media newsfeeds. *Technology, Mind, and Behavior*, 3(1). <https://doi.org/10.1037/tmb0000059>
- Strasser, M. A., Sumner, P. J., & Meyer, D. (2022). COVID-19 news consumption and distress in young people: A systematic review. *Journal of Affective Disorders*, 300, 481–491. <https://doi.org/10.1016/j.jad.2022.01.007>
- Sun, C., Li, Y., Kwok, S. Y., & Mu, W. (2022). The Relationship between intolerance of uncertainty and problematic social media use during the COVID-19 pandemic: A serial mediation model. *International Journal of Environmental Research and Public Health*, 19(22), 14924. <https://doi.org/10.3390/ijerph192214924>
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Allyn&Bacon, Inc.

- Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., & Stewart-Brown, S. (2007). The Warwick-Edinburgh Mental Well-being scale (WEMWBS): development and UK validation. *Health and Quality of Life Outcomes*, 5(1), 63. <https://doi.org/10.1186/1477-7525-5-63>
- Turan, M. (2019). *Predicting subjective wellbeing of graduate students by mindfulness, intolerance to uncertainty, rumination and anxiety sensitivity* (Master's thesis, Middle East Technical University).
- Turkish Radio Television (2023). Death toll from February earthquakes in Türkiye tops grim mark of 50,000. Retrieved April 10 2023, from: <https://www.trtworld.com/turkey/death-toll-from-february-earthquakes-in-t%C3%BCrkiye-tops-grim-mark-of-50-000-66314>
- World Health Organization (2023). WHO coronavirus (COVID-19) dashboard. Retrieved April 4, 2023, from: <https://covid19.who.int/>
- Yook, K., Kim, K. H., Suh, S. Y., & Lee, K. S. (2010). Intolerance of uncertainty, worry, and rumination in major depressive disorder and generalized anxiety disorder. *Journal of Anxiety Disorders*, 24(6), 623–628. <https://doi.org/10.1016/j.janxdis.2010.04.00>
- Ytre-Arne, B., & Moe, H. (2021). Doomscrolling, monitoring and avoiding: News use in COVID-19 pandemic lockdown. *Journalism Studies*, 22(13), 1739-1755. <https://doi.org/10.1080/1461670X.2021.1952475>

Table 1.

Descriptive statistics and correlation values of the study variables

Variable	Mean (SD)	Skewness	Kurtosis	$\alpha$	$\omega$	$\lambda_6$	CR	AVE	1	2	3
1. IU	41.03(10.37)	-0.315	-0.338	0.909	0.911	0.915	0.923	0.554	-		
2. DS	10.36(6.69)	1.038	0.134	0.893	0.894	0.871	0.926	0.758	0.329**	-	
3. MW	49.00(11.78)	-0.268	-0.268	0.929	0.930	0.980	0.950	0.525	-0.255**	-0.296**	-

\*\* $p < 0.01$ , Note: IU = Intolerance of uncertainty; DS = Doomscrolling; MW = Mental wellbeing

Table 2.

Direct and indirect effects of intolerance of uncertainty on mental wellbeing

Pathway	B	SE	Coefficient	Lower bound	Upper bound
IU→ MW (Total effect)	-0.229	0.045	-0.236	-0.319	-0.141
Direct effect					
IU→ MW	-0.161	0.467	-0.166	-0.253	-0.069
IU→ DS	0.611	0.089	0.315	0.438	0.786
DS→ MW	-0.112	0.024	-0.222	-0.159	-0.064
Indirect effect					
IU→ DS→ MW	-0.068		-0.081	-0.127	-0.039

Note: IU = Intolerance of uncertainty; DS = Doomscrolling; MW = Mental wellbeing

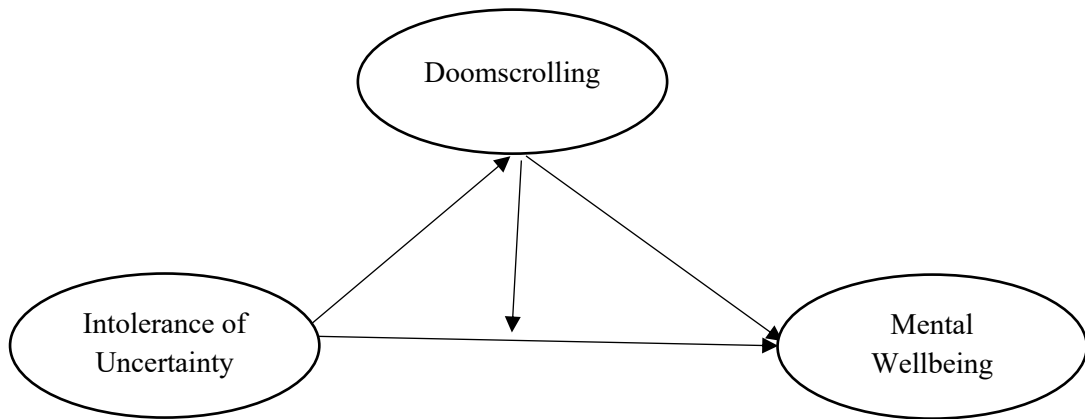
Table 3.

Moderating effects of intolerance of uncertainty on mental wellbeing

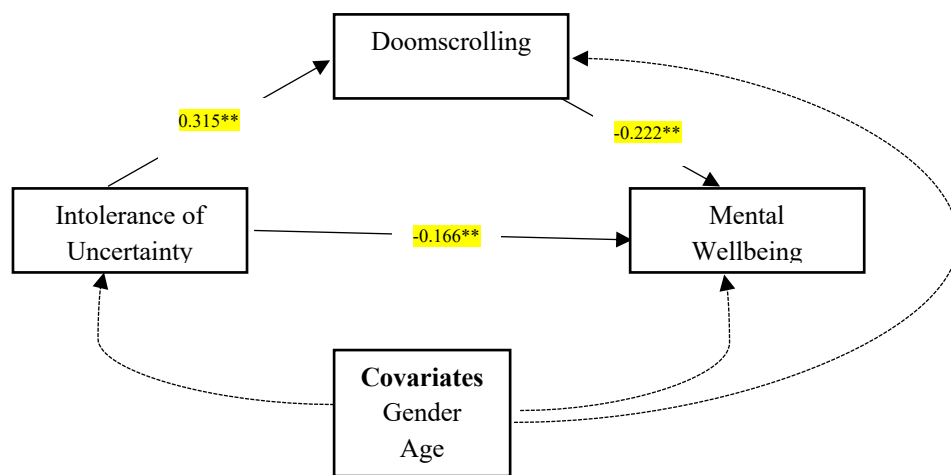
Variables	Coefficient	SE	t	Lower Bound	Upper Bound
Constant	4.305	0.340	12.649	3.636	4.974
IU	-0.287	0.076	-3.743	-0.438	-0.136
DM	-0.314	0.101	-3.106	-0.513	-0.115
Moderating Effect	0.054	0.026	2.061	0.003	0.106

Note: IU = Intolerance of uncertainty; DS = Doomscrolling; MW = Mental wellbeing

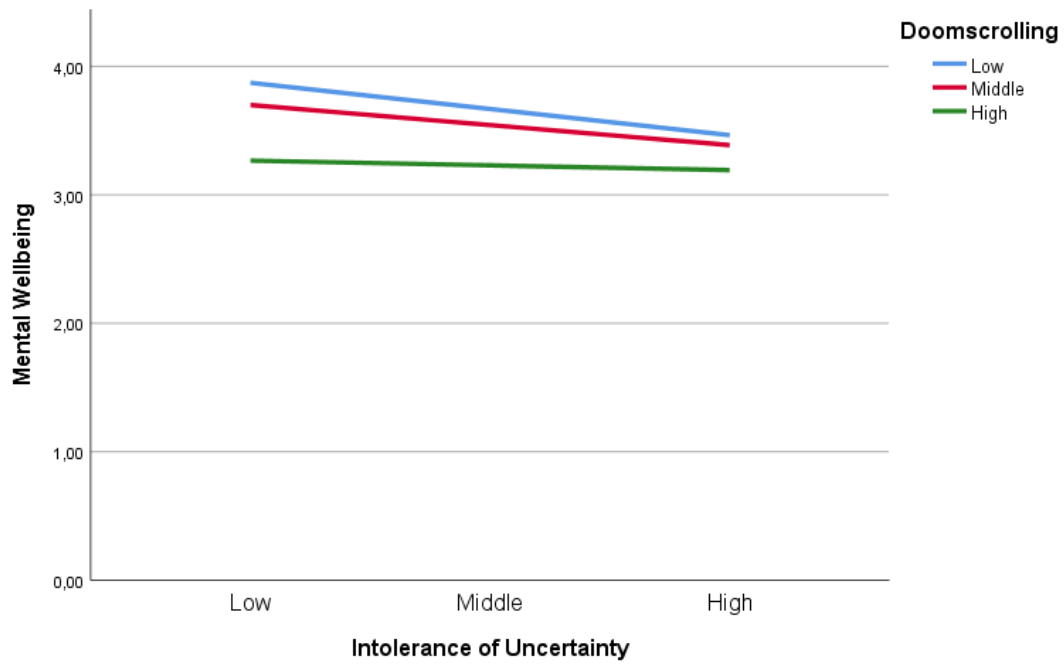




**Fig. 1.** Hypothetical model



**Fig. 2.** Mediating effect of doomscrolling



**Fig. 3.** Moderating effect of doomscrolling