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Fear of Loneliness in Contemporary Digital Life: A Terror Management Theory Perspective on Scale Validation and its Associations with Dark Future, Doomscrolling, and Psychological Adjustment

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Abstract
This study was conducted using a two-stage design to adapt the Fear of Loneliness Scale into Turkish and to examine how this construct is patterned with dark future perception, doomscrolling, and psychological adjustment. In Study I, the linguistic adaptation of the scale was performed; its psychometric properties were evaluated using confirmatory factor analysis, item response theory, criterion-related validity, measurement invariance, and reliability analyses. The findings revealed that the unidimensional structure of the scale was confirmed at an acceptable level in the Turkish sample, exhibited high internal consistency, and demonstrated measurement invariance across gender. In Study II, the relationships between dark future perception, doomscrolling, fear of loneliness, and psychological adjustment were examined using correlation analysis and structural equation modeling. The results showed that fear of loneliness was positively associated with dark future and doomscrolling, and negatively associated with psychological adjustment. Furthermore, the results indicated that doomscrolling and fear of loneliness presented a significant pattern through indirect pathways in the relationship between dark future and psychological adjustment. The findings were discussed within the framework of Terror Management Theory and Mean World Syndrome. Overall, the study suggests that fear of loneliness is a central construct that should be addressed together with psychological adjustment under modern conditions of uncertainty, offering both a valid measurement tool and a theoretically grounded network of relationships.

Keywords Fear of loneliness · Dark future · Doomscrolling · Psychological adjustment · Scale

Extended author information available on the last page of the article

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Introduction

As part of the modernisation process, recent years have seen a marked increase in economic uncertainties, rapid social transformations and crises on a global scale (Moitra et al., 2023). Rising living and housing costs, weakening employment security, accelerating technological transformations, unpredictable events such as global pandemics or geopolitical tensions are making individuals' expectations for the future increasingly fragile (Marazziti et al., 2021; Tao et al., 2025; Tsubono & Ogawa, 2022). Living in a constantly changing and unpredictable social environment weakens individuals' sense of control and threatens their feelings of security, stability, and continuity (Tao et al., 2022). Current literature indicates that such structural and persistent uncertainties constitute a chronic source of stress for individuals and create long-term risks for mental health (Gupta et al., 2023). In this context, uncertainty in contemporary societies is no longer a temporary situation but has become a permanent risk environment that affects individuals' psychological functioning (Vitoriono et al., 2024).

Within this context of persistent uncertainty, fear of loneliness may represent a particularly relevant relational concern. Although fear of loneliness is closely related to loneliness, the two constructs are conceptually distinct. Whereas loneliness reflects an experience associated with the quantity or quality of existing social relationships (Ellis et al., 2020), fear of loneliness refers to anxiety about the possibility of losing social bonds or being alone in the future rather than the current experience of loneliness (Ventura-León et al., 2020). This future-oriented relational concern may become particularly salient when individuals perceive their future as uncertain or threatening. Indeed, fear of loneliness has been associated with adverse psychological outcomes, including stress, anxiety, and depression (Ventura-León et al., 2022). Accordingly, understanding fear of loneliness in the context of contemporary uncertainty may provide important insights into the relational processes associated with psychological adjustment.

It is important for individuals to remain functional within their society and region in environments where there are numerous chronic uncertainties (Oliinyk et al., 2025). Maintaining mental balance in the face of changing conditions fundamentally requires psychological adaptation (Oliinyk et al., 2025). Psychological adaptation is defined as an individual's ability to respond flexibly to changing environmental conditions, maintain emotional balance, and derive satisfaction from life (Schoon et al., 2003). This concept, which is not limited to the absence of psychopathology, also encompasses the individual's capacity to respond flexibly, regulatively, and functionally to environmental demands (Sarkar et al., 2023). It also serves a protective function for individuals during periods of heightened social and economic uncertainty (Chen & Bonanno, 2020). Based on clinical research, a high level of psychological adjustment buffers the negative effects of stress, increasing resilience and reducing experiential avoidance (Seçer et al., 2020). The fact that impairments in psychological adjustment pave the way for various psychopathologies makes understanding the mechanisms that threaten this structure critical for protective mental health (Busch et al., 2021).

Psychological adjustment is particularly related to various factors occurring in the society in which individuals live. Alongside protective factors such as increased educational opportunities, healthcare services, and transport options, there are also various risk factors for psychological adjustment (Herbers et al., 2021). Individuals may struggle to adapt, particularly in light of recent global problems in the economic, professional, and health spheres (Neto et al., 2023). Faced with numerous global crises, individuals experience problems in their perceptions of the future due to the intense uncertainty they face. Unpredictable conditions such as economic instability, social transformations, and global crises weaken individuals' capacity to perceive the future as controllable and safe, thereby increasing their anxiety about the future (Arslan, 2021; Herrera et al., 2022). Instead of being a source of hope, the future may now become an uncertain stressor that threatens psychological integrity and must be managed, leading to a perception of a dark future. This situation may also increase individuals' perception of a dark future, making it difficult for them to adjust psychologically (Dalmış et al., 2025). In this context, a dark future is defined as an element characterised by constant and intense anxiety that the individual will encounter negative events in the future (Zaleski et al., 2019). The literature reveals that individuals with high future anxiety struggle to stay in the present moment and that this situation directly predicts their psychological adjustment (Erguler et al., 2025). The persistence of perceived threats to the future increases stress levels as individuals remain constantly alert (Yıldırım et al., 2023). It also depletes cognitive resources and weakens adaptive coping processes (Yıldırım et al., 2023). However, current findings suggest that the effects of future anxiety on psychological adjustment cannot be explained solely by a direct relationship; this relationship is also shaped through various behavioural and emotional processes (Awad et al., 2024).

One of the key mechanisms for understanding the relationship between a dark future and psychological adjustment is the behavioral responses individuals give to their perceptions of uncertainty and threat (Öztekin et al., 2025). In order to manage the intense uncertainty brought about by various global crises and regain a sense of control, individuals often engage in information-seeking behaviour to understand what is happening around them (Jiang, 2024). At the same time, they may show a tendency to follow developments, particularly on social media, in order to feel prepared for possible risks (Guo et al., 2020). In the modern digital age, this tendency paradoxically pushes individuals to constantly follow negative, disaster-related news feeds, i.e., doomscrolling behaviour (Fergen et al., 2021). Doomscrolling is a dysfunctional behavioural pattern that emerges as a result of the effort to monitor and control threats to the future (McCutcheon et al., 2024). It is characterised by the individual's repetitive and uncontrolled consumption of negative and threatening online news or posts (Ang, 2025). Although this behaviour appears to provide information and a sense of control in the short term, in the long term it reinforces the perception of threat, becoming a significant risk factor for psychological well-being (Taskin et al., 2024). Indeed, recent empirical studies in the field support this risk. Satici et al. (2023) found that doomscrolling behaviour is associated with neurotic personality traits and psychological distress. Similarly, it has been revealed that this behaviour predicts death anxiety by constituting a risk factor for self-compassion (Kaya et al., 2025) and plays a critical mediating role in the relationship between problematic

internet use and psychological adjustment (Kaya, 2025). Therefore, in light of the current findings, doomscrolling appears to be an important digital risk factor for psychological adjustment.

Alongside dark future and doomscrolling behaviour, another potential risk factor for psychological adaptation, not only drags individuals into digital pessimism (Kütük et al., 2025) but also becomes a risk factor for relational processes (Şanlıer & Yılmaz, 2025). The Terror Management Theory (TMT) provides a robust theoretical framework for understanding this relationship. According to the theory, when individuals perceive negativity towards the future, such as an existential threat or fear of death, they resort to two fundamental convergent defence mechanisms to manage this dread: aligning with a cultural worldview and forming close relationships (Pyszczynski et al., 2021). Through close relationships, individuals can buffer the stress created by challenging events (Kilpatrick et al., 2023). However, feeling helpless in the face of potential future risks and being constantly exposed to disaster content can reinforce individuals' perception that the world is a dangerous and unsafe place (Kartol et al., 2023). From TMT perspective, at a point where the world is perceived as so dangerous, the anxiety of losing social bonds, which are the individual's most fundamental security base, is triggered. The constantly felt perception of risk can also increase the anxiety of having to face future difficulties alone. Therefore, individuals need people from whom they can receive support in the face of various global crises (Killgore et al., 2020). In the literature, this situation is referred to as the fear of loneliness. Although the fear of loneliness is often discussed alongside the concept of loneliness, it is conceptually distinct from it. While loneliness reflects an experience related to the quantity or quality of existing social relationships (Ellis et al., 2020), fear of loneliness is defined as the anxiety individuals feel about the possibility of losing their social bonds or being alone in the future, rather than their current perception of loneliness (Ventura-León et al., 2020). Individuals who focus intensely on uncertainties about the future may perceive interpersonal relationships as more fragile and experience a more intense fear of being alone. Indeed, research shows that fear of loneliness has significant associations with stress, anxiety, and depression (Ventura-León et al., 2022).

The Present Study

The literature summarised above indicates that dark future, doomscrolling, and fear of loneliness may be associated with psychological adjustment at different levels. However, the majority of existing studies have addressed this effect either through direct relationships or through single mediating mechanisms. In light of the theoretical framework, valid and reliable instruments that measure this construct are needed to understand the relationship between fear of loneliness and individuals' psychological adjustment, and to examine its relationship with modern stressors such as a dark future and doomscrolling. However, a review of the national literature reveals a notable lack of a current measurement tool that specifically addresses the concept of fear of loneliness and whose psychometric properties have been validated for Turkish culture. Based on this need, the present study was designed as a two-phase, complementary approach. The primary aim of Study I is to adapt the Fear of Loneliness

Scale and to reveal its psychometric properties by conducting linguistic equivalence, construct validity, and reliability analyses of the scale. The primary aim of Study II was to test the mediating roles of doomscrolling and fear of loneliness in the relationship between dark future and psychological adjustment. Adapting the scale to Turkish will enable the reliable and valid measurement of fear of loneliness within the Turkish context, thereby facilitating a more systematic approach to this construct in mental health research. Thus, the aim is to provide a more comprehensive explanation of how future-oriented anxieties weaken psychological adjustment through behavioural and emotional pathways. In this regard, the hypotheses of the study are presented below:

H1 The Fear of Loneliness Scale, adapted into Turkish, is a valid and reliable measurement tool (Study-I).

H2 Doomscrolling and fear of loneliness play a mediating role in the relationship between dark future and psychological adjustment (Study-II).

Study I

In this stage of the study, confirmatory factor analysis of the Fear of Loneliness Scale were conducted. As in the original form, a FOL was conducted for the 5-item forms of the scale. In addition, the scale was analyzed using item-total correlations, measurement invariance and Item Response Theory. Reliability analyses were also conducted at this stage.

Method

Participants and Procedure

Study I included 427 participants who were recruited using convenience sampling. Participants were between 18 and 57 years (M = 24.88, SD = 4.70). Of these, 266 were female (62.3%) and 161 were male (37.7%). The majority were single (n = 262, 61.4%), while 165 were married or engaged (38.6%). Most participants reported that their parents were together (n = 352, 82.4%), and 75 reported divorced parents (17.6%). Regarding living arrangements, 268 participants were living with their families (62.8%), 140 were living on their own (32.8%), and 19 were living with housemates (4.4%). Most participants grew up in urban areas (n = 364, 85.2%), whereas 63 grew up in a county or small district (14.8%). In terms of family structure, 259 reported a nuclear family background (60.7%) and 168 an extended family background (39.3%). Detailed information given in Table 1.

Following permission from the original developer, the Fear of Loneliness Scale was translated and adapted into Turkish. The translation process was conducted by two experts with doctoral-level qualifications, one in psychology and the other in English language teaching. The original English items were first translated into Turkish, after which the Turkish version was back-translated into English by the same

Table 1 Demographic information of participants

Variable	Frequency	%	Frequency	%
Study-I (N=427)			Study-II (N=909)	
Gender				
Female	266	62.3	532	58.5
Male	161	37.7	377	41.5
Marital Status				
Single	262	61.4	549	60.4
Marriage - Engaged	165	38.6	360	39.6
Parental Marital Status				
Together	352	82.4	757	83.3
Divorced	75	17.6	152	16.7
Housing Status				
Living with my family	268	62.8	528	58.1
Living with my own	140	32.8	284	31.2
Living with my housemates	19	4.4	97	10.7
Place that you were growth				
Downtown	364	85.2	643	70.7
County	63	14.8	266	29.3
Structure of Your Family				
Nuclear family	259	60.7	646	71.1
Extended family	168	39.3	263	28.9

experts. Following the translation and back-translation procedures, the Turkish version was pilot-tested to assess the clarity and comprehensibility of the items before administration to the main study sample.

Measures

Fear of Loneliness Scale: This scale was developed by Ventura-León et al. (2020) to evaluate fear of loneliness. The scale consists of five items and is rated on a 5-point Likert scale (0=never, 4=always). Higher scores on the unidimensional scale indicate higher levels of fear of loneliness. The internal consistency of the 5 items version was α=0.91 in the validation study.

CEL-3 Loneliness Scale: This scale was developed by Campaign to End Loneliness (2014) and adapted into Turkish by Atok et al. (2024). The scale consists of three items and is rated on a 5-point Likert scale (0=strongly disagree, 4=strongly agree). Higher scores on the unidimensional scale indicate higher levels of loneliness perception. The internal consistency of the 3 items version was α=0.81 in the adaptation study.

RULS-6 Loneliness Scale: This scale was developed by Wongpakaran (2020) and adapted into Turkish by İnanç and Ekşi (2022). The scale consists of six items and is rated on a 4-point Likert scale (1=never, 4=always). Higher scores on the unidimensional scale indicate higher levels of loneliness perception. The internal consistency of the 6 items version was α=0.84 in the adaptation study.

EUROHIS-QOL-8: This scale, developed based on the World Health Organization Quality of Life Scale (WHOQOL), is a short, general-purpose quality of life scale

created by selecting specific items from the WHOQOL-100 and WHOQOL-BREF scales. The scale was adapted into Turkish by Eser et al. (2010). The scale consists of eight items and is rated on a 5-point Likert scale (1 = 'very poor/not at all satisfied' to 5 = 'very good/very satisfied'). In the adaptation study, the scale's internal consistency coefficient was calculated as $\alpha = 0.85$

Data Analysis

The construct validity of the Fear of Loneliness Scale was examined using Confirmatory Factor Analysis (CFA) conducted in the AMOS 24 program using maximum likelihood estimation. A unidimensional structure was tested while maintaining the original structure of the scale. Model fit in CFA stage was evaluated using several indices, including CFI, TLI, IFI, NFI, and RFI, with a cutoff value of 0.90 considered acceptable (Shi et al., 2019). Additionally, correlation analysis was performed using SPSS 27 for criterion-related validity. In addition to structural analysis, the measurement invariance of the scale was tested across gender; Item Response Theory (IRT) analyses were utilized to examine item-level functionality and discriminability. Finally, item-total correlations and reliability coefficients were calculated using SPSS and JASP software. This comprehensive analytical approach provided strong psychometric evidence regarding the structural validity of the adapted form, intergroup comparability, and item sensitivity.

Results

Confirmatory factor analysis (CFA) was conducted to examine the factorial structure of the Fear of Loneliness Scale. The proposed unidimensional structure demonstrated an acceptable to good fit to the data ($\chi^2 = 46.438$/ df = 8, $p < .001$; CFI = 0.969; GFI = 0.960; NFI = 0.967; IFI = 0.970; TLI = 0.924; SRMR = 0.0341). Overall, the results were consistent with the theorized unidimensional structure. Detailed factor loadings, descriptive statistics, and item–total correlations are presented in Table 2.

After confirming the factor structure of the Fear of Loneliness Scale, criterion-related validity analyses were conducted using Pearson's correlation coefficients. In this stage, the correlations between the fear of loneliness, Ruls-6 loneliness, CEL-3 loneliness and quality of life were examined. The results demonstrated that the fear of loneliness was significantly correlated with Ruls-6 loneliness ($r = .481$, $p < .001$), CEL-3 loneliness ($r = .479$, $p < .001$), and quality of life ($r = -.120$, $p < .001$). Descriptive statistics and correlations among the variables are presented in Table 3.

Table 2 Factor loading, descriptive statistics, and item-total correlations of FOL-5

Item	Factor loading	Mean	SD	Item-total correlations
FOL – 1	0.596	1.871	1.33	0.630
FOL – 2	0.940	1.775	1.39	0.817
FOL – 3	0.902	1.646	1.40	0.799
FOL – 4	0.752	1.779	1.30	0.738
FOL – 5	0.672	1.723	1.38	0.740

Table 3 Descriptive statistics and correlations with FOL 5-item form

Variables					Correlation with FOL 5 Item	
	Mean	SD	Skewness	Kurtosis	*r*	*p*
Study I						
Fear of Loneliness	10.191	5.759	-0.314	-0.998	–	–
Ruls-6 Loneliness	12.159	3.676	0.067	-0.915	0.481**	<0.001
CEL-3 Loneliness	06.223	1.872	0.019	-0.824	0.479**	<0.001
Quality of life	14.385	4.894	-0.218	-0.336	−0.120**	<0.001
Study II						
Fear of Loneliness	9.523	5.349	−0.025	−0.775	–	–
Dark Future	19.332	7.331	−0.642	−0.077	0.466**	<0.001
Doomscrolling	9.305	5.561	0.959	0.231	0.210**	<0.001
Psychological Adjustment	25.709	9.033	−0.136	−0.708	−0.341**	<0.001

Table 4 IRT results for FOL-5

Item	a coefficient	SE	Confidence interval	z	$p > \|z\|$
Item 1	1.758	0.154	1.455–2.062	11.40	0.001
Item 2	6.115	0.727	4.689–7.541	8.41	0.001
Item 3	5.160	0.514	4.152–6.168	10.03	0.001
Item 4	2.587	0.214	2.167–3.066	12.08	0.001
Item 5	2.342	0.196	1.956–2.227	11.91	0.001

Item Response Theory

Item Response Theory (IRT) analysis was conducted to evaluate the psychometric properties of the scale at the item level. Unlike traditional summative scoring, this approach provides precise estimates of item discrimination and difficulty parameters (Baker & Kim, 2017), making it particularly suitable for the scale's Likert-type structure. The findings revealed that all items exhibited high discrimination values ($\alpha > 0.60$), indicating that they effectively differentiate between varying levels of the latent construct. The detailed results of the IRT analysis are presented in Table 4.

Measurement Invariance

Subsequent to the CFA, measurement invariance (MI) was examined across gender to determine whether the scale functioned equivalently for female and male participants. Establishing MI is a critical step in validation studies, ensuring that observed differences between groups reflect true psychological variation rather than measurement bias (Vandenberg & Lance, 2000). The results supported configural, metric, and scalar invariance across gender. Specifically, changes in CFI remained within the recommended threshold across the increasingly constrained models $\Delta CFI = 0.001$ for metric invariance and $\Delta CFI = 0.004$ for scalar invariance, indicating that the factor structure, factor loadings, and item intercepts were invariant across female and male participants. Detailed fit indices for the measurement invariance analyses are presented in Table 5.

Table 5 Fit indices of gender invariance

Invariance	χ^2	df	TLI	NFI	IFI	CFI	SRMR	ΔCFI
Female	8.344	3	0.979	0.990	0.994	0.994	0.0135	–
Male	1.578	3	0.981	0.987	0.993	0.990	0.0098	–
Configural invariance	9.922	6	0.990	0.993	0.997	0.997	0.0098	–
Metric invariance	12.081	10	0.997	0.991	0.998	0.998	0.0144	0.001
Scalar invariance	21.614	14	0.992	0.984	0.994	0.994	0.0180	0.004

Reliability Analysis

Reliability analyses for the Fear of Loneliness Scale were conducted using Cronbach's alpha, McDonald's omega, and Guttmann's lambda coefficients. Reliability analyses showed high internal consistency for the fear of loneliness across both studies. For Study I, Cronbach's $\alpha = 0.896$, McDonald's $\omega = 0.896$, and Guttmann's $\lambda = 0.896$; for Study II, $\alpha = 0.891$, $\omega = 0.889$, and $\lambda = 0.888$.

Study II

Method

Participants

Study II included 909 participants who were also recruited using convenience sampling. Participants were between 18 and 64 years (M = 27.43, SD = 6.63). The sample consisted of 532 females (58.5%) and 377 males (41.5%). Of these, 549 were single (60.4%) and 360 were married or engaged (39.6%). Most participants reported that their parents were together ($n = 757$, 83.3%), whereas 152 reported divorced parents (16.7%). In terms of housing status, 528 were living with their families (58.1%), 284 were living on their own (31.2%), and 97 were living with housemates (10.7%). A majority of participants grew up in urban areas ($n = 643$, 70.7%), while 266 grew up in a county or district (29.3%). Regarding family structure, 646 reported a nuclear family background (71.1%) and 263 an extended family background (28.9%). Detailed information given in Table 1.

Procedure

Study II was conducted separately from study I. In addition, data were collected from another participants. Participants were selected through convenience sampling. Within the scope of the research, all volunteers over the age of 18 and anyone who could be reached were included in the research. The collected data were taken in the classrooms and research centers in different places from volunteer participants via Google Forms. Informed consent was provided to the participants.

Measures

Dark Future Scale (DFS): This scale was developed by Zaleski (2019) and adapted into Turkish by Yıldırım et al. (2023). The scale consists of five items (e.g., "The thought of not being able to achieve my goals in the future bothers me") and is rated on a 6-point Likert scale (1 = completely false, 6 = completely true). Higher scores on the scale indicate higher levels of future anxiety/dark future perception. The internal consistency of the five items version was α = 0.87 in the adaptation study.

Doomscrolling Scale (DS): This scale was originally developed by Sharma et al. (2022) and the adaptation study of the scale was conducted by Satici et al. (2023). Consisting of 15 items, the scale has a unidimensional structure (e.g., "I find myself looking at negative news all the time."). There is also a short form of the scale consisting of 4 items (Sharma et al., 2022). The Doomscrolling Scale is a 7-point Likert scale from 1 (strongly disagree) 7 to (strongly agree). High scores obtained from the scale indicate high doomscrolling. In this study, the short form of the scale consisting of four items was used. The internal consistency of the 4 items version was α = 0.80 in the adaptation study

Psychological Adjustment Scale (PAS): This scale developed by Cruz et al. (2020) and adapted by Yildirim and Solmaz (2021) to measure psychological adjustment. The unidimensional scale consists of 8 items (e.g., '*To what extent have your emotional problems had a negative impact on your performance at work*, *school*, *etc. this week?*) and is rated on a 7-point Likert scale, with 1 being '*strongly disagree'* and 7 being '*strongly agree'*. High scores indicate that the individual has many psychological resources and strengths. The internal consistency reliability coefficient of the adapted scale was found to be .88

Data Analysis

Data analyses were performed using IBM SPSS Statistics 27 and AMOS Graphics 24. In Study II, a structural model was tested employing the scale adapted in Study I. Initially, descriptive statistics were examined, followed by Pearson correlation analysis to investigate the relationships between the study variables. Structural Equation Modeling (SEM) was utilized to examine the predictive relationships among the variables. The SEM analysis followed a two-step procedure: first, the measurement model was tested, followed by the assessment of the structural model. Model fit in both stages was evaluated using several fit indices, including CFI, TLI, IFI, NFI, and RFI, with a cutoff value of 0.90 considered acceptable (Shi et al., 2019). The analysis was conducted using observed variables; for multidimensional scales, sub-dimensions were included in the model as observed indicators. For the unidimensional constructs, item parceling was employed to obtain a more parsimonious measurement model and reduce model complexity (Matsunaga, 2008). Parceling was restricted to constructs measured by scales with an established unidimensional structure, thereby maintaining consistency with their theoretically specified measurement structure (Little et al., 2002). Items were combined into parcels using the odd–even allocation strategy, resulting in two parcels for each construct. Subsequently, the serial mediating roles of doomscrolling and fear of loneliness in the relationship between

dark future and psychological adjustment were examined. Bootstrap analysis (5,000 resamples) was employed to evaluate the significance of indirect effects.

Results

Correlation Analysis

The Fear of Loneliness Scale that adapted in the study was found to have significant relationships with dark future, doomscrolling and psychological adjustment. Fear of loneliness was positively correlated with dark future ($r = .466$, $p < .001$), doomscrolling ($r = .210$, $p < .001$) and negatively correlated with psychological adjustment ($r = -.341$, $p < .001$). Correlation results are given in Table 3.

Measurement Model

The measurement model consists of four latent variables: dark future, doomscrolling, fear of loneliness, psychological adjustment. These constructs were represented by a total of eight observed variables: two for dark future, two for doomscrolling, two for fear of loneliness and two for psychological adjustment. According to findings goodness-of-fit indices indicated a satisfactory model fit ($\chi^2/df = 1.274$; $p < .001$; CFI = 0.998; GFI = 0.995; NFI = 0.996; TLI = 0.998; IFI = 0.997; SRMR = 0.0107; RMSEA = 0.017). These findings confirm that the observed indicators adequately and meaningfully represent their respective underlying latent variables.

Structural Model

The structural model was tested using Structural Equation Modeling (SEM), and the results indicated a satisfactory fit to the data ($\chi^2/df = 1.848$; $p < .001$; CFI = 0.996; GFI = 0.990; NFI = 0.990; TLI = 0.992; IFI = 0.996; SRMR = 0.0259; RMSEA = 0.031). Examination of the path coefficients revealed that dark future positively predicted fear of loneliness ($\beta = 0.489$, $p < .001$), and doomscrolling ($\beta = 0.163$, $p < .001$), while negatively predicting psychological adjustment ($\beta = -0.394$, $p < .001$). Furthermore, doomscrolling positively predicted fear of loneliness ($\beta = 0.136$, $p < .001$) and negatively predicted psychological adjustment ($\beta = -0.263$, $p < .001$). Finally, fear of loneliness was found to be a significant negative predictor of psychological adjustment ($\beta = -0.125$, $p < .001$). In conclusion, the findings suggest that fear of loneliness and doomscrolling play a partial serial mediating role in the relationship between dark future and psychological adjustment. All standardized coefficients are presented in Fig. 1.

Bootstrapping

Bootstrapping technique was applied to the full mediation model, which was hypothetically tested in the study and preferred as the best model in the SEM results. The results of bootstrapping to provide additional evidence for the significance of direct and indirect paths in the model are presented in Table 6. The direct effects was statis-

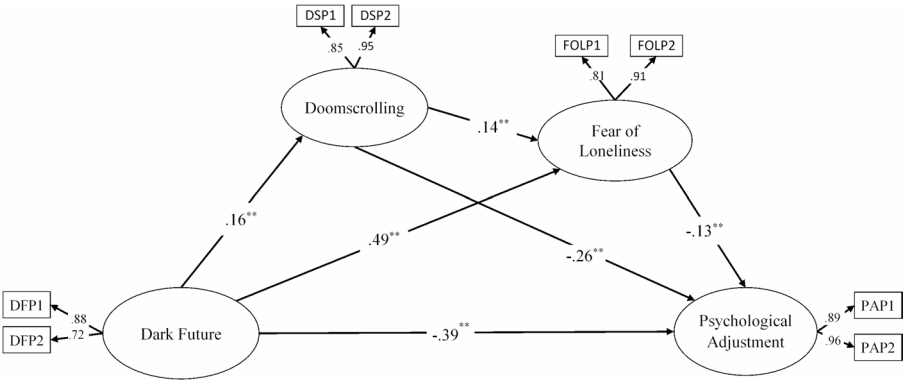


Fig. 1 Structural equation modeling for the serial mediation model. $^{*}p < .05$, $^{**}p < .01$, *DFP* parcel of dark future, *DSP* parcel of doomscrolling, *FOLP* parcel of fear of loneliness, *PAP* parcel of psychological adjustment

Table 6 Parameters and 95% C. I. for the paths of the final model

Model pathways	Estimated	95% Confidence interval	
		Lower	Upper
Direct link			
Dark future → Doomscrolling	0.163	0.097	0.230
Dark future → Fear of loneliness	0.482	0.423	0.537
Dark future → Psychological adjustment	−0.399	−0.468	−0.326
Doomscrolling → Fear of loneliness	0.139	0.076	0.207
Doomscrolling → Psychological adjustment	−0.121	−0.185	−0.056
Fear of loneliness → Psychological adjustment	−0.124	−0.204	−0.052
Indirect link			
Dark future → Doomscrolling → Fear of loneliness	0.010	0.005	0.017
Dark future → Doomscrolling → Fear of loneliness → Psychological adjustment	−0.003	−0.007	−0.001
Dark future → Doomscrolling → Psychological adjustment	−0.021	−0.038	−0.009
Dark future → Fear of loneliness → Psychological adjustment	−0.063	−0.106	−0.026
Doomscrolling → Fear of loneliness → Psychological adjustment	−0.028	−0.058	−0.011

tically significant. In conclusion, the findings suggest that doomscrolling and fear of loneliness play a partial serial mediating role in the relationship between dark future and psychological adjustment. All standardized coefficients are presented in Table 6.

Discussion

This study was conducted using a two-phase design with the aim of adapting an instrument capable of measuring the fear of loneliness in a valid and reliable manner within the Turkish cultural context, and examining the patterns associated with psychological adjustment under modern conditions of uncertainty. The general findings from the research demonstrated that the adapted scale is psychometrically reliable, valid and gender-invariant. Based on this tool, the structural model indicated that dark future was negatively associated with psychological adjustment both directly and through statistically significant indirect pathways involving doomscrolling and fear of loneliness. These results show that individuals' efforts to cope with existential anxieties in the digital age can threaten mental health by turning into dysfunctional digital habits and relational insecurities. The findings are discussed in detail below in light of the relevant literature and theoretical frameworks.

Study I was designed to adapt the Fear of Loneliness Scale (FLS) into Turkish and examine its psychometric properties. The results of confirmatory factor analysis revealed that the one-dimensional structure proposed in the original form of the scale was acceptable and showed a good level of fit in the Turkish sample. The fit indices obtained support the notion that fear of loneliness can be considered a homogeneous psychological construct grouped under a single underlying dimension. Findings from Item Response Theory (IRT), applied beyond classical analysis, showed that all items of the scale had high discriminant validity. This result proves that the scale can sensitively differentiate individuals experiencing different levels of fear of loneliness. The high discrimination parameters indicate that the items effectively differentiate individuals across varying levels of fear of loneliness, supporting the scale's potential utility in research and future applied settings.

The criterion-related validity analyses of the scale revealed that, as expected, fear of loneliness showed significant positive correlations with the two loneliness measures and a significant negative correlation with quality of life. These findings confirm the validity of the adapted scale's position within the nomological network and its ability to reliably measure the expected theoretical relationships. Furthermore, the measurement invariance analyses conducted showed that the scale worked equivalently in terms of structural form, factor loadings, and measurement properties across genders. This means that the scale can be used with confidence in comparative analyses between women and men. Finally, the high internal consistency coefficients obtained in both Study I and Study II samples confirm that the scale is a reliable measurement tool. When all findings are evaluated holistically, it can be stated that the Turkish version of the Fear of Loneliness Scale is a valid, reliable, culturally adaptive, and psychometrically robust measurement tool.

Correlation analyses conducted within the scope of Study II reveal significant relationships among the key variables examined in the study. The relationships between

variables also present a pattern consistent with the defense dynamics predicted by the Terror Management Theory (TMT) (Pereira et al., 2025). According to the theory, when individuals perceive uncertainty or threat regarding their future, they feel the need to seek refuge in close relationships as a social buffer to alleviate this existential anxiety (Pyszczynski et al., 2021). Under conditions where the future is perceived as uncontrollable, the expectation that these relationships may also be lost may intensify, and the fear of loneliness may increase. Therefore, as individuals' anxiety about the future increases, it is theoretically expected that their fear of facing this difficult future alone will also increase. Indeed, studies in the literature showing that pessimistic expectations about the future trigger individuals' fears of social exclusion and loneliness are consistent with this finding (Deguma et al., 2022; Stubbs et al., 2024).

According to the correlation results of the study, fear of loneliness has a positive relationship with doomscrolling, a modern digital risk factor. This finding shows that fear of loneliness is related not only to relational dynamics but also to an individual's digital information consumption habits. According to the TMT approach, when threat perception increases, individuals turn more intensely to information about their environment in order to reestablish a sense of control and predictability (Perry et al., 2024). Individuals may use social media as a tool to follow developments and stay in touch with their loved ones in the face of global crises such as wars, epidemics, and economic problems (Jiang, 2024). In this context, doomscrolling can create the illusion that the individual is keeping threats under control by constantly monitoring them (Fergen et al., 2021). However, constant exposure to disaster-related information can intensify feelings of insecurity and fear of isolation by continually reactivating the existential threat rather than alleviating it. Previous studies have shown that doomscrolling behavior is associated with anxiety, intolerance of uncertainty, impulsivity, and perceptions of existential threat (Kütük, 2025; Shabahang et al., 2023; Taskin et al., 2024). The current study's identification of the relationship between fear of loneliness and doomscrolling adds a new dimension to the literature by revealing that this behavior is also linked to relational vulnerability.

The finding that fear of loneliness is negatively associated with psychological adjustment is also consistent with TMT. According to the theory, individuals need psychological supports such as meaning, cultural values, and relational attachment to cope with existential anxieties (Pyszczynski et al., 2021). Feeling intense fear of the possibility of being alone may be related to the perception of dysfunctional defense mechanisms. This situation may reinforce the individual's perception of inadequate relational support, weakening their sense of security and continuity. Consequently, it may become a risk factor for psychological adjustment, along with the individual's stress coping capacity and adaptive responses (Moitra et al., 2023). This finding is consistent with previous research findings showing that fear of loneliness is associated with depression, stress, and low life satisfaction (Ventura-León et al., 2022).

Study II results from structural equation modeling indicate that a meaningful pattern emerges through indirect pathways as well. The findings reveal that doomscrolling and fear of loneliness act as partial serial mediators in the relationship between a dark future and psychological adjustment. The partial serial mediation pattern obtained can be explained within the framework of TMT and Gerbner's Mean World Syndrome. From a TMT perspective, it is discussed in the literature that individuals

with a high perception of a dark future tend to stay in touch with people they see as close, follow current events, and search for information on social media as part of their convergent defense mechanism tendencies in order to manage this threat (Baños et al., 2023; Schnell & Krampe, 2020). However, the transformation of this search for information into doomscrolling behavior presents a picture that aligns with Gerbner's Cruel World Syndrome assumptions. According to the theory, intense exposure to content about disasters, violence, and crises is related to the perception that the world is more dangerous and unsafe than it actually is (Gerbner, 1998). Individuals constantly exposed to crisis content through doomscrolling may develop a stronger perception that the outside world is a "cruel" place (Ang, 2025). However, repeated exposure to negative content may fail to satisfy an individual's need for security and close relationships, which they seek through their proximity defense mechanism. A constant need for closeness that must be satisfied and the false sense of control provided by current digital behaviors may be related to individuals' increasing fears of loneliness. In this context, it is seen that the unmet need for security and the increasing perception of global threats are related to individuals' fears of being deprived of social support. However, the magnitude of these pathways warrants a more cautious interpretation. Although all structural paths were statistically significant, some effects, particularly those involving doomscrolling and fear of loneliness in relation to psychological adjustment, were relatively small. Moreover, the direct association between dark future and psychological adjustment was comparatively stronger than the effects of doomscrolling and fear of loneliness on psychological adjustment. These findings suggest that doomscrolling and fear of loneliness represent meaningful but supplementary mechanisms rather than central explanatory pathways linking dark future to psychological adjustment. The persistence of the comparatively stronger direct association further suggests that additional cognitive, emotional, or contextual mechanisms not included in the present model may contribute to psychological adjustment.

Overall, these multidimensional stressors, where the perceived future is dangerous and the inner world is lonely, may constitute risk factors for psychological adjustment within the framework of TMT. Indeed, research suggests that this cognitive and emotional burden may weaken individuals' capacity to respond flexibly to environmental demands and may be associated with poorer psychological adjustment (Asper et al., 2022). However, given the relatively modest magnitude of some of the observed structural paths, these mechanisms should be considered as part of a broader set of factors associated with psychological adjustment rather than as its primary determinants.

Limitations and Future Research

The findings of this study have some limitations despite being conducted using a two-stage design. First, the study was designed using a cross-sectional design. Cross-sectional data do not allow for inferences of causality regarding the direction and strength of relationships between variables. Therefore, future studies should be designed using longitudinal and experimental designs. Furthermore, although the theoretical framework assumes that doomscrolling behavior predicts fear of loneli-

ness, it is possible that individuals with high fear of loneliness may be more inclined to doomscroll as a coping strategy. Future studies designed with longitudinal or experimental designs will provide a clearer understanding of the causal relationships between these variables.

A second limitation is that the data were collected using self-report scales. This situation may bring measurement-related limitations such as social desirability bias, common method bias, and subjective evaluation errors. Future studies are recommended to use objective data collection in addition to self-report scales. Furthermore, the fact that the data was collected via online platforms may limit the representation of groups with limited access to technology. Working with larger samples that include different socio-demographic groups and cultural contexts will increase the generalizability of the findings. Another methodological limitation concerns the use of item parceling in the SEM analysis. Although parceling was employed to obtain a more parsimonious measurement model for constructs represented by unidimensional scales, aggregating items into parcels may obscure potential item-level sources of misfit and contribute to more favorable global fit indices. Therefore, the exceptionally high fit indices observed for the measurement and structural models should be interpreted with caution, as they may partly reflect the simplification of the measurement model resulting from parceling. Future studies should examine the robustness of the proposed structural relationships using item-level indicators and compare these findings with those obtained from parcel-based models.

The generalizability of the findings is also limited by the sampling strategy and demographic composition of the samples. Participants in both studies were recruited using convenience sampling, and the samples predominantly consisted of younger adults with urban backgrounds. Therefore, the findings may not fully generalize to the broader Turkish population, particularly older adults and individuals from rural or more socio-demographically diverse backgrounds. Importantly, because the psychometric evaluation of the Turkish Fear of Loneliness Scale was conducted within this sampling context, its reliability, factor structure, and measurement properties should not be assumed to generalize automatically to demographic groups that were underrepresented in the present study. Accordingly, the current findings should be regarded as initial psychometric evidence for the Turkish version of the scale rather than definitive evidence of its applicability across the entire Turkish adult population. Future studies should cross-validate the scale using more representative and demographically heterogeneous samples, particularly across different age groups and rural–urban populations. Another limitation is that the sample is restricted to the Turkish context. Cultural values, the level of collectivism-individualism, and the meaning attributed to social relationships may influence the relationships between fear of loneliness and psychological adjustment. Therefore, adapting the scale to different cultures and testing measurement invariance at the cross-cultural level is important for understanding whether fear of loneliness is a universal or context-specific construct. Finally, in the model tested in this study, doomscrolling and fear of loneliness were treated as mediating variables. However, it is also possible that different mechanisms (e.g., perceived social support, digital literacy, intolerance of uncertainty) may influence the psychological adaptation process. Future research could examine the relation-

ship between a dark future and adaptation more comprehensively by including these variables in the model.

Implications

The findings from the research provide important practical implications for mental health professionals, educators, and policymakers. First, the assessment of the Fear of Loneliness Scale using a valid and reliable measurement tool adapted into Turkish allows for a more systematic approach to this construct in both research and practice. In this context, the fact that the scale can be used in clinical assessment, screening, and preventive mental health programs contributes significantly to the early detection of fear of loneliness and the identification of risk groups. In a culture like Turkey, where communitarian cultural characteristics are dominant and relational/family ties are of vital importance, this scale provides researchers with the opportunity to examine the concept of 'loneliness' not only as a result but also as a dimension of 'fear/anxiety' directed towards the future.

From a theoretical perspective, the present study contributes to the literature by providing a theoretical integration between Terror Management Theory (TMT) and the Cruel World Syndrome. The indirect shaping of the relationship between perceptions of future threats and psychological adjustment through doomscrolling and fear of loneliness suggests that TMT's 'social buffer' assumption should be considered in interaction not only with face-to-face relationships but also with digital information consumption patterns. This situation indicates that defense responses to existential threats are also reproduced today through digital environments. Furthermore, it appears that Gerbner's Cruel World Syndrome assumptions can be reinterpreted through modern digital behaviors such as doomscrolling. The fear of loneliness transition in the model makes it more apparent that intense exposure to disaster content creates a context that weakens not only the general perception of the world but also expectations of relational security.

From the perspective of practical and clinical studies, the findings indicate that the fear of loneliness is not limited to interpersonal relationships; it is a multidimensional phenomenon that must be evaluated in conjunction with digital information consumption habits and perceptions of the future. Therefore, clients' digital media consumption habits should also be considered a risk factor in psychological counseling processes. In psychotherapy processes, working on the fear of loneliness in the context of the individual's digital life practices and perceptions of future threats may contribute to a more comprehensive assessment of relational security expectations. Within the scope of preventive mental health studies, it is recommended that priority be given to interventions that increase digital media literacy and support healthy information consumption habits. At the same time, interpersonal relationship training that develops coping skills for uncertainty and weakens the negative patterns established by the fear of loneliness through psychological adaptation can play a protective role. Addressing the relationship between doomscrolling and fear of loneliness in university, workplace, and community-based mental health programs may enable the development of unique intervention models for new areas of vulnerability emerging in the digital age.

From society's perspective, considering the triggering role of the perception of a dark future, the importance of the language used in the media during times of crisis becomes apparent. Adopting a language that emphasizes social solidarity rather than fear and disaster scenarios will help individuals mitigate their perception of a cruel world, preserve their hope for the future, and maintain their psychological well-being. Accordingly, considering that structural stressors such as global crises and economic uncertainties also affect individuals' perceptions of relational security, policies that strengthen social support networks, increase community-based solidarity, and encourage healthy interactions in the digital environment can be thought to play a role in supporting psychological adjustment.

Conclusion

In this study, the Fear of Loneliness Scale was adapted into Turkish, and its relationships with dark future, doomscrolling, and psychological adjustment were examined. Findings from Study I revealed that the scale's unidimensional structure was preserved in the Turkish sample, that it had high internal consistency, and that it ensured measurement invariance across genders. The results obtained in Study II show that fear of loneliness is significantly related to perceptions of a dark future, doomscrolling, and psychological adjustment, and that there are indirect relationship patterns between these variables. The findings suggest that it is conceptually meaningful to evaluate perceptions of future threats, digital information consumption patterns, and relational vulnerabilities together with psychological adjustment. The patterns obtained discuss how existential threat perceptions and negative media exposure are patterned together with fear of loneliness and psychological adjustment within the framework of Terror Management Theory and the Mean World Syndrome. Overall, this study demonstrates that fear of loneliness can be considered a central variable in understanding psychological adjustment in modern societies; by providing both a valid measurement tool and a theoretically grounded network of relationships, it establishes an important reference point for future cross-sectional and longitudinal research.

Author Contributions Ali Berke Körün was responsible for the writing, data collection, data analysis and reporting of the article. M. Engin Deniz supervised the writing, data collection and reporting of the article. Seydi Ahmet Satıcı supervised the writing, data analysis, and reporting of the article.

Data Availability No datasets were generated or analysed during the current study.

Declarations

Competing Interests The authors declare no competing interests.

Ethical Approval and Consent to Participate This study was conducted in accordance with the ethical principles governing research involving human participants. Ethical approval for the study was obtained from the Yıldız Technical University Institute of Social Sciences Ethics Committee (Approval No. E-20260509511). Informed consent was obtained from all participants prior to their participation in the

study. Participation was voluntary, and participants were informed about the purpose and procedures of the study before providing their consent.

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