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Doomscrolling evokes existential anxiety and fosters pessimism about human nature? Evidence from Iran and the United States

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ABSTRACT

The media's adherence to "*if it bleeds, it leads*" has resulted in global dominance of negative news (e.g., stories of corruption, fraud, shootings, terrorism, and war). The appetite for negative news is fueled by *negativity bias*, which compels people to prioritize negative over positive stories. This cross-cultural study, inspired by media effect theories such as *Cultivation Theory*, explored the links between problematic consumption of negative news (doomscrolling), existential anxiety, pessimistic views about human nature, and belief about a just world in two distinct cultures. Participants included convenience samples of Iranian (n = 620) and American (n = 180) university-student social media users. Doomscrolling was associated with elevated levels of existential anxiety in both samples. Additionally, misanthropy was positively associated with doomscrolling only in the Iranian sample. Aligned with the *Media-induced PTSD Hypothesis* and the *Shattered Assumption Theory*, our findings suggest that prolonged exposure to negative news can contribute to the development of existential anxiety. Current news framing with its overemphasis on negativity could fuel doomscrolling-inspired existential concerns.

1. Introduction

Negativity is one of the prominent qualities of news media. Recent reports have revealed an increase in the prevalence of negative sentiment in news and headlines. Emotionally neutral news has diminished, and a substantial portion of coverage is now characterized by emotions such as anger, fear, disgust, and sadness (see Rozado et al., 2022). News media appears to have a blind spot for good news and tends to disproportionately focus on negative stories (Van der Meer et al., 2019). Positive news is often disregarded as no news, while negative news ensures greater readership, higher ratings, and more clicks (Robertson et al., 2023). Furthermore, from the demand side of news consumption, many consumers prefer and actively seek out cynical and negative news (Trussler & Soroka, 2014). These circumstances have resulted in biased news production and media attention.

The historical tendency toward negativity in news coverage reflects viewers' high responsiveness to tragic news. Throughout history, humans have sought out bad news which increases alertness, a trait essential for survival (Blades, 2021). Concerns over negativity in news have persisted across different time periods (e.g., Patterson, 1996). Research evidence supports this *negativity bias*, which can be defined as a tendency to place a high value on negative information relative to

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positive information (e.g., Soroka et al., 2019). This bias manifests in various stages of human development, extending even to infants, and has deep evolutionary roots (Vaish et al., 2008).

Apart from the potential evolutionary functions of negativity bias, negative news can be associated with adverse personal and societal outcomes. Negative framing of society and government is nearly inseparable from the news media, especially during times of crisis (Laor & Lissitsa, 2022). This pervasive negativity in the media can deteriorate societal cohesion and trust in the government (Laor & Lissitsa, 2022). Moreover, negative news can contribute to poor mental health and altered perspectives toward the self, others, and existence.

Negative news can be considered as a stressor, evoking affective reactions (Satici et al., 2023; Shabahang et al., 2022), which can possibly alter attitudes towards society or specific events. Recent evidence has suggested that compulsive, indiscriminate consumption of negative news, known as *doomscrolling*, appears to be associated with exacerbated future anxiety, elevated risk-taking (Shabahang et al., 2022), psychological distress (lower well-being, life satisfaction, and harmony in life; Satici et al., 2023), fear of missing out, and problematic media use (Satici et al., 2023; Shabahang et al., 2022; Sharma et al., 2022). Lower self-control, and higher neuroticism, cynicism, generalized anxiety, and political interest predict higher doomscrolling (Sharma et al., 2022), indicating that personality variables may render some people more susceptible to doomscrolling.

Media and media content overload can serve as a conduit for mental health problems, such as anxiety and depression (e.g., Li et al., 2023; Matthes et al., 2020). The content of media, including negative news, has the potential to shape the minds of audiences and implant specific assumptions and tendencies within them. Indeed, the media plays an influential role in attitude formation. The *general learning model* contends that observational learning affect how individuals behave. In this context, the media facilitates accessibility to specific thoughts and triggers relevant reactions. For example, exposure to violent media has been shown to implant aggressive thoughts and increase antagonism (see Barlett & Anderson, 2012). *Social cognitive theory* (SCT) suggests a reciprocal dynamic relationship between the individual, behavior, and the environment. Drawing on the SCT, individuals' cognitions and behaviors could be influenced by media modeling (see Bandura, 2002). *Cultivation theory* (CT), which focuses on the alteration of viewers' attitudes and behaviors in response to long-term media exposure (see Potter, 2014), and theories of *media violent effects* (exploring short-term effects such as priming, arousal, and mimicry, as well as long-term effects such as observational learning, desensitization, and enactive learning; see Huesmann, 2007) also share a similar perspective. According to the CT, media have the potential to alter viewers' conceptions of social reality. Considering the theories of media violent effects, media with aggressive content may trigger real-world hostility. Combining these theoretical frameworks, news media can potentially alter individuals' cognitions and behaviors.

1.1. Doomscrolling and existential anxiety

Negative news can be a source of vicariously experienced trauma. Recent studies suggest that media coverage of mass traumatic events (vicarious trauma), has the potential to trigger acute stress and post-traumatic stress symptoms (*media-induced PTSD*; see Abdalla et al., 2021). This media exposure to mass trauma has the potential to induce anxiety and depression (Pfefferbaum et al., 2021). Considering that media can be a source of trauma, and traumatic events can give rise to an existential crisis (Floyd et al., 2005), we expect doomscrolling will be associated with existential questions and insecurity.

Individuals often grapple with profound existential questions about what it means to be human, the nature of life and death, and factors that make life worth living. Serious life events and deprivations may give rise to existential inquiries, particularly when adverse circumstances force individuals to reorient themselves (see Frankl, 1959; Yalom, 1998). For example, exposure to disasters can lead to existential anxiety about the meaning of life (Weems et al., 2016). Serious challenges disrupt the familiar fabric of life, challenging previously held beliefs and expectations. These circumstances remind us of the fragility of human existence and the unpredictability of the world, diminishing a person's sense of control and contributing to feelings of helplessness and nihilism. Such events can shatter the illusion of stability and predictability, prompting individuals to confront existential questions about the purpose and meaning of life (see Scott & Weems, 2013; Weems et al., 2016).

Existential apprehension is notably intertwined with emotional functioning (*theory of existential anxiety*; Tillich, 1952). After exposure to a stressor like doomscrolling (Satici et al., 2023; Shabahang et al., 2022; Sharma et al., 2022), the resulting anxiety may determine whether existential apprehension follows. Exposure to negative news can lead to more negative and less positive affect (e.g., de Hoog & Verboon, 2020). Studies have also highlighted that a positive mood is entangled with the meaning of life, predisposing individuals to perceive life as meaningful and enhancing their sensitivity to meanings within events (e.g., King et al., 2006). Perceiving meaning in life acts as a buffer for existential dread (Kesebir & Pyszczynski, 2014). If high positive affect is linked to a higher sense of meaning in life and negative news is associated with less positive affect, we can expect that exposure to negative news might be related to a lack of meaning in life. Indeed, experiencing feelings of emptiness, meaninglessness, and condemnation appears after the exposure to such meaning-threatening stimuli (e.g., reports on hunger crises, genocides, and homicides). Drawing on the media-induced PTSD hypothesis and the relationship between mood and the perception of life's meaning, doomscrolling is hypothesized to be associated with existential anxiety. Therefore, the present study's main focus is to investigate whether there is an association between doomscrolling and existential anxiety.

1.2. Doomscrolling, belief in a just world, and misanthropy

In addition to potential concerns about the self and life following the exposure to negative news, doomscrolling can possibly have far-reaching consequences, extending beyond person-oriented perspectives. One notable impact could be the cultivation of negative attitudes toward society and the world. As elaborated earlier, the consumption of negative news has the potential to evoke feelings akin to experiencing traumatic events indirectly. This exposure to negative and traumatic events, particularly those caused by others, may be linked to the development of misanthropy—a profound sense of hatred and distrust toward humankind. Misanthropes tend to experience greater anomie and harbor negative views about the nature of the world (Smith, 1997). Furthermore, traumatic events can undermine the perception of justice in the world (Calhoun et al., 1998). The *shattered assumption theory* (Janoff-Bulman, 1992) posits that challenging life events have the potential to shatter one's belief system, ultimately threatening mental health. In this context, the constant exposure to negative news through doomscrolling serves as a reminder that humankind is imperfect, and there is no justice in the world. These reminders, fueled by vicariously experienced traumatic events and injustices, may contribute to a pervasive sense of disillusion, challenging individuals' fundamental assumptions about the fairness and benevolence of the world. Hence, exploring the psychological consequences of doomscrolling goes beyond individual mental health concerns, extending its impact to societal trust, perceptions of justice, and the overall worldview of those immersed in the continuous stream of negative information. Drawing on the shattered assumption theory, doomscrolling appears to have the potential to shatter an optimistic perspective toward justice in the world and foster negative attitudes towards humankind. Therefore, another main research question of the present study is whether there is an association between doomscrolling and belief in a just world. Moreover, the present study seeks to address the question of whether there is an association between doomscrolling and misanthropy.

Excessive exposure to negative news may increase the accessibility of negative and pessimistic thoughts about the self, humanity, and the world. This study investigates whether doomscrolling is associated with existential anxiety, misanthropy, and just-world beliefs in two different samples, which differ in cultural background (i.e., Iran and the United States). Surprisingly, exploration of the impacts of negative news with an existential approach is scarce. To our knowledge, this is the first investigation into the potential existential correlates of doomscrolling. In alignment with SCT, CT, theories of media violent effects, the media-induced PTSD hypothesis, shattered assumption theory, and prior evidence, we hypothesize that doomscrolling will predict greater existential anxiety, misanthropy, and just-world beliefs in Iranian and United States social media users.

2. Methods

2.1. Participants

The study included 800 university students who were active social media users from Iran (University of Guilan, Rasht, Iran) and the United States (University of Central Missouri, Warrensburg, Missouri). Recruitment took place between September and November 2023. The Iranian sample ($n = 620$) consisted of 165 women, 454 men, and 1 other gender ($M_{age} = 26.75$ years, $SD_{age} = 5.61$). The United States sample ($n = 180$) was comprised of 135 women, 43 men, and 2 other gender ($M_{age} = 20.06$ years, $SD_{age} = 2.92$). Electronic written consent was obtained before participation, adhering to the principles of the Declaration of Helsinki. The study protocol received approval from the Institutional Review Board of the principal investigator's university.

2.2. Measures

The *Social Media Doomscrolling Scale* (SMDS; Shabahang et al., 2022) assesses individual differences in the tendency to prefer negative over positive social media news. The scale consists of eight items (e.g., "I have the urge to view more and more negative content on social media"), measured on a Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The SMDS has demonstrated satisfactory validity and reliability (Shabahang et al., 2022). In our study, Cronbach's alpha was 0.91 for the Iranian sample, and 0.92 for the US sample.

The *Existential Anxiety Questionnaire* (EAQ; Weems et al., 2004) was developed to assess the primary domains of existential anxiety, drawing on Tillich's theory of existential anxiety (Tillich, 1952). The EAQ comprises 13 items representing three domains, each addressing a relative and an absolute existential concern: fate and death, emptiness and meaninglessness, and guilt and condemnation. A sample item is: "I often think that the things that were once important in life are empty". Originally, the EAQ used a true–false rating scale, with 0 indicating "*no*" and 1 indicating "*yes*". However, for this study, the recommended response format of a 6-point scale was employed, where 1 represents "*strongly disagree*", and 6 represents "*strongly agree*" (To & Chan, 2016). The original version of the measure has demonstrated good psychometric properties (Weems et al., 2004). The Persian version of the EAQ has also shown sound psychometric attributes (e.g., Etemad et al., 2017). Cronbach's alphas ($\alpha_{Iran} = 0.78$, $\alpha_{US} = 0.84$) indicated appropriate reliability in this study. Similar to Carter et al.'s (2013) investigation, the total score of the EAQ was used in the current study's analysis.

The *Global Belief in a Just World Scale* (GBJWS; Lipkus, 1991) is a 7-item unidimensional instrument designed to assess belief in a just world (BJW; e.g., "I feel that rewards and punishments are fairly given''). Responses are scored on a 6-point Likert scale (1 = *strong disagreement*, 6 = *strong agreement)*. The English version of the GBJWS has demonstrated sound psychometric characteristics (Lipkus, 1991). Studies have also confirmed acceptable internal consistency of the GBJWS in Persian-speaking populations (e.g., Shabahang, Rezaei, et al., 2021). Cronbach's alpha values for the present study were 0.88 for the Iranian sample and 0.86 for the US sample.

The 5-item *Misanthropy Scale* (Wuensch et al., 2002) was designed to measure the extent to which individuals harbor a dislike for humans (e.g., "Humans are by nature basically corrupt"). Response options are provided on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*). The scale has demonstrated good reliability, as reported by the original authors. In our study, reliability was appropriate in both samples ($\alpha_{US} = 0.79$, $\alpha_{US} = 0.68$).

2.3. Procedure

Data were collected using online surveys. The English version of the survey was distributed to students at the University of Central Missouri (US) via Qualtrics. A small amount of course credit was awarded to each participant. Thirteen US participants were excluded from statistical analyses due to incomplete answers to measures or incorrect responses on an attention-check item embedded in the survey. The Persian version of the survey was shared with Iranian participants via a Google Forms link posted in social media groups associated with the University of Guilan. Compensation was provided in the form of a discount card for purchasing books. Twenty-nine Iranian participants who responded incorrectly to the attention-check item were excluded from statistical analyses.

2.4. Data analyses

First, Pearson-correlations were used to explore the associations between study-variables. Second, a structural regression model was constructed within a structural equation modeling (SEM) framework in which doomscrolling was a latent predictor variable. Existential anxiety, belief in a just world, and misanthropy were treated as latent outcome variables. Gender and age were added as observed, control variables to the model. The structural regression model was conducted on both samples. Mean- and variance-adjusted weighted least squares estimator (WLSMV) was used, which is appropriate for categorical variables such as gender (Finney & DiStefano, 2013). Standardized regression and correlation coefficients are reported using 95% bias-corrected bootstrapped confidence intervals based on 10,000 replication samples. The following cutoff points were used for evaluating fit indices of the SEM model (Brown, 2015; Hu & Bentler, 1999): the Comparative Fit Index (CFI; $\geq$0.90 for acceptable), the Tucker-Lewis Index (TLI; $\geq$0.90 for acceptable), and the root-mean-square error of approximation (RMSEA; $\leq$0.08 for acceptable) with its 90% confidence interval (90% CI). Considering the low sample size of the US participants ($n = 180$), which is below the commonly applied rule of thumb of $N > 200$ for SEM models to gain adequate statistical power (Hoe, 2008; Singh et al., 2016), the SEM model was tested on the US sample only to contrast the findings derived from the Iranian sample. Further research is needed to confirm the findings of the SEM model with regard to the US sample. Data analysis was performed using SPSS statistical software (IBM SPSS Statistics 21.0, 2012) and Mplus 7.4 (Muthén & Muthén, 2016). To reduce the risk of type I error across multiple comparisons, the level of significance was consistently set at $p < 0.01$ in the data analysis.

3. Results

Descriptive statistics and correlations among study variables are presented in Table 1.

Structural regression models were constructed to explore the associations of doomscrolling with existential anxiety, belief in a just world, and misanthropy across the Iranian ($n = 620$) and US ($n = 180$) samples (see Fig. 1). Both the Iranian ($\chi^2 = 1012.354$, $df = 259$, $p < 0.001$; CFI = 0.958; TLI = 0.952; RMSEA = 0.068 [90 % CI = 0.064–0.073]) and the US model ($\chi^2 = 552.939$, $df = 259$, $p < 0.001$; CFI = 0.940; TLI = 0.931; RMSEA = 0.079 [90 % CI = 0.070–0.089]) yielded acceptable model fit

Table 1
Descriptives and zero-order correlations in the Iranian (n = 620) and US (n = 180) samples.

Variable	M (SD)		1	2	3	4
	Iran	US				
1. Doomscrolling	1.92 (0.98)	2.56 (1.09)	1	**0.26**	0.16	**0.30**
2. Existential anxiety	3.38 (0.80)	3.29 (0.82)	**0.28**	1	−0.11	**0.40**
3. Belief in a just world	3.03 (1.08)	3.33 (0.88)	−0.10	**−0.23**	1	−0.08
4. Misanthropy	2.69 (0.91)	2.68 (0.71)	**0.21**	**0.33**	**−0.24**	1

Notes. M = mean; SD = standard deviation; correlation coefficients below the diagonal represent the Iranian sample, while coefficients above the diagonal represent the US sample; significant correlations are marked in bold ($p < 0.01$).

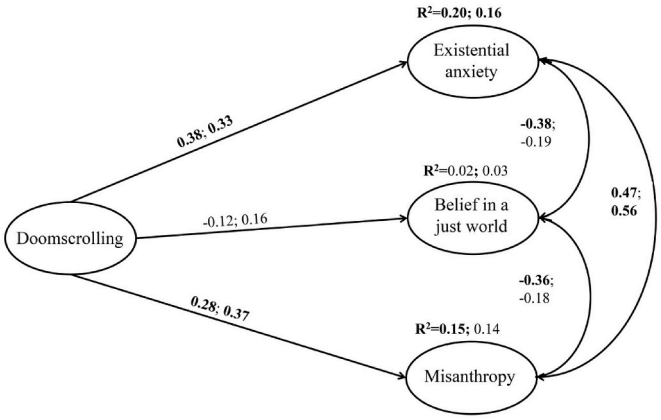

Fig. 1. Structural regression model representing associations between doomscrolling, existential anxiety, belief in a just world, and misanthropy in the Iranian (n = 620) and US (n = 180) samples.
Notes: Boldfaced values are significant at least at $p < 0.01$, while all other values are non-significant.
Standardized β coefficients are reported on single-headed arrows, while correlation coefficients between latent variables are reported on double-headed arrows. The first value represents the coefficient calculated on the Iranian sample (n = 620), while the second value represents the coefficient for the US sample (n = 180). Gender (1 = women, 2 = men) and age were included in the model as control variables. Error covariances were added between the 5th and 6th items and the 7th and 8th items of the Social Media Doomscrolling Scale, the 1st and 2nd items of the Misanthropy Scale, and the 1st and 2nd items of the Global Belief in a Just World Scale in both the Iranian and US models.

indices.

Doomscrolling predicted higher levels of existential anxiety in both samples (β = 0.38, 95% CI = [0.29; 0.46], SE = 0.05; $p < 0.001$ for the Iranian sample; β = 0.33, 95% CI = [0.16; 0.47], SE = 0.07; $p < 0.001$ for the US sample). The strength of the associations was weak-to-moderate. Doomscrolling also predicted slightly higher levels of misanthropy in the Iranian sample (β = 0.28, 95% CI = [0.18; 0.36], SE = 0.05; $p < 0.001$). Although doomscrolling was a significant predictor of misanthropy also in the US sample (β = 0.37, 95% CI = [0.10; 0.57], SE = 0.12; p = 0.002), its contribution to explaining misanthropy was negligible (R^2 = 14%). Therefore, further evidence is needed to confirm this relationship. Doomscrolling was not associated with belief in a just world in either the Iranian sample (β = −0.12, 95% CI = [−0.22; −0.03], SE = 0.05; p = 0.011) or the US sample (β = 0.16, 95% CI = [−0.01; 0.32], SE = 0.09; p = 0.070). The greatest proportion of variance explained by doomscrolling was observed in relation to existential anxiety across the samples (20% in the Iranian sample and 16% in the US sample).

Regarding the associations between outcome variables, lowered belief in a just world was associated with higher levels of existential anxiety (r = −0.38, 95% CI = [−0.48; −0.27], SE = 0.05; $p < 0.001$) and misanthropy (r = −0.36, 95% CI = [−0.45; −0.24], SE = 0.05; $p < 0.001$) in the Iranian sample. The strength of associations was weak-to-moderate. However, these associations failed to reach the level of significance in the US sample (r = −0.19, 95% CI = [−0.36; 0.02], SE = 0.10; p = 0.055 for the association between belief in a just world and existential anxiety; r = −0.19, 95% CI = [−0.45; 0.12], SE = 0.15; p = 0.217 for the association between belief in a just world and misanthropy). Finally, a moderate, positive association was found between existential anxiety and misanthropy (r = 0.47, 95% CI = [0.35; 0.58], SE = 0.06; $p < 0.001$ for the Iranian sample; r = 0.56, 95% CI = [0.32; 0.76], SE = 0.11; $p < 0.001$ for the US sample) in both samples (see Fig. 1).

4. Discussion

Addressing existential questions arising from the excessive consumption of negative news could emerge as a novel theoretical and practical field. The application of an existential framework to explain specific media use and possible media effects is an understudied area of research. Despite recent research attention to doomscrolling, no previous study has yet examined this news-consuming behavior from an existential perspective. Still, the question remains unanswered: Can doomscrolling alter the values and beliefs in relation to our lives, the world, and humankind? This study aimed to provide insights into the potential existential correlates of doomscrolling, utilizing data from an Eastern, collective culture (Iran) and a Western, individualistic culture (the United States) to provide evidence on possible associations. In line with the general learning model, social cognitive theory, cultivation theory, and theories of media violent effects, our study provided some preliminary evidence for the assumption that doomscrolling can alter our perspectives.

As expected, doomscrolling was associated with existential anxiety in both Iranian and American samples. This result suggests that doomscrollers may experience higher levels of stress following the consumption of negative news, which can exacerbate existential concerns. Doomscrolling exposes users to traumatic events that can potentially lead to secondary PTSD (media-induced PTSD; Abdalla et al., 2021). Such vicarious exposure to traumatic events through doomscrolling can fuel anxiety and negative moods, which, in turn, can undermine life's meaning. Anxiety and depression have been associated with a lower perception of meaning in life (Boreham & Schutte, 2023). These mental health difficulties can exacerbate stress and feelings of insecurity, which deteriorates proactive engagement with activities consistent with one's interests, values, strengths, and life meanings. Therefore, excessive exposure to negative news can predispose individuals to feel hopeless about finding satisfying answers to their questions regarding the reason, importance, and meaning of life. Following negative news can evoke existential insecurities, challenging followers' sense of purpose and meaning in life.

Furthermore, in a similar vein, the death-thought accessibility hypothesis (see Schimel et al., 2007) can explain the link between doomscrolling and meaning in life. This hypothesis posits that encountering challenging experiences, whether directly (e.g., a relationship breakup) or indirectly (e.g., online exposure to traumatic content), can weaken the individual coping mechanisms that provide protection from thoughts of death. In such circumstances, thoughts of death become more accessible to consciousness (see Hayes et al., 2008). Accordingly, excessively immersing oneself in the stream of negative news through doomscrolling can threaten individual's beliefs in immortality, and nurture thoughts such as life being fragile and limited, humans fundamentally being alone, and individuals not having full control over their lives. Individuals with a higher tendency for doomscrolling may experience feelings of emptiness and hopelessness, leading them to view life as worthless, and envision the future as threatening.

Partially supporting our expectation, doomscrolling emerged as a significant predictor of misanthropy in the Iranian sample, while further evidence would be needed to confirm this relationship in the US sample. Concerns about the world can increase misanthropy (Kidd, 2022). Negative news often raises concerns within the viewer (e.g., safety concerns). Furthermore, experiencing negative life events has been associated with misanthropy (Smith, 1997). Doomscrolling, as a form of secondary exposure to negative life events (media-induced PTSD; Abdalla et al., 2021), can possibly strengthen misanthropic beliefs. Doomscrolling can potentially cultivate thoughts about the unpredictability, harshness, and brutality of humans in individuals with a higher tendency for doomscrolling. Exposure to negative news, such as religious decapitation, rape, and human trafficking, can exacerbate the perception that people are fundamentally, morally bad. Drawing on the shattered assumption theory (Janoff-Bulman, 1992), watching negative news can make individuals with a higher tendency for doomscrolling indirectly experience these traumatic events (media-induced PTSD; Abdalla et al., 2021), which, in turn, can negatively affect how they view themselves and humankind. Considering that misanthropy can reduce intention for investing in social capital (Melgar et al., 2013) and can be manifested in dangerous forms (e.g., criminal behaviors such as vandalism; McGraw, 2014), the potential of doomscrolling in fostering misanthropy warrants more scientific attention. Nevertheless, more evidence is needed to confirm this relationship in US participants. Larger samples would allow for a clearer picture regarding the association of doomscrolling with misanthropy in this culture. The present sample size was not appropriate to draw clear conclusions regarding the nature of this association.

Contrary to our expectations, no significant association was found between doomscrolling and belief in the just world in either the Iranian or the US samples. Users' perspectives toward justice in the world do not appear to be significantly affected by negative news. This lack of association may be explained by considering the adaptive function of belief in a just world. Belief in a just world is an empowering resource that promotes adaptive functioning (see Bartholomaeus et al., 2023). Doomscrolling seems to have more potential to foster negative beliefs, such as existential concerns and misanthropy, rather than undermining adaptive beliefs, such as belief in a just world. Furthermore, the notion of belief in a just world extends beyond the individual and humans, and encompasses broader entities such as God, nature, and chance (see Stroebe et al., 2015). These facets may buffer the effects of negative news from challenging belief in a just world. Future investigations should explore the link between doomscrolling and belief in the just world in detail by deconstructing belief in the just world (God, nature, other people, self, chance; Stroebe et al., 2015), or focusing on its negative aspects, such as Belief in a Dangerous World (Altemeyer, 1988) and the Mean World Syndrome (a cognitive bias wherein a person perceives the world to be more dangerous than it actually is; Gerbner, 1998).

In line with the prevailing trend in doomscrolling research (Satici et al., 2023; Shabahang et al., 2022; Sharma et al., 2022), this study identified doomscrolling as a news consumption behavior associated with negative consequences. The *broaden-and-build theory* (Fredrickson, 2001) postulates that positive emotions (i.e., joy, interest, contentment, and love) expand individuals' momentary thought-action repertoire (broadened mindsets). These positive feelings contribute to individuals' resources (e.g., intellectual and social resources), which subsequently improve individuals' coping and survival capabilities. Based on the broaden-and-build theory, doomscrolling can potentially make users vulnerable by cultivating negative emotions. Future studies should focus on the impact of negative emotions triggered by doomscrolling on users' mindset and coping capability to determine whether a narrow-and-diminish hypothesis about doomscrolling is plausible. It can be assumed that doomscrolling, by fueling and cultivating negative emotions, has the capacity to deplete the psychological resources of users, leading to mental fatigue and thereby diminishing their functioning and coping capacity.

Additionally, while studies propose that challenging situations can lead to positive psychological changes (i.e., post-traumatic growth; Tedeschi et al., 2018), doomscrolling, providing indirect exposure to stressful events, does not appear to serve as a catalyst for fostering positive psychological outcomes. Scrolling excessively through negative news feeds seems to be more closely associated with negative emotions and pessimism than contributing to any constructive shifts in one's perspectives and behaviors. The association of doomscrolling with positive emotional or behavioral changes is surprisingly under-researched; therefore, exploring possible positive correlates may be worthwhile to obtain a complex picture on the negative and positive cognitive, affective, and behavioral correlates of doomscrolling.

Our study has limitations. This study was based on cross-sectional data. Therefore, establishing causal relationships is impossible. Future research directions could confirm or disconfirm these paths using experimental designs. Despite proposing existential concerns and attitudes toward humans and justice as outcome variables, the nature of the data prevents us from confirming their respective roles as potential consequences of doomscrolling behavior. Another limitation is that the present study did not explore psychological clinical states, such as trait and state anxiety, or diagnoses of psychological disorders among participants. Therefore, future research could provide a more nuanced understanding on the negative existential outcomes of doomscrolling by examining and controlling for participants' psychological clinical states. Moreover, the convenience samples of university students in Iran and the US may not accurately represent their respective populations, thus limiting the generalizability of our findings. Moreover, the US sample size was limited; therefore, examining the SEM model in this sample served only purposes to confirm or contrast the findings on the Iranian sample. As the US model is underpowered based on the commonly applied rule of thumb suggested by Hoe (2008) and Singh et al. (2016), more research is needed to confirm these findings using larger US samples. Additionally, there was a gender imbalance among respondents, with more women in the US dataset and more men in the Iran dataset. Future research should use samples with more equal gender distributions.

Future investigations should explore more possible existential correlates of doomscrolling, including existential loneliness, existential empathy, and existential nihilism. Such studies would contribute to a more comprehensive understanding of the existential aspects of doomscrolling. Further examination of the impact of doomscrolling on users' existential well-being is warranted. Additional theoretical frameworks, such as Terror Management Theory (TMT), can offer further insights into the existential implications of this phenomenon. TMT suggests that individuals confront death-related anxiety and manage it through the meaning provided by cultural worldview and the sense of personal values provided by self-esteem (see Greenberg & Arndt, 2012). For instance, TMT has been applied to explain the link between terrorist news and prejudice (Das et al., 2009). Furthermore, more advanced research designs in future studies can shed more light on this topic. For instance, longitudinal studies can provide valuable insights into the long-term existential impacts of doomscrolling. Moreover, the positive existential outcomes of doomscrolling, such as post-traumatic growth, have not yet been explored. Future studies could also explore the mediating role of psychological characteristics and abilities, such as resilience and coping styles, in the association between doomscrolling and existential outcomes. Given the potential negative existential outcomes of doomscrolling, exploring the effectiveness of existential psychological interventions for doomscrollers could offer a novel avenue for research.

Overall, this study aimed to address the question of whether compulsive consumption of negative news is associated with decreased faith in oneself, the society, and the world. According to the media-induced PTSD hypothesis (Abdalla et al., 2021), negative news can be considered a vicarious engagement with traumatic events that can

expose individuals to secondary traumatic stress. Drawing from the Shattered Assumption Theory (Janoff-Bulman, 1992), the distress cultivated by negative news consumption can reshape doomscrollers' perceptions of themselves and humanity. Spending increased time doomscrolling may lead individuals to perceive themselves and humans as incompetent and vulnerable.

This study offers novel insights into how doomscrolling may contribute to existential anxiety and misanthropy, drawing from data collected in two distinct cultures. It underscores the significance of examining doomscrolling—a tendency that has the potential to gradually shape the existential attitudes of news consumers and lay the groundwork for an existential crisis. There appears to be a prevalent culture of addiction to negative news consumption in today's world (see Shelby, 2016). Individuals are becoming increasingly obsessed with and reliant on news that is tinged with negativity. Inordinate engagement with negative news appears to be perceived as a so-called positive addiction (Glasser, 1976). This tendency may be rooted in users' levels of perceived threat and uncertainty, as they view negative news as valuable cues and doomscrolling as a helpful way to stay alert to potential surrounding dangers and gain more control over their environment. Future studies focusing on frameworks of risk perception can provide insightful findings about doomscrolling.

Belief in oneself, the meaningfulness of life, and faith in humanity are crucial in navigating today's complex and challenging world. Global challenges and conflicts—such as resource depletion, societal/civilizational collapse, extremism, and terrorism—are on the rise. Expanding upon the findings of this study, exposure to negative news content appears to be associated with existential concerns among those who engage in doomscrolling. This existential state has the potential to foster feelings of hopelessness and helplessness, characterized by a perceived lack of control. Such emotions can increase vulnerability to stress, lead to depression, and incite impulsive reactions (see, e.g., Li et al., 2020; Mascaro, 2006; Pellens et al., 2022). Distress-related behaviors (e.g., panic shopping) may serve as protective responses aimed at gaining a sense of control over chaotic and unpredictable situations (see, e.g., Shabahang, Aruguete, et al., 2021). Accordingly, exploring the existential aspects of doomscrolling and subsequent reactionary behaviors warrants attention.

Social media users need to enhance their awareness of sensations, thoughts, and feelings during social media consumption (*mindful use of social media*; Shabahang et al., 2024), and both news media and news consumers must prioritize news which also highlights positive outcomes of negative events (e.g., personal growth; see McIntyre & Gibson, 2016). This study emphasizes the importance of paying attention to the existential and misanthropic aspects of doomscrolling. Doomscrolling is growing considerably in today's world saturated with negative news, and is becoming normalized online behavior among users. While not following positive news does not induce a sense of missing out, users seem to believe that being unaware of bad news makes them feel oblivious. Such a trend (i.e., excessively following negative news), can possibly lead to serious existential outcomes, such as existential anxiety and misanthropy.

Ethics approval

Ethical practices were observed in accordance with the World Medical Association Declaration of Helsinki. This study was approved by the Institutional Review Board of the University of Central Missouri (Warrensburg, Missouri, USA). Participants provided online informed consent before participating in the study.

Informed consent

Electronic written consent was required prior to participation, and participants' confidentiality and privacy were maintained.

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Lay summary

Social media users are almost constantly bombarded with gloomy news, such as stories of corruption, fraud, shootings, terrorism, and war. Some social media users feel compelled to read and search for negatively-toned news, a practice known as doomscrolling. This study, using two culturally distinct samples from Iran and the US, found that consistently following negative news is linked to anxiety about the meaning of life. Results suggest that prioritizing prudent consumption of negative news may be helpful in avoiding undesirable existential feelings.

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Reza Shabahang: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Data curation, Conceptualization. **Hyeyeon Hwang:** Writing – review & editing, Methodology, Investigation, Data curation. **Emma F. Thomas:** Writing – review & editing, Project administration, Methodology, Investigation. **Mara S. Aruguete:** Writing – review & editing, Project administration, Methodology, Investigation. **Lynn E. McCutcheon:** Writing – review & editing, Project administration, Methodology, Investigation. **Gábor Orosz:** Writing – review & editing, Project administration, Methodology, Investigation. **Abbas Ali Hossein Khanzadeh:** Investigation, Data curation. **Benyamin Mokhtari Chirani:** Investigation, Data curation. **Ágnes Zsila:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

References

Abdalla, S. M., Cohen, G. H., Tamrakar, S., Koya, S. F., & Galea, S. (2021). Media exposure and the risk of post-traumatic stress disorder following a mass traumatic event: An in-silico experiment. *Frontiers in Psychiatry, 12*, Article 674263. https://doi.org/10.3389/fpsyt.2021.674263

Altemeyer, B. (1988). *Enemies of Freedom: Understanding Right-wing authoritarianism*. Jossey-Bass.

Bandura, A. (2002). Social cognitive theory of mass communication. In J. Bryant, & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (pp. 121–153). Lawrence Erlbaum Associates Publishers.

Barlett, C. P., & Anderson, C. A. (2012). Examining media effects: The general aggression and general learning models. In *The international encyclopedia of media studies*. John Wiley & Sons, Ltd.

Bartholomaeus, J., Burns, N., & Strelan, P. (2023). The empowering function of the belief in a just world for the self: Trait-level and experimental tests of its association with positive and negative affect. *Personality and Social Psychology Bulletin, 49*(4), 510–526. https://doi.org/10.1177/01461672211072823

Blades, R. (2021). Protecting the brain against bad news. *CMAJ: Canadian Medical Association Journal, 193*(12), E428–E429. https://doi.org/10.1503/cmaj.1095928.

Boreham, I. D., & Schutte, N. S. (2023). The relationship between purpose in life and depression and anxiety: A meta-analysis. *Journal of Clinical Psychology, 79*(12), 2736–2767. https://doi.org/10.1002/jclp.23576

Brown, T. A. (2015). *Confirmatory factor analysis for applied research*. Guilford publications.

Das, E., Bushman, B. J., Bezemer, M. D., Kerkhof, P., & Vermeulen, I. E. (2009). How terrorism news reports increase prejudice against outgroups: A terror management account. *Journal of Experimental Social Psychology, 45*(3), 453–459. https://doi.org/10.1016/j.jesp.2008.12.001

de Hoog, N., & Verboon, P. (2020). Is the news making us unhappy? The influence of daily news exposure on emotional states. *British Journal of Psychology, 111*(2), 157–173. https://doi.org/10.1111/bjop.12389. London, England: 1953.

Etemad, J., DehghanManshadi, Z., & Mozafari, N. (2017). Investigation on psychometric properties of existential anxiety Questionnaire in elderly. *JOGE, 1*(3), 39–48. http://joge.ir/article-1-76-en.html.

Finney, S. J., & DiStefano, C. (2013). Non-normal and categorical data in structural equation modeling. In *Structural equation modeling: A second course* (2nd ed., pp. 439–492). Information Age Publishing.

Floyd, M., Coulon, C., Yanez, A. P., & Lasota, M. T. (2005). The existential effects of traumatic experiences: A survey of young adults. *Death Studies, 29*(1), 55–63. https://doi.org/10.1080/07481180490483463

Frankl, V. E. (1959). *Man's search for meaning*. Boston, MA: Beacon Press.

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist, 56*(3), 218–226. https://doi.org/10.1037/0003-066X.56.3.218

Gerbner, G. (1998). Cultivation analysis: An overview. *Mass Communication & Society, 1* (3–4), 175–194. https://doi.org/10.1080/15205436.1998.9677855

Glasser, W. (1976). *Positive addictions*. Harper & Row. https://psycnet.apa.org/record/1976-11211-000.

Greenberg, J., & Arndt, J. (2012). Terror management theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 398–415). Sage Publications Ltd. https://doi.org/10.4135/9781446249215.n20.

Hayes, J., Schimel, J., Faucher, E. H., & Williams, T. J. (2008). Evidence for the DTA hypothesis II: Threatening self-esteem increases death-thought accessibility. *Journal of Experimental Social Psychology, 44*(3), 600–613. https://doi.org/10.1016/j.jesp.2008.01.004

Hoe, S. L. (2008). Issues and procedures in adopting structural equation modeling technique. *Journal of Applied Quantitative Methods, 3*(1), 76–83. Available at: https://ink.library.smu.edu.sg/sis_research/5168.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55.

Huesmann, L. R. (2007). The impact of electronic media violence: Scientific theory and research. *Journal of Adolescent Health: Official Publication of the Society for Adolescent Medicine, 41*(6 Suppl 1), S6–S13. https://doi.org/10.1016/j.jadohealth.2007.09.005

IBM Corp. Released. (2012). *IBM SPSS statistics for windows, version 21.0*. IBM Corp.

Janoff-Bulman, R. (1992). *Shattered assumptions: Towards a new psychology of trauma*. Free Press. https://psycnet.apa.org/record/1992-97250-000.

Kesebir, P., & Pyszczynski, T. (2014). Meaning as a buffer for existential anxiety. In A. B.&P. Russo-Netzer (Ed.), *Meaning in positive and existential psychology* (pp. 53–64). Springer Science + Business Media. https://doi.org/10.1007/978-1-4939-0308-5_4.

Kidd, I. J. (2022). Misanthropy and the hatred of humankind. In NoellBirondo (Ed.), *The moral psychology of hatred* (pp. 75–98). Rowman & Littlefield.

King, L. A., Hicks, J. A., Krull, J. L., & Del Gaiso, A. K. (2006). Positive affect and the experience of meaning in life. *Journal of Personality and Social Psychology, 90*(1), 179–196. https://doi.org/10.1037/0022-3514.90.1.179

Laor, T. (2024). Public and commercial more of the same? The characteristics of the opening monologues of public and commercial channels during the COVID-19 pandemic. *PLoS One, 19*(2), Article e0293172. https://doi.org/10.1371/journal.pone.0293172

Laor, T., & Lissitsa, S. (2022). Mainstream, on-demand and social media consumption and trust in government handling of the COVID crisis. *Online Information Review, 46* (7), 1335–1352. https://doi.org/10.1108/OIR-06-2021-0299

Li, K., Jiang, S., Yan, X., & Li, J. (2023). Mechanism study of social media overload on health self-efficacy and anxiety. *Heliyon, 10*(1), Article e23326. https://doi.org/10.1016/j.heliyon.2023.e23326

Li, M., Zhao, T., Huang, E., & Li, J. (2020). In *How does a public health emergency motivate people's impulsive consumption? An empirical study during the COVID-19 outbreak in China. International journal of environmental research and public health* (Vol. 17, p. 5019). https://doi.org/10.3390/ijerph17145019, 14.

Lipkus, I. (1991). The construction and preliminary validation of a global belief in a just world scale and the exploratory analysis of the multidimensional belief in a just world scale. *Personality and Individual Differences, 12*(11), 1171–1178. https://doi.org/10.1016/0191-8869(91)90081-L

Mascaro, N. (2006). *Longitudinal analysis of the relationship of existential meaning with depression and hope*. Texas A&M University Libraries. Doctoral dissertation, Texas A&M University https://hdl.handle.net/1969.1/4258.

Matthes, J., Karsay, K., Schmuck, D., & Stevic, A. (2020). "Too much to handle": Impact of mobile social networking sites on information overload, depressive symptoms, and well-being. *Computers in Human Behavior, 105*. https://doi.org/10.1016/j.chb.2019.106217. Article 106217.

McGraw, S. (2014). *Misanthropy and criminal behavior [Master'sthesis,California State University, Stanislaus]*. https://scholarworks.calstate.edu/concern/theses/5m60qs64z.

McIntyre, K. E., & Gibson, R. (2016). Positive news makes readers feel good: A "silver-lining" approach to negative news can attract audiences. *Southern Communication Journal, 81*(5), 304–315. https://doi.org/10.1080/1041794X.2016.1171892

Melgar, N., Rossi, M., & Smith, T. W. (2013). Individual attitudes toward others, misanthropy analysis. *The American Journal of Economics and Sociology, 72*(1), 222–241. https://doi.org/10.1111/j.1536-7150.2012.00865.x

Muthén, L. K., & Muthén, B. O. (2016). *Mplus*. Los Angeles, CA: Muthén & Muthén [Computer software] Version 7.4. .

Patterson, T. E. (1996). Bad news, period. *Political Science and Politics, 29*(1), 17–20. https://doi.org/10.2307/420184

Pellens, H., Dezutter, J., Luyten, P., & Vanhooren, S. (2022). To be scared or scared to be: Existential anxiety as a mediator between meaning experience and depression. *Journal of Humanistic Psychology*. https://doi.org/10.1177/00221678221140617

Pfefferbaum, B., Nitiéma, P., & Newman, E. (2021). The association of mass trauma media contact with depression and anxiety: A meta-analytic review. *Journal of Affective Disorders Reports, 3*, Article 100063. https://doi.org/10.1016/j.jadr.2020.100063

Potter, W. J. (2014). A critical analysis of cultivation theory. *Journal of Communication, 64*(6), 1015–1036. https://doi.org/10.1111/jcom.12128

Robertson, C. E., Pröllochs, N., Schwarzenegger, K., Pärnamets, P., Van Bavel, J. J., & Feuerriegel, S. (2023). Negativity drives online news consumption. *Nature Human Behaviour, 7*(5), 812–822. https://doi.org/10.1038/s41562-023-01538-4

Rozado, D., Hughes, R., & Halberstadt, J. (2022). Longitudinal analysis of sentiment and emotion in news media headlines using automated labelling with Transformer language models. *PLoS One, 17*(10), Article e0276367. https://doi.org/10.1371/journal.pone.0276367

Satici, S. A., GocetTekin, E., Deniz, M. E., & Satici, B. (2023). Doomscrolling scale: Its association with personality traits, psychological distress, social media use, and wellbeing. *Applied Research in Quality of Life, 18*(2), 833–847. https://doi.org/10.1007/s11482-022-10110-7

Schimel, J., Hayes, J., Williams, T., & Jahrig, J. (2007). Is death really the worm at the core? Converging evidence that worldview threat increases death-thought accessibility. *Journal of Personality and Social Psychology, 92*(5), 789–803. https://doi.org/10.1037/0022-3514.92.5.789

Scott, B. G., & Weems, C. F. (2013). Natural disasters and existential concerns: A test of Tillich's theory of existential anxiety. *Journal of Humanistic Psychology, 53*(1), 114–128. https://doi.org/10.1177/0022167812449190

Shabahang, R., Aruguete, M. S., Kim, S., Hosseinkhanzadeh, A. A., & Kakabaraee, K. (2022). "Give your thumb a break" from surfing tragic posts: Potential corrosive consequences of social media users' doomscrolling. *Media Psychology, 26*(4), 460–479. https://doi.org/10.1080/15213269.2022.2157287

Shabahang, R., Aruguete, M. S., Rezaei, S., & McCutcheon, L. E. (2021). Psychological determinants and consequences of COVID-19 anxiety: A web-based study in Iran. *Health Psychology Research, 9*(1), Article 24841. https://doi.org/10.52965/001c.24841

Shabahang, R., Rezaei, S., Madison, T. P., Aruguete, M. S., & Bagheri Sheykhangafshe, F. (2021). Celebrity hate: Credibility and belief in a just world in prediction of celebrity hate. *Psychology of Popular Media, 10*(4), 500–504. https://doi.org/10.1037/ppm0000333

Shabahang, R., Zsila, Á., Aruguete, M. S., Huynh, H. P., & Orosz, G. (2024). Embrace the moment using social media: A cross-cultural study of mindful use of social media. *Mindfulness, 15*(1), 157–173. https://doi.org/10.1007/s12671-023-02271-9

Sharma, B., Lee, S. S., & Johnson, B. K. (2022). The dark at the end of the tunnel: Doomscrolling on social media newsfeeds. *Technology, Mind, and Behavior, 3*(1). https://doi.org/10.1037/tmb0000059

Shelby, C. L. (2016). The culture of addiction. In *Addiction*. Palgrave Macmillan. https://doi.org/10.1057/9781137552853_5.

Singh, K., Junnarkar, M., & Kaur, J. (2016). *Measures of Positive Psychology, Development and Validation*. Springer.

Smith, T. W. (1997). Factors relating to misanthropy in contemporary American society. *Social Science Research, 26*(2), 170–196. https://doi.org/10.1006/ssre.1997.0592

Soroka, S., Fournier, P., & Nir, L. (2019). Cross-national evidence of a negativity bias in psychophysiological reactions to news. *Proceedings of the National Academy of Sciences, 116*(38), 18888–18892.

Stroebe, K., Postmes, T., Täuber, S., Stegeman, A., & John, M. S. (2015). Belief in a just what? Demystifying just world beliefs by distinguishing sources of justice. *PLoS One, 10*(3), Article e0120145. https://doi.org/10.1371/journal.pone.0120145

Tedeschi, R. G., Shakespeare-Finch, J., Taku, K., & Calhoun, L. G. (2018). *Posttraumatic growth: Theory, research, and applications*. Routledge. https://doi.org/10.4324/9781315527451

Tillich, P. (1952). *The courage to be*. New Haven: Yale University Press.

To, S.-m., & Chan, W. C.-h. (2016). Psychometric evaluation of the Chinese version of the Existential Anxiety Questionnaire in a sample of Chinese adolescents living in Hong Kong. *Child and Youth Care Forum, 45*(4), 487–503. https://doi.org/10.1007/s10566-016-9347-0

Trussler, M., & Soroka, S. (2014). Consumer demand for cynical and negative news frames. *The International Journal of Press/Politics, 19*(3), 360–379. https://doi.org/10.1177/1940161214524832

Vaish, A., Grossmann, T., & Woodward, A. (2008). Not all emotions are created equal: The negativity bias in social-emotional development. *Psychological Bulletin, 134*(3), 383–403. https://doi.org/10.1037/0033-2909.134.3.383

van der Meer, T. G. L. A., Kroon, A. C., Verhoeven, P., & Jonkman, J. (2019). Mediatization and the disproportionate attention to negative news: The case of airplane crashes. *Journalism Studies, 20*(6), 783–803. https://doi.org/10.1080/1461670X.2018.1423632

Weems, C. F., Costa, N. M., Dehon, C., & Berman, S. L. (2004). Paul tillich's theory of existential anxiety: A preliminary conceptual and empirical examination. *Anxiety, Stress & Coping: International Journal, 17*(4), 383–399. https://doi.org/10.1080/10615800412331318616

Weems, C. F., Russell, J. D., Neill, E. L., Berman, S. L., & Scott, B. G. (2016). Existential anxiety among adolescents exposed to disaster: Linkages among level of exposure,

PTSD, and depression symptoms. *Journal of Traumatic Stress, 29*(5), 466–473. https://doi.org/10.1002/jts.22128

Wuensch, K. L., Jenkins, K. W., & Poteat, G. M. (2002). Misanthropy, idealism and attitudes towards animals. *Anthrozoös, 15*(2), 139–149. https://doi.org/10.2752/089279302786992621

Yalom, I. D. (1998). The four ultimate concerns. In I. D. Yalom, & B. Yalom (Eds.), *The Yalom Reader. Selections from the work of a master therapist and storyteller* (pp. 167–182). BasicBooks.