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ORIGINAL ARTICLE

Believing Happiness Lies Outside in the Digital Age: A Systemic Model of Externality of Happiness, Doomscrolling, Schadenfreude, Family Functioning, and Mental Well-Being

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Abstract
Components affecting individuals' mental well-being in the digital age are emerging as complex and multi-layered structures, increasing the need for holistic and systemic approaches. This study aims to investigate the relationships between individual, behavioural, emotional, and contextual factors associated with mental well-being in the digital age. Specifically, this study examined whether the externality of happiness predicts mental well-being through the sequential mediating roles of doomscrolling, schadenfreude, and family functioning. This research employed a cross-sectional survey design. The relationships between the externality of happiness, doomscrolling, schadenfreude, family functioning, and mental well-being were analysed using a serial mediation model. Structural equation modelling, central network analysis, and clustering network analysis were employed in a sample of 811 individuals from Türkiye. SEM findings reveal that doomscrolling, schadenfreude, and family functioning play a serial mediating role in the relationship between the externality of happiness and mental well-being (χ^2/df = 3.86; CFI = 0.98; TLI = 0.97; SRMR = 0.04; RMSEA = 0.056). According to the results of the central and clustering network analyses, doomscrolling and mental well-being were found to be in the same subsystem, while schadenfreude, the externality of happiness, and family functioning were grouped in another cluster. The findings reveal that individual tendencies interact with digital behaviours and contextual factors in a multidimensional structure. In this respect, the study contributes to the development of holistic mental health models for multifactorial systemic determinants of mental well-being in the digital age and provides practical implications for family-based interventions, digital literacy programs, and counselling practices.

Keywords Digital age · Doomscrolling · Externality of happiness · Family functioning · Mental well-being · Schadenfreude

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Digital transformation has radically changed various areas of life, from how individuals access information to how they establish and maintain social relationships, offering opportunities such as being constantly online, receiving instant feedback, and engaging in multiple interactions, while also introducing various psychosocial risks (Winstone et al., 2021). In this respect, digitalisation is not only a technological development, but also a new area of adaptation and a psychological challenge for individuals' mental health (Naslund et al., 2020). Recent studies show that digital life practices have determinative effects on individuals' perception of happiness, life satisfaction and general well-being levels (Plackett et al., 2023). Mental well-being, which has gained importance especially with the contribution of positive psychology and humanistic psychology theories, is a multidimensional structure that includes the capacity of individuals to maintain meaning, purpose and emotional balance in their lives. In the literature, it has been shown that individuals with high levels of mental well-being are more satisfied with life, have a stronger capacity to cope with stress and can establish more functional social relationships (Slimmen et al., 2022). However, the structure of the digital age, which is exposed to constant information flow, brings along various psychological vulnerabilities in individuals. In particular, comparisons on social media can lead to erosion in self-perception, weakening in empathy (Mirowska & Arsenyan, 2023) and an increase in aggressive behaviours (Xie et al., 2025). Moreover, excessive exposure to information on digital platforms can cause physiological problems such as insomnia (Xie & Wang, 2025). The frequency of social comparison-based content increases individuals' depressive symptoms and damages their general mental well-being (Yan et al., 2024). All these findings suggest that technological and behavioural processes emerging with the digital transformation may significantly threaten individuals' well-being levels. Moreover, these risk factors can negatively affect not only the mental health of the individual, but also many areas of life such as academic performance, occupational functioning, social relationships and family life (Lee et al., 2022). Therefore, digital transformation should be considered as a multi-layered phenomenon that goes beyond the individual level and threatens a holistic understanding of well-being.

Cognitive and emotional structures that affect an individual's life satisfaction and mental well-being are among the main issues that have been discussed in the psychological literature for a long time. One of the prominent concepts among these constructs in recent years is the externality of happiness. The externality of happiness refers to the tendency of individuals to perceive happiness as dependent on external conditions, events or other people rather than their own internal resources (Joshanloo, 2017). Individuals with this belief system tend to associate the positive emotions they experience with luck, social environment or external factors rather than personal effort or attitudes. In the literature, it has been revealed that this belief has various negative effects on subjective and psychological well-being. For example, Joshanloo (2017) showed that as the tendency to attribute happiness to external factors increases, individuals' life satisfaction, psychological resilience and positive affect levels decrease significantly. Similarly, Yıldırım et al. (2018) found that this belief makes individuals more vulnerable to life difficulties and reduces their subjective well-being. Individuals with a high belief in the externality of happiness become more dependent on external stimuli in order to maintain happiness, and this may leave individuals more vulnerable to the social comparison-based content of the digital age. Constant exposure to the lives of others, especially in social media, may cause the individual to compare his/her own happiness with these contents and weaken his/her inner satisfaction. Arslan (2021) showed that there are significant relationships between the externality of happiness and psychological maltreatment and fear of happiness. In the same direction, Yıldırım and Çelik Tanrıverdi (2021) stated that the belief in the externality of happiness

strengthens the perception of fragile happiness in the individual and that this perception may develop a perception of threat to happiness over time. These findings suggest that the individual's attribution of happiness to external conditions may weaken not only the level of satisfaction but also the capacity to experience and maintain happiness.

Social media, news platforms and digital content streams significantly transform not only individuals' beliefs about happiness but also their daily life habits (Akyıl et al., 2025). Zhang et al. (2022) state that the problematic use of social media disrupts individuals' physical habits, resulting in a decrease in life satisfaction and happiness levels. One notable behaviour emerging in the digital age is doomscrolling, defined as the compulsive and consecutive consumption of negative news and content on social media, often driven by intensive external comparisons (Mannell & Meese, 2022). This behaviour weakens emotion regulation skills and increases anxiety, burnout and general psychological distress levels (Satıcı et al., 2023; Kartol et al., 2023). Recent studies link doomscrolling to anxiety, depression, post-traumatic stress, impaired social cognition and academic performance, sleep problems, and heightened uncertainty about the future (Price et al., 2022; Rajeshwari & Meenakshi, 2023; Syunyakov et al., 2023). Moreover, there are also findings that doomscrolling, when combined with long-term exposure, reduces the level of mindfulness, weakens self-awareness capacity and increases secondary traumatic stress reactions (Taşkın et al., 2024). All these findings suggest that doomscrolling may affect an individual's mental well-being not only through short-term emotion fluctuations but also through long-term mental and behavioural mechanisms.

Constant exposure to negative content through digital media not only increases anxiety in individuals; it can also trigger complex emotional responses to social comparisons and others' experiences (Buchanan et al., 2021). Another relevant emotional reaction is schadenfreude, the pleasure an individual feels at others' misfortunes, which is linked to envy, perceived justice, and social comparisons (Wang et al., 2019). For example, the failure of an envied person may lead to a suppressed feeling of satisfaction in the individual. This feeling is a form of 'atypical joy' rather than a pure feeling of happiness and is often fuelled by low levels of empathy, high competitiveness, and perceptions of injustice. Recent studies show that schadenfreude is common on digital platforms, where individuals may express overt or covert pleasure in others' failures, scandals, or mistakes from childhood onwards (Bacile et al., 2024; Wang et al., 2024). Brubaker et al. (2021) showed that individuals with high schadenfreude levels more frequently engage in online trolling and criticism, and Sun et al. (2024) found that this tendency is especially pronounced towards people outside one's social circle and increases under competitive conditions. These findings suggest that the constant flow of digital news may weaken empathy and trigger schadenfreude, undermining personal well-being and eroding emotional bonds in family relationships, especially when happiness is attributed to external sources and thus contributes to structural disruptions in social relationships. In this context, it is thought that online experiences shaped by digital comparisons and negative content may lead to unhealthy tendencies in the emotional world of individuals and cause structural disruptions in social relationships.

As a result of digitalisation, individuals' exposure to negative news and developing emotional reactions such as taking pleasure in the pain of others deeply affect not only individual sources of happiness but also the family system (Sin et al., 2022). Especially in collectivist cultures such as Türkiye, families function as a determinant social system on an individual's emotional regulation skills and psychological health. However, in recent years, the widespread integration of digital devices into the family environment has led to significant changes in the quality of communication and interaction within the family. Studies

show that the use of smartphones, tablets, and computers is associated with ignoring emotional needs between family members, erosion of emotional integrity, and a decrease in face-to-face communication (Derks et al., 2021; Jimeno et al., 2022). As family members in the same physical space turn to digital screens, the quality of the time spent together decreases; this becomes a factor that weakens family dynamics. In this context, it is thought that the risk factors of digitalisation for family interactions may have a direct impact on family functioning. Family functionality is a holistic expression of family members' ability to manage crisis situations, clearly define their roles, show emotional participation and communicate effectively (Körün et al., 2025). In highly functional family structures, individuals can share the problems they face openly and develop solutions within a relationship of mutual support and trust. As a matter of evidence, studies have shown that high family functioning constitutes a protective factor for individuals at both physical and psychological levels (Pan et al., 2021). On the other hand, conflicts in family relationships, emotional disconnection and insufficient support have been associated with depression, anxiety and a decrease in general psychological well-being (Feinberg et al., 2022; Moroni et al., 2021). These findings show that the family system is one of the main determinants of individuals' cognitive, emotional and behavioural functioning. In particular, in collectivist societies, strong family ties can function as a source of inner happiness and psychological resilience. However, it is still controversial how new lifestyles shaped by digital content affect these traditional protective structures. For this reason, how the individual tendencies brought by the digital age intersect with interactions within the family and how these interactions are reflected on the psychological well-being of individuals stand out as an important area of investigation in today's research.

The Current Study

This study aims to examine the relational patterns between individual dispositions, emotional reactions, family dynamics and mental well-being emerging in the context of digitalisation. In the study, a sequential mediation model is proposed that tests the relationships of prominent psychological constructs of the digital age, such as the externality of happiness and doomscrolling, with mental well-being through schadenfreude and family functioning. Although these variables have mostly been examined independently in the literature before, examining them simultaneously through a multilevel model in unity constitutes one of the original contributions of this study. Particularly in collectivist cultural contexts such as Türkiye, where the family structure plays a central role in the emotional regulation and psychological adjustment processes of the individual, how digital habits intersect with intra-family interactions and how these intersections are related to well-being stand out as an important research question. Considering the increasing social concerns about the effects of digitalisation on individual and family structures, the findings of this study are expected to contribute not only to theoretical discussions but also to practical intervention programmes. Thus, a multi-layered framework is put forward in which the cognitive and emotional vulnerabilities brought about by the digital age as well as the protective factors at the relational level are addressed together. In this respect, the study presents a comprehensive model to explain mental well-being and aims to contribute to a better understanding of the dynamics between family relationships and digital behaviours in a cultural context. Moreover, this study is methodologically novel in integrating systemic structural equation modelling with network analysis, a combination rarely employed together, which enables a

more comprehensive understanding of the complex interplay among digital behaviours and psychosocial threats, family functioning, and mental well-being. In summary, this study addresses the following general research question: How are the externality of happiness, doomscrolling, schadenfreude, family functioning, and mental well-being related to each other in serial mediation? Based on the theoretical background and proposed model, the following hypotheses (H) were tested:

H1. Doomscrolling mediates the relationship between the externality of happiness and mental well-being.
H2. Family functioning mediates the relationship between schadenfreude and mental well-being.
H3. Family functioning mediates the relationship between externality of happiness and mental well-being.
H4. Doomscrolling, schadenfreude, and family functioning mediate the relationship between the externality of happiness and mental well-being.

Method

Participant and Procedure

In this study, data were collected via Google Forms from volunteer participants. Convenience sampling was used, including the voluntary participation of individuals who had access to online survey platforms and were willing to respond during the data collection period, due to its practicality. This method allowed for the rapid collection of a sufficiently large and diverse sample. However, convenience sampling may limit the generalizability of the findings, as participants joined the study voluntarily and may not fully represent a broader population. All participants were informed about the study's purpose and procedures and provided their voluntary consent before participation. Participation was entirely voluntary and uncompensated. The online survey was configured to permit withdrawal at any time, and submission was only possible after all items had been completed. The final sample consisted of 811 emerging adults and adults living in Türkiye, including 592 females (73.0%) and 219 males (27.0%). The mean age of the participants was 23.01 years (SD = 5.42), ranging from 18 to 50 years. Regarding relationship status, 501 participants (61.8%) were single, while 310 participants (38.2%) were in a romantic relationship. In terms of housing status, 538 participants (66.3%) were living with their families, 189 participants (23.3%) with housemates, and 84 participants (10.4%) in their own homes. Concerning parental marital status, 674 participants (83.1%) reported that their parents were married or living together, whereas 137 participants (16.9%) reported that their parents were divorced. All the information about participants is presented in Table 1.

Measures

Externality of Happiness Scale (EHS)

This scale was originally developed by Joshanloo (2017) to measure the extent to which individuals perceive their happiness as beyond their control and mostly dependent on uncontrollable external factors. The scale was adapted to Turkish by Yıldırım et al. (2018).

Table 1 Demographic information of participants

Variable	Frequency	%
Gender		
Female	592	73.0
Male	219	27.0
Marital status		
Single	501	61.8
Has a relationship	310	38.2
Housing status		
Living with my family	538	66.3
Living with my housemate	189	23.3
Living in my own house	84	10.4
Parental marital status		
Together	674	83.1
Separate	137	16.9

The unidimensional scale consists of 4 items (e.g. "*My happiness is determined by external factors*") rated on a 7-point Likert scale, with 1 'strongly disagree' and 7 'strongly agree'. The internal consistency was $\alpha = 0.80$ in the adaptation study.

Doomscrolling Scale Short Form

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 $\alpha = 0.80$ in the adaptation study.

Schadenfreude Scale (SS)

This scale, originally developed by Crystel (2014), to measure schadenfreude level. Adaptation of the scale conducted by Sevinçli and Abayhan (2022). The scale consists of twelve items (e.g., "*I'd like to see a successful person fired.*"), each rated on a five-point Likert scale ranging from 1 'totally disagree' to 9 'totally agree'. The internal consistency was $\alpha = 0.71$ in the adaptation study.

General Family Functioning Assessment Device (GF-FAD)

This scale developed by Miller et al. (1985) and adapted by Körün et al. (2025) to measure functionality of families. The unidimensional scale consists of 12 items (e.g., '*We can express our feelings to each other*') and is rated on a 4-point Likert scale, with 1 being '*strongly disagree*' and 4 being '*strongly agree*'. High scores indicate high family functioning. The internal consistency was $\alpha = 0.88$ in the adaptation study.

Short Form Warwick Edinburgh Mental Well Being Scale (SWEMWBS)

The SWEMWBS, originally developed by Tennant et al. (2007), to measure well-being. Short form of the scale was adapted to Turkish by Demirtaş and Baytemir (2019). The scale consists of seven items (e.g., "*I feel close to other people around me*"), each rated on a five-point Likert scale ranging from 1 ('never') to 5 ('always'). The internal consistency was $\alpha = 0.86$ in the adaptation study.

Data Analysis

The mediating roles of doomscrolling, schadenfreude, and family functioning in the relationship between externality of happiness and mental well-being were examined using structural equation modelling (SEM). All data analyses were conducted with IBM SPSS 27 and AMOS Graphics version 24. Prior to analysis, the dataset was screened for missing values and multivariate outliers. No missing data were detected; therefore, all 811 cases were retained. Univariate and multivariate normality were assessed using skewness and kurtosis statistics, and all values were within the acceptable range (± 2), indicating that the assumption of multivariate normality was met. Firstly, descriptive statistics, relabilities and Pearson's correlations were calculated for each variable. To assess the quality of representation of the observed variables, a measurement model was created prior to testing the structural model. Control variables such as age, gender, and socioeconomic status were examined in preliminary analyses and were not significantly related to the key study variables. To maintain model parsimony and focus on the hypothesized relationships, these variables were not included as covariates in the final SEM. Model fit was evaluated based on multiple fit indices, including the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardised Root Mean Square Residual (SRMR). In addition, item parcelling was applied to reduce measurement error and achieve a more stable factor structure, as recommended when each construct is unidimensional and supported by strong theoretical rationale (Little et al., 2002; Matsunaga, 2008). Parcels were created using the item-to-construct balance method. Thus, each of the unidimensional constructs such as externality of happiness, doomscrolling, family functioning and mental well-being was divided into two plots. For multidimensional constructs such as schadenfreude sub-dimensions were treated as observed variables. The significance of the indirect (mediating) effects was evaluated using bootstrapping procedures with 5000 resamples. Using this method, 95% confidence intervals (CIs) were produced for indirect effects. In addition to the SEM analyses, a central and clustering network analysis was conducted to further examine the system-level relationships between the variables in the study. All variables were z-standardised before being included in the network model. Centrality indices (betweenness, closeness, strength and expected influence) were calculated to determine the structural roles of each variable within the network. Furthermore, clustering analyses were performed using four algorithms: Barrat, Onnela, Watts–Strogatz, and Zhang, to identify potential subsystems.

Ethics

This research was approved by the Yıldız Technical University Institute of Social Sciences Ethics Committee (Approval number: 20250104137), and all participants provided informed consent.

Results

Preliminary Analysis

Descriptive statistics, reliabilities and Pearson correlation coefficients for the study variables are presented in Table 2. As a result of the analyses, significant relationships at different levels were found between the variables in the study. According to the correlation analysis in Table 2, externality of happiness has a positive relationship with doomscrolling, schadenfreude and negative relationship with family functioning and mental well-being. Doomscrolling has a positive relationship with schadenfreude and negative relationship with family functioning and mental well-being. Mental well-being has a positive relationship with family functioning and negative relationship with externality of happiness, doomscrolling and schadenfreude. Also all the variables have significant relationship with each other.

Measurement Model

The measurement model consists of five latent variables: externality of happiness, doomscrolling, schadenfreude, family functioning and mental well-being; and ten observed variables: two for externality of happiness, two for doomscrolling, two for schadenfreude, two for family functioning and two for mental well-being. According to measurement model the model fit was satisfactory (χ^2/df = 4.185; CFI = 0.981; TLI = 0.966; SRMR = 0.0356; RMSEA = 0.059). It can be said that the observed variables can represent the latent variables in a meaningful way.

Structural Model

Structural equation modelling findings showed that the structural model fit was satisfactory (χ^2/df = 3.859; CFI = 0.981; TLI = 0.970; SRMR = 0.0391; RMSEA = 0.056). According to the structural model, externality of happiness positively predicted doomscrolling ($\beta = 0.32$, $p < 0.01$) and schadenfreude ($\beta = 0.38$, $p < 0.01$). Doomscrolling positively predicted schadenfreude ($\beta = 0.72$, $p < 0.01$) and negatively predicted family functioning ($\beta = -0.15$, $p < 0.01$) and mental well-being ($\beta = -0.36$, $p < 0.01$). Schadenfreude negatively predicted family functioning ($\beta = -0.16$, $p < 0.01$) and mental well-being ($\beta = -0.22$, $p < 0.01$). Finally, family functioning positively predicted mental well-being ($\beta = 0.30$, $p < 0.01$). In addition, doomscrolling and family functioning were found to play a partial mediating role while schadenfreude was found to play a

Table 2 Descriptive statistics, reliability and correlation findings

Variable	Descriptive statistics					Correlations				
	Mean	*SD*	*Skewness*	*Kurtosis*	α	1	2	3	4	5
1. Externality of happiness	15.51	4.98	0.34	−0.44	0.76	–				
2. Doomscrolling	11.61	6.13	0.62	−0.47	0.86	0.32**	–			
3. Schadenfreude	36.04	13.17	0.12	−0.48	0.75	0.09**	0.18**	–		
4. Family functioning	35.78	8.07	−0.38	−0.33	0.91	−0.26**	−0.18**	−0.14**	–	
5. Mental well-being	25.46	5.58	−0.34	−0.01	0.89	−0.41**	−0.31**	−0.08*	0.38**	–

α = Cronbach alpha * $p < 0.05$; ** $p < 0.01$

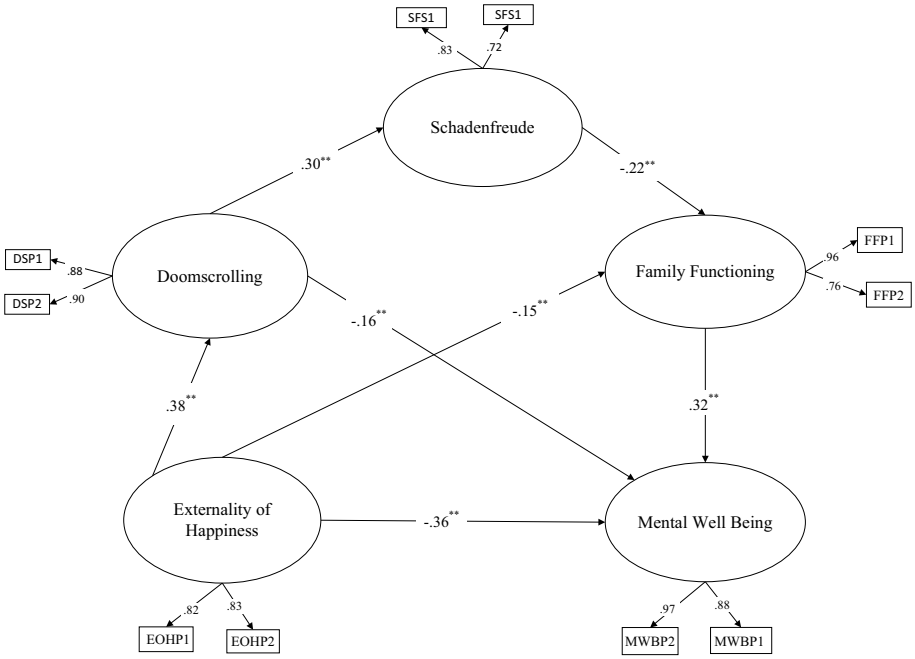


Fig. 1 Structural equation modelling for the serial mediation model. $^{*}p < 0.05$ and $^{**}p < 0.01$. *EOHP*: parcel of externality of happiness; *DSP*: parcel of doom scrolling; *SFS*: sub dimension of schadenfreude; *FF*: parcel of family functioning; *MWB*: parcel of mental well-being

full mediating role in the relationship between externality of happiness and mental well-being, respectively. All standardised coefficients are presented in Fig. 1.

Bootstrapping

Bootstrapping technique was applied to the partial 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 3.

Centrality Plot Metrics

In order to examine the structural relationships between the variables more comprehensively, a network analysis was performed with standardised values based on z-scores. In this analysis, the centrality levels of the variables in the network were examined. The centrality levels were analysed through 'betweenness, closeness, strength and expected influence' values. According to the central network analyses, mental well-being stands out as the most central variable (strength, $z = 1.160$; closeness, $z = 0.788$; betweenness, $z = 1.095$). The central measurement values show that this variable is in a strong, close and bridging position with all other variables in the system. Doomscrolling has the highest expected influence value ($z = 1.099$) and is considered the observed variable with the highest direct and indirect influence on other variables in the system. In contrast, schadenfreude, family

Table 3 Standardised direct and indirect effects with 95% confidence intervals of the structural model

Model pathways	Estimated	95% CI	
		Lower	Upper
Direct link			
Externality of happiness → doomscrolling	0.38	0.30	0.46
Doomscrolling → schadenfreude	0.30	0.19	0.41
Schadenfreude → family functioning	− 0.22	− 0.32	− 0.12
Externality of happiness → family functioning	− 0.15	− 0.29	− 0.06
Family functioning → mental well-being	0.32	0.26	0.39
Externality of happiness → mental well-being	− 0.36	− 0.44	− 0.27
Doomscrolling → mental well-being	− 0.16	− 0.24	− 0.07
Indirect link			
Externality of happiness → doomscrolling → schadenfreude	0.26	0.14	0.41
Externality of happiness → doomscrolling → schadenfreude → family functioning	− 0.05	− 0.09	− 0.03
Externality of happiness → doomscrolling → schadenfreude → family functioning → mental well-being	− 0.01	− 0.02	− 0.00
Externality of happiness → doomscrolling → mental well-being	− 0.06	− 0.09	− 0.03
Externality of happiness → family functioning → mental well-being	− 0.05	− 0.09	− 0.00
Doomscrolling → schadenfreude → family functioning	− 0.10	− 0.17	− 0.05
Doomscrolling → schadenfreude → family functioning → mental well-being	− 0.02	− 0.03	− 0.01
Schadenfreude → family functioning → mental well-being	− 0.03	− 0.05	− 0.02

Table 4 Centrality and cluster networks results of variables

Variable	**Network**				**Cluster**			
	Betweenness	*Closeness*	*Strength*	*Expected influence*	*Barrat*	*Onnela*	*WS*	*Zhang*
Externality of happiness	− 0.73	0.55	0.44	− 1.04	− 0.58	− 0.27	− 0.73	0.20
Doomscrolling	1.10	0.47	0.09	1.10	1.06	− 0.96	1.10	− 1.55
Schadenfreude	− 0.73	− 1.68	− 1.56	0.50	− 0.41	− 0.04	− 0.73	1.14
Family functioning	− 0.73	− 0.15	− 0.12	0.53	− 1.13	− 0.42	− 0.73	0.45
Mentall well-being	1.10	0.79	1.16	− 1.09	1.06	1.68	1.10	− 0.24

functioning and the externality of happiness are positioned as more peripheral components of the system with lower centrality values. The centrality analysis showed that doomscrolling emerged as the most strongly connected and influential factor in the network, indicating that it exerts a broad impact on the other variables. Mental well-being also held a central and bridging position, suggesting that it links various digital and family factors. Detailed information on the central network measures of the variables is presented in Table 4 and Fig. 2.

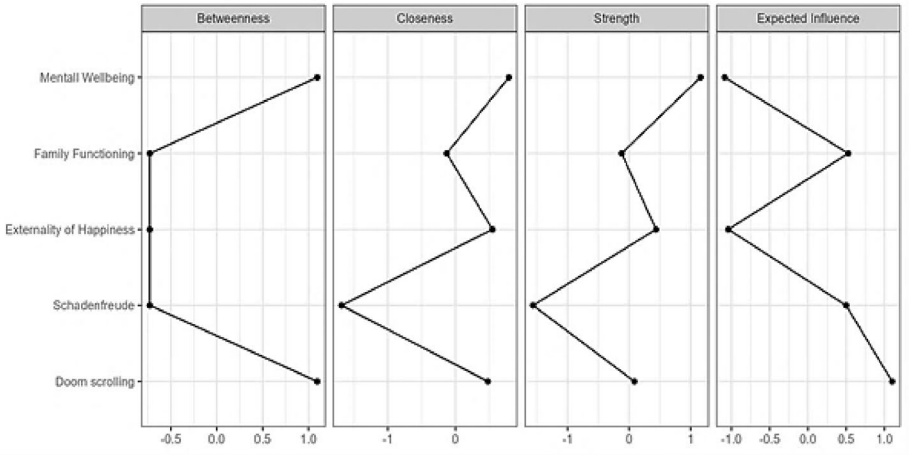


Fig. 2 Centrality plot metrics for the serial mediation model

Clustering Plot Metrics

Clustering network analysis was performed to evaluate the grouping tendencies of the variables in the central network analysis. Four different clustering criteria, namely 'Barrat', 'Onnela', 'WS' and 'Zhang' were analysed. According to the findings, mental well-being and doom scrolling variables are in the same cluster according to Barrat ($z = 1.056$) and WS ($z = 1.095$) criteria. According to Zhang criteria, Schadenfreude ($z = 1.139$), Family Functioning ($z = 0.448$) and Externality of Happiness ($z = 0.200$) are in the same cluster. The cluster analysis revealed two main groups of variables. The first cluster contained the closely related concepts of doomscrolling and mental health. The second cluster contained the externalization of happiness, schadenfreude, and family functioning, reflecting their common underlying dynamics. Detailed information about the clustering network analysis measurements of the variables is presented in Table 4 and Fig. 3.

Discussion

Addressing the possible reflections of digitalisation on individuals' psychological processes and family interactions within the framework of a multidimensional model is becoming increasingly important for today's mental health research. The sequential mediation model tested in this study provides meaningful data on the relational patterns between different characteristic tendencies, family functioning and mental well-being. In particular, the family functioning variable stands out as an important contextual element that plays a role in these relationships; it reveals that it may be meaningful to address the links between digital behaviours and well-being in the context of the family system. According to the findings obtained from structural equation modelling, doomscrolling and family functioning play a partial mediating role in the relationship between the externalities of happiness and mental well-being, while schadenfreude plays a full mediating role. These relational patterns reveal the necessity of multilevel approaches that take into account not only individual

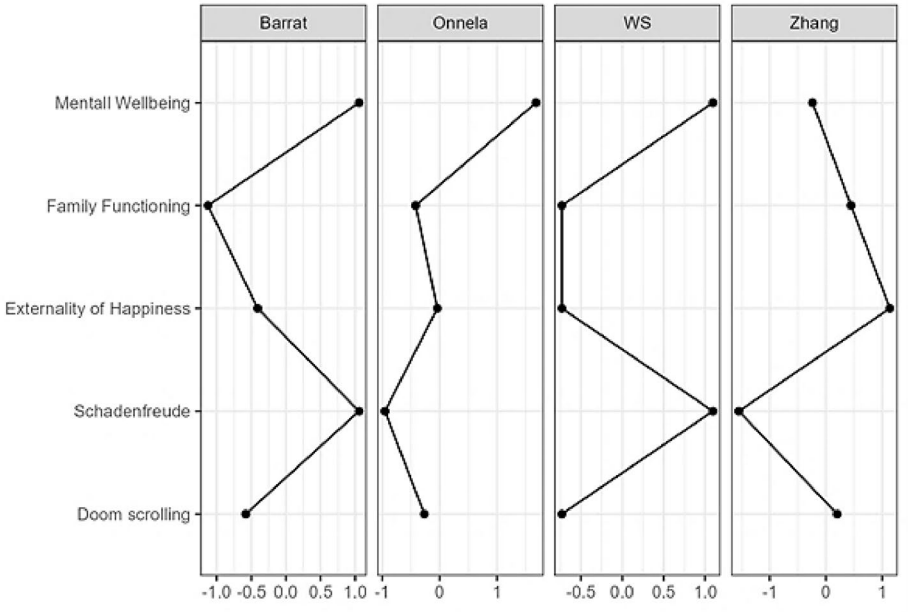


Fig. 3 Clustering metrics based on Barrat, Onnela, WS, and Zhang algorithms, indicating subsystem formations among the five variables

tendencies but also social context in explaining the psychological effects of the digital age on individuals. Below, each finding is discussed in more detail and discussed in the context of current theoretical approaches.

Externality of happiness was positively associated with doomscrolling, suggesting that attributing happiness to external conditions increases susceptibility to negative digital content. Similar patterns are also found in the literature. For example, Ytre-Arne and Moe (2021) emphasized that individuals' behaviours of consuming negative content in digital media may be related to cognitive vulnerability. Likewise, Xie and Wang (2025) reported that individuals who attribute happiness to external sources are more sensitive to online threat perceptions and exhibit lower tolerance towards negative news. When evaluated in this context, the relationship between the externality of happiness and doomscrolling presents a remarkable pattern in terms of both the individual's self-perception and the interaction with the digital environment (Güme, 2024; Taskin et al., 2024). It is suggested that the rapidly increasing lifestyle-themed content, such as holiday, clothing, food, success stories, especially on social media platforms, may increase individuals' sensitivity to external sources of happiness. These digital environments, where social comparison is intense, may reinforce individuals' behaviour of following the developments in the outside world and this may be associated with doomscrolling tendencies. While our findings suggest that doomscrolling predicts lower mental well-being, the cross-sectional design does not permit firm causal inferences. It is equally plausible that low mental well-being increases vulnerability to doomscrolling, as individuals experiencing anxiety or depressive symptoms may be more inclined to engage with negative online content (Rodrigues, 2022).

Doomscrolling was positively associated with schadenfreude, suggesting that greater exposure to negative digital content may foster satisfaction in others' misfortunes.

Although there is no research directly examining the relationship between these two variables, studies on the relationship between neurotic personality traits and doomscrolling are in line with this finding (Satıcı et al., 2023; Buchanan et al., 2021). It is suggested that individuals who are constantly exposed to negative content may decrease empathic reactions over time and develop more insensitive or pleasure-oriented emotional tendencies towards the negativity experienced by others (Demeter et al., 2021). It is also stated that social comparison mechanisms intensified on social media platforms may reinforce this process. Indeed, Brubaker et al. (2021) and Edgar (2022) reported that individuals may tend to feel better by focusing on the misfortunes of others, and this may foster the feeling of schadenfreude. In collectivist cultures such as Türkiye, social dynamics such as social comparison, jealousy and perception of justice are more prominent, which may make this relationship more meaningful in a cultural context. The findings suggest that digital content consumption may be related to complex processes that may shape not only cognitive but also emotional and moral responses. Although these findings were obtained in a collectivist context, the strength or nature of these associations may vary in a more individualistic context. In such contexts, personal happiness perception and self-focused values may be linked to different patterns of family influence and to distinct ways in which digital behaviours and social-emotional tendencies relate to mental well-being (McCutcheon et al., 2024).

Higher externality of happiness was linked to lower family functioning, suggesting weaker emotional bonds and less effective interactions within the family system. Indeed, it has been emphasised in the literature that extrinsic happiness beliefs are negatively related to self-efficacy and intrinsic motivation (Izzo et al., 2022). Within the framework of the McMaster Family Functioning Model, this situation can be associated with the emotional involvement dimension (Caño González & Rodríguez-Naranjo, 2024). It is thought that individuals who seek happiness in external elements may have difficulty in emotionally orienting towards family members and this may limit functional processes such as communication and mutual support (Pan et al., 2022). Furthermore, it is suggested that the perception of external happiness may create dissatisfaction with the 'ideal family' representations shaped by social comparisons and may lead individuals to evaluate their current family environment as inadequate or irrelevant (Roberts et al., 2022). Even if this situation does not weaken the individual's family ties, it may be a factor that may affect the perception of family functioning. From a cultural perspective, in collectivist cultures such as Türkiye, it is expected that the ties between family members are strong and happiness is mostly defined through intra-family relationships (Koçak et al., 2022). However, even in this collectivist framework, the increase in individuals' tendency to turn to external sources of happiness may change the perceptions related to the functionality of the family system. Within this context, it is considered that the individual's understanding of happiness may be related not only to individual tendencies but also to the family structure and emotional attachment styles.

One of the noteworthy findings of the study is that a negative relationship was observed between schadenfreude level and family functioning. Various studies have shown that individuals with a high schadenfreude tendency have low empathy levels, weak social bonding capacities and may be more distant in their relationships (Bacile et al., 2024; Karaosmanoğlu & Kandemir, 2025). It is considered that such neurotic social-emotional tendencies may be related to functional processes such as open communication, crisis management and responsiveness to emotional needs in the family environment. Especially in family systems where empathic sensitivity is low, co-operation and emotional closeness may weaken in the face of daily stressors (Yang et al., 2023). It is thought that such individual tendencies may be related to the emotional atmosphere within the family and may

be in a certain connection with the functionality of relationships. In fact, Maurovic et al. (2020) stated that the capacity of families to respond to emotional needs and manage crisis situations is among the important indicators of family functioning. Thus, it is considered that social-emotional tendencies such as schadenfreude, which may make interpersonal interaction difficult, may be in a certain relationship with emotional processes within the family. In the literature, it is suggested that schadenfreude may weaken empathic responses (De Jong et al., 2021), and this may be linked to the ability to recognise the emotional needs of family members (Wang et al., 2024). Such decreases in empathic sensitivity may make it difficult to communicate effectively especially in times of crisis and can be considered an important factor for family functioning. Therefore, it can be said that the negative relationship observed between this emotional tendency and family functioning gains meaning with these contextual factors.

The serial mediation model demonstrated how external happiness beliefs are expressed at individual and relational levels through digital behaviours and social comparisons, integrating perceptions of happiness, digital habits, social-emotional tendencies, and family dynamics into a comprehensive, multi-layered framework. The externality of happiness, which constitutes the starting point of the model, is defined by the individual attributing happiness to external conditions instead of internal processes (Joshanloo, 2017). It is stated that this belief structure has the potential to make individuals more sensitive to environmental stimuli and may be associated with continuous content tracking behaviours in digital environments. As a matter of fact, this situation has been associated with a form of behaviour called 'doomscrolling' in the literature, which is characterised by intense exposure to negative news content on digital platforms. Doomscrolling is not only an effort to access information; it can also be linked to cognitive and emotional burnout processes caused by encountering uncontrollable negativity.

Individuals who are constantly exposed to negative news on social media may develop a perception that they are deprived of external sources of happiness. In this context, it is stated that there may be a relationship between doomscrolling behaviours and the increase in empathic distance and the strengthening of social comparison-based emotional responses. In particular, schadenfreude, which is the individual's tendency to derive pleasure from the negative experiences of others, becomes one of the social-emotional structures associated with this process. If individuals feel a lack of control and happiness in their own lives, they may tend to observe the lack of others externally, creating a short-term sense of superiority or satisfaction. Schadenfreude has been reported to be associated with low empathy, competitiveness, and emotional insensitivity in the literature (Brubaker et al., 2021; Wang et al., 2019). Such social-emotional patterns are thought to be associated with certain risk factors for establishing functional relationships in the family context. In this framework, focusing on how schadenfreude is related to emotional interactions within the family and overall family functioning may provide an explanatory basis for understanding the relational effects of the digital age.

Although schadenfreude showed a negative association with mental well-being, this effect operated indirectly through family functioning, suggesting that its impact is shaped more by contextual factors. Similarly, some previous studies suggest that schadenfreude may have indirect effects through relationships with the social environment (Chen & Zhang, 2020; Ng & Kang, 2022). Conceptually, schadenfreude is defined by the tendency to enjoy the negativity of others, and this feeling may create temporary satisfaction in the short term. However, it is shown in the literature that this tendency is associated with a decrease in empathy level, increased social distance and relational disconnections in the long term (Bacile et al., 2024; Wessler et al., 2023). In this framework, schadenfreude is

considered to be indirectly related to individuals' mental well-being in relation to emotional processes related to the family system. As seen in the structural model, the findings provide evidence that the relationship between social-emotional structures with neurotic tendencies and mental well-being is not unidimensional; it is shaped through multi-layered systems (Henderson & Loreau, 2023; Joshanloo, 2023). In particular, it is considered that close social contexts such as family can play an important role in understanding the effects of such individual tendencies on well-being.

Family functioning emerged as a key contextual factor positively linked to mental well-being. In the literature, it is reported that functional characteristics such as communication quality, emotional support, role sharing and crisis management within the family are associated with individuals' life satisfaction, self-esteem, emotion regulation capacity and coping skills with stress (Feinberg et al., 2022; Körün et al., 2025; Pan et al., 2021). Indeed, it has been reported in various studies that dysfunctional family environments are associated with psychological outcomes such as depression, anxiety and low life satisfaction (Urbina-Garcia, 2025). In this framework, the family is considered not only as a social unit but also as one of the basic systems that support the emotional regulation of the individual. Adequate functioning of the family system may be associated with the development of a more resilient stance against psychosocial stressors that increase with digitalisation. On the other hand, breakdowns in intra-family communication or lack of support may lead individuals to external resources and this may have negative effects on psychological balance. In this context, it is thought that the functionality of the family system may become a more crucial factor in terms of individual mental well-being, especially in collectivist cultural contexts.

Network analyses extended the structural model by highlighting systemic interactions: doomscrolling clustered with mental well-being, while schadenfreude, externality of happiness, and family functioning formed a second cluster, underscoring the close links between digital behaviors and well-being. This finding reveals that cognitive-emotional deviations and contextual systemic functions are structured in a common pattern. Individual dynamics can also show their effects in line with the social context (Fitzgerald et al., 2023). These patterns show that individual tendencies and familial context form subsystems that interact with each other and support the multilevel structure of the proposed model. The fact that constructs such as doomscrolling and mental well-being, which can be theoretically positioned in different directions, are included in the same cluster reveals that mental well-being is strongly associated with digital behaviours and the importance of addressing these two constructs together in intervention programmes. In addition, the fact that the family functioning variable is located in a more discrete structure in most algorithms reflects the unique systemic role and contextual contribution of this variable in the network (Rhodes et al., 2024). These centrality and cluster network-level findings provide a deeper understanding of how digital behaviours, cognitive-emotional dispositions and family systems dynamically interact, reinforcing the importance of holistic and multidimensional approaches to mental well-being in the digital age.

Limitations and Future Research

Although this study found significant relationships between the externality of happiness, doomscrolling, schadenfreude, family functioning and mental well-being, there are some limitations. To begin with, the study is based on a cross-sectional research model. Therefore, although it is possible to have an idea about the orientation and relational structure between variables, it is not possible to make causal inferences. Therefore, longitudinal

and experimental studies should be prioritised in future studies. Following this, data were collected online using self-report scales. Participants' self-perceived responses may have been influenced by effects such as social desirability or respondent bias. This may pose a significant limitation, especially in the measurement of socially sensitive emotions such as schadenfreude. In closing, the majority of the sample group consists of individuals in emerging adulthood and middle adulthood and the sample has a homogeneous age range. This situation does not allow comparing the effects of family structures and digital habits in different age groups. Therefore, it is recommended to include adolescents and individuals in the older adulthood group in future studies. In addition, the fact that the study was conducted only in the Turkish sample may limit the generalisability of the results to different cultural contexts.

Implications

In this study, a unique structural model of the multilayered relationships between the externality of happiness, doomscrolling, schadenfreude, family functioning, and mental well-being was examined. The findings obtained indicate that the cognitive-emotional attitudes that individuals develop in digital environments may be reflected in their mental well-being through family interactions. In this framework, it is understood that it is important to address the effects of digitalisation on the individual not only at the individual level but also in the context of the family system. Theoretically, this model offers a new perspective to the literature by approaching the relationships between digital habits and mental well-being from a systemic perspective. It also integrates key perspectives from positive psychology, systemic family theory, and digital mental health by framing the tested structural and network models in a way that connects individual well-being processes to family-level dynamics and to digital behavior patterns, showing how meaning, purpose, and emotional balance interact with family-based protective factors and digital-age risks. In particular, examining social-emotional constructs such as schadenfreude, which are not frequently addressed in the literature, in the context of family functioning can strengthen the integration between social psychology and family studies.

From a practical point of view, it should be taken into consideration that emotional patterns such as doomscrolling, externality of happiness and schadenfreude may have negative effects not only on the individual but also on family relationships. Based on these findings, strengthening mutual interaction through approaches such as experiential family therapy and emotion-focused practices may be considered in future preventive or supportive programs. Moreover, enhancing skills such as self-awareness, empathy development and digital content literacy could help strengthen both individual and relational well-being. Likewise, promoting the digital literacy of mental health professionals and family counsellors may assist them in recognising the elements likely to affect individuals through social media and in providing appropriate support. Mental health professionals and family counsellors may also take into account individuals' relationships with the digital world when designing family-based psychoeducation and intervention programmes.

Conclusion

The way the cognitive and emotional tendencies that emerge in individuals' relationship with digital environments are related to mental well-being is becoming increasingly important in the current mental health literature. In this study, the relationships between externality of happiness, doomscrolling, schadenfreude, family functioning and mental well-being were examined. The findings suggest that the cognitive and emotional tendencies developed by individuals in the digital age may be related to mental well-being through family functioning in the family system. This study considers well-being not only as an individual construct but also as a systemic outcome shaped by the interactive dynamics of digitalisation and social context. In particular, this model, which shows how the characteristic tendencies of the digital age such as the externality of happiness, doomscrolling and schadenfreude can be linked to mental well-being through family functioning, combines concepts that are rarely considered together in the literature in a holistic and systemic structure. Considering that in collectivist cultures, an individual's well-being is related not only to internal resources but also to the social systems in which he/she lives, it is thought that family functioning may play an important role in emotional processes related to characteristic traits. The findings obtained in this context emphasise the importance of evaluating protective and risk factors together not only at the individual level but also at the family system level. In conclusion, this study presents a unique structural model that explains the multi-layered determinants of mental well-being by presenting a sequential structure that includes the perception of happiness, doomscrolling, social-emotional reactions and family dynamics. This model both paves the way for a re-discussion of holistic systems approaches in the theoretical field in the context of digitalisation and proposes a new framework for applied interventions to evaluate the psychosocial effects of the digital age.

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Data Availability Data will be available on request.

Declarations

Ethics Approval This research was ethically approved by Yıldız Technical University Institute of Social Sciences Ethics Committee with document number 20250104137.

No animals or humans were harmed in the research.

Consent to Participate Informed consent was obtained from all the individual participants who were included in the study. Participants were given an informed consent form.

Conflict of interest The authors declare no competing interests.

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