



RESEARCH ARTICLE

Emotion and Cognition Risk and Reward of Digital Scrolling among Emerging Adults

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Abstract

Previous studies have largely examined the positive and negative impacts of social media use. This research broadens the scope to a wider behavioral pattern, namely digital scrolling behavior. Unlike earlier studies that employed the instant gratification theoretical framework, this study applies the instant gratification theory to identify the triggering situations that drive young adults to engage in digital scrolling behavior and to explore the dynamics that occur once they have obtained instant gratification. Adopting a qualitative approach, this study offers novelty compared to prior research that predominantly relied on quantitative methods. Data were collected from 309 personal diaries completed over one month by 65 young adults and analyzed thematically. The findings reveal situational factors triggering digital scrolling behavior, including activity-related, emotion-related, and external-related situations. Instant gratifications obtained include entertainment, product discovery, inspiration, escape from problems, and access to information. Participants reported both positive and negative emotional outcomes. Typically, digital scrolling was triggered by specific situations, leading to instant gratification and positive emotions. However, when digital scrolling behavior is unregulated, these positive emotions shift into negative ones. This study contributes novelty by providing deeper insights into scrolling behavior through the lens of instant gratification theory, highlighting the triggering situations, and the dynamic of its dual emotional consequences.

Keywords: Cognitive impact; emotional impact; instant gratification theory; scrolling behavior; young adult

INTRODUCTION

In recent years, the use of digital devices has increased substantially, fundamentally transforming the ways individuals interact and communicate with one another. The rapid advancement of smartphone technology has further reinforced this dependence on digital media. Smartphones have become the first and last object many people access each day. In Indonesia, an estimated 67.29% of the population owns a smartphone (*Badan Pusat Statistik* [BPS], 2024). According to the Indonesian Internet Service Providers Association (APJII), the number of internet users in 2024 reached 221,563,479 individuals out of a total population of 278,696,200 in 2023, indicating an internet penetration rate of 79.5%. Internet usage has continued to rise since 2018. By age group, the largest proportion of users consists of individuals born between 1997–2012 (34.4%), followed by those born between 1981–1996 (30.63%) (Haryanto, 2024). A global study conducted by McAfee in F2023 reported that 37% of adults worldwide

feel addicted to scrolling. Additionally, 70% of individuals aged 18–35 acknowledged that their harmful scrolling habits emerged specifically during the COVID-19 pandemic and have persisted unconsciously to the present (George et al., 2024).

This trend has had a profound impact on behavioral patterns, social interactions, and modes of communication. Digital media platforms are no longer merely tools for communication; they have evolved into multifunctional spaces that individuals actively use to meet various needs. People intentionally select platforms that can fulfill specific purposes, such as building social connections, accessing information, expressing themselves, or seeking entertainment and relaxation. The extent to which these needs are met through digital platforms contributes to increased usage intensity. This tendency is further reinforced by digital algorithms designed to maximize engagement by providing emotionally stimulating and personally relevant content. Moreover, autoplay features that automatically present continuous streams of content reduce users' opportunities to consciously pause or regulate their scrolling behavior (George et al., 2024). As a result, scrolling becomes automatic and habitual, leading to aimless media consumption, diminished awareness of time spent and content viewed, and a passive mode of engagement (de Segovia Vicente et al., 2024).

A substantial body of research has highlighted the negative consequences of excessive scrolling, both

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physically and psychologically. Physically, it has been associated with sleep disturbances, eye strain, and musculoskeletal discomfort. Psychologically, prolonged scrolling can contribute to anxiety, depressive symptoms, addiction, decreased concentration and attention span, and lower self-esteem (Mancini, 2019; Sulaiman et al., 2024; Kumar et al., 2025). Continuous notifications from messaging and social media applications can heighten feelings of overwhelm, while social pressures to present an idealized online persona may further erode self-worth (Srivastava et al., 2024). Nonetheless, some positive outcomes have also been identified, such as acquiring useful information, enhancing motivation, receiving advice or validation, obtaining social support, and using scrolling as a coping strategy to reduce stress (Mancini, 2019; Kumar et al., 2025).

Given the diverse consequences associated with scrolling, it is essential to understand the underlying factors that drive individuals to engage with digital platforms in ways that may lead to overuse. Several contributing factors have been identified, including the desire for social connection, the need to stay updated, individual characteristics, boredom, and specific affordances and features of digital platforms (Ribeiro, 2021; Sümer & Büttner, 2022; Hämäläinen et al., 2024). Interestingly, despite the numerous documented negative effects, many individuals continue engaging in persistent scrolling behaviors. This tendency can be understood through the gratification users receive from the activity, such as immediate access to desired information, opportunities to connect with others, and instant entertainment (Hämäläinen et al., 2024). Today, instant gratification is widely observed, as individuals often prefer immediate rewards rather than larger benefits that may be obtained in the future or require time to achieve. This concept refers to the tendency to seek quick and satisfying outcomes while paying less attention to long-term consequences (Matama et al., 2020). Instant gratification differs from delayed gratification, and together they represent intertemporal choice, a process of choosing between short-term pleasures and long-term advantages (Yin & Shen, 2024). Accordingly, instant gratification theory provides a relevant framework for explaining why digital scrolling remains highly prevalent, even when users recognize its potential harms.

Social media behavior is strongly shaped by reward-seeking tendencies. For instance, users who frequently receive high numbers of “likes” on previous posts tend to upload new content more quickly than those who receive fewer likes. Individuals may not always realize that their social media use is driven by the pursuit of instant gratification. Generally, people prefer immediate rewards over larger delayed rewards, making them more vulnerable to excessive digital engagement despite its negative consequences. Prior studies have demonstrated positive associations between social media use and instant gratification (Ribeiro, 2021). Without awareness, the immediate pleasure derived from receiving likes after posting an image can prompt individuals to seek similar gratification across other aspects of their lives. The constant accessibility afforded by smartphones leaves little room for boredom, while the broader digital ecosystem encourages expectations of speed and abundance. This continuous stimulation fosters a persistent urge to scroll (Mokry, 2024). Most prior research has predominantly focused on social media. Research on emerging adulthood is particularly important, as individuals within this age group have near-universal access to smartphones and the internet. They are often described as living in a world that

is “permanently online and permanently connected” (Vorderer et al., 2018). Emerging adulthood represents a transitional developmental stage during which individuals actively explore their identities, seek autonomy, and establish intimacy in relationships (Russett & Waldron, 2017). Consequently, they may be more sensitive to social feedback, such as likes and comments on digital platforms (Marano et al., 2025). The present study is particularly relevant because it offers a new perspective for understanding digital scrolling behavior among emerging adults through the lens of instant gratification theory. Researchers have noted that gratification is a central component of digital media use, making this concept particularly valuable for further investigation (van Endert, 2022). Although previous studies have shown that scrolling behavior is related to immediate gratification aligned with individual needs, little is known about the emotional and cognitive dynamics experienced after receiving such instant gratification during scrolling. A deeper understanding of these dynamics is crucial for designing effective interventions and promoting adaptive and constructive digital media use among emerging adults. This study addresses two research questions: (1) What situations encourage individuals to engage in scrolling through digital media? and (2) What dynamics occur after individuals experience instant gratification? Previous studies have predominantly examined scrolling behavior as a form of problematic digital use associated with negative outcomes (Choi et al., 2025; Colak, 2024; Goldfus, 2024). These behaviors are often driven by digital platform features, such as infinite scrolling and algorithm-driven content feeds, which promote prolonged engagement (Yousef et al., 2025; Montag & Elhai, 2024). However, the present study adopts a more neutral perspective to explore the emotional and cognitive dynamics experienced by emerging adults during scrolling activities, including both positive and negative impacts. Moreover, this study provides depth through the use of a qualitative approach, addressing the limitations of prior work that has largely relied on quantitative methods, which are less able to capture the complex, nuanced nature of digital media experiences (Jungselius, 2024).

MATERIALS AND METHODS

Participant characteristics and research design

The research design employed in this study is an instrumental case study, which aims to enhance understanding of a real-life phenomenon within clearly defined boundaries (Creswell & Creswell, 2017). From the outset of the study, the phenomenon under investigation was delimited in accordance with the principles of case study research (Stake & Visse, 1995). In this study, the case boundary was defined by the presence of scrolling activity among participants. Data were collected using personal diaries in which participants documented their scrolling behavior experiences over a period of approximately one month. The inclusion criteria specified early adulthood, with participants aged between 19 and 21 years, and prior experience engaging in scrolling behavior. Participants were active first-semester university students. A total of 68 students were invited to participate, 65 students agreed to participate voluntarily, and 61 participants completed the diary process consistently throughout the study period, including 49 female students and 12 male students.

Sampling procedures

Sampling in this study was conducted using purposive sampling, a technique that involves the intentional selection of participants or units based on their relevance to the research questions and objectives. This approach was chosen to enable an in-depth exploration of complex phenomena. Specifically, the study employed a within-case purposive sampling strategy. As described by Miles et al. (2014), within-case sampling allows all elements within predetermined case boundaries to be treated as potential data sources. These data may include activities, processes, events, settings, and interactions among relevant role partners within the case. Qualitative diaries are defined as a data collection method involving repeated first-person accounts of participants' events, experiences, emotions, and reflections (Stephens et al., 2025). This method is particularly valuable for capturing temporal changes and continuity, while also enabling participants to engage in deeper meaning-making processes regarding their experiences. Furthermore, qualitative diaries reduce social pressure, making them especially effective for exploring emotionally sensitive topics.

Data collection procedures

Participation in the study was voluntary, and informed consent was obtained from all participants prior to data collection. Participants were informed that they could withdraw from the study at any time without consequences. Participant anonymity and confidentiality were maintained throughout the study. The collected data will be deleted after the publication process is completed. Formal ethics approval from an institutional review board was not available for this study. Data collection was

conducted through personal diaries using Google Forms, submitted on a weekly basis. Participants were asked to write their diaries after engaging in scrolling activities. The diary study was conducted over a period of three weeks. In total, 309 diary entries were collected during the three-week period, with an average of approximately 5 diary entries per participant. Participants were asked to report: (1) the type of scrolling activity they engaged in; (2) the emotions they experienced individually after scrolling behavior; (3) the duration of scrolling activity; (4) the dominant emotion before scrolling; and (5) the dominant emotion after scrolling.

Data analysis

The data analysis technique employed was two-stage coding as explained by Miles et al. (2014) and Saldana (2021). Efforts to enhance credibility were undertaken through methodicalness, namely by following steps in an orderly and consistent manner and adherence to evidence, meaning interpretations were based on data recorded (Yin, 2016). The collection of participants' experiences was conducted over a prolonged engagement of one month, which also served as an effort to strengthen the credibility of this study.

RESULTS OF STUDY

This study aims to identify the situations that drive individuals to engage in digital scrolling (RQ1) and to explore the dynamics that occur once individuals have obtained instant gratification (RQ2). The results are presented in two sections to address these two research questions (table 1 and table 2).

Table 1. Situational triggers of gratification-seeking in digital scrolling

		Quotes
Activity-related situation	On a busy schedule	I feel happy that I was able to make time to scroll through Instagram today, as it has been really packed and exhausting. [Participant JD] A whole day filled with exhausting tasks and activities just makes me want to keep scrolling through TikTok. [Participant AG]
	On a relaxed schedule	I spent a lot of time scrolling today because work wasn't very busy [Participant JD] Since I didn't have any plans today, I spent my time scrolling through social media. [Participant MSO]
Emotional-related situation	Feeling bored	I was a bit bored today, so I decided to see what the people I follow online were up to. (Participant CK) I felt a bit bored and tired, so I scrolled through Instagram during a break from work. [Participant JD]
	Feeling sad	I felt really sad today after a bad day on campus. So I scrolled through TikTok for a few hours to cheer myself up, and ended up scrolling for a few hours. [Participant CN]
	Feeling lonely	I feel lonely so I started scrolling [Participant CPK]
Physical state-related situation	In states of tiredness	I was tired today, so I turned through TikTok and Instagram [Participant ADP]
	In states of low motivation	I continued scrolling on TikTok, feeling too lazy to get ready to go [Participant RCF]
	In states of sleepiness or restlessness	Hoping to wake myself up, I immediately started scrolling through TikTok. [Participant SM] On the 23rd, I spent the entire night scrolling through TikTok [Participant FA]
External-related situation	At the moment a notification appears	My phone beeped and an Instagram notification popped up, so I opened it right away [Participant CPK] The moment I got home, I checked my phone and saw an Instagram notification. [Participant NF]

Table 2. Instant gratification during digital scrolling

Category	Quotes
Receiving entertainment	I opened the platform looking for some quick entertainment [Participant AG] I opened TikTok, in search of some entertainment [Participant AG]
Obtaining desired products	While scrolling through TikTok, I felt urged to buy appealing clothes promoted during live streams. [Participant AG] After checking out several products, I finally found one that suited me, and it felt really great [Participant CS]
Gaining inspiration	I spent this afternoon on Pinterest seeking art project inspiration. I soon found myself absorbed by the vibrant colors and creative designs. [Participant EW] While watching, I found content that provided both ideas for my college assignments and inspiration for other projects. [Participant ATL]
Escaping problems temporarily	My problems went away for a while as I scrolled through TikTok [Participant EW] I scroll through TikTok simply to unwind, watching funny and relaxing short videos. [Participant CS]
Accessing information related to hobbies	I enjoyed coming across so much football and basketball content. It felt good to stay updated. [Participant MSO] After receiving movie recommendations and seeing several football clips, I was inspired to watch a new film. [Participant MSO]
Accessing information related to current news	Then, I came across a piece of news that amazed me. Ever since the change in presidency, my TikTok feed has been filled with news about corruption and bribery arrests. When I opened TikTok today, the news about Tom Lembong's corruption case caught my attention. [Participant ATO]

Table 1 addresses the first research question, namely the situation that triggers individuals to engage in digital scrolling behavior. Based on the data obtained (see Table 1), the situations that triggered participants to engage in digital scrolling behavior can be categorized into four types: activity-related, emotional-related, physical-related, and external-related situations. Both busy and relaxed states, experiences of negative emotions, as well as feelings of fatigue or lack of motivation, were found to trigger digital scrolling behavior. In addition, external cues such as pop-up notifications from apps also served as triggers. It can be concluded that participants frequently engaged in digital scrolling behavior during breaks in their activities. The most dominant themes related to situations triggering digital scrolling among young adults were moments of relaxation, experiences of boredom, and feelings of fatigue. Among these relatively dominant situations, being on a relaxed schedule emerged as the most prominent condition triggering individuals to engage in digital scrolling behavior. In contrast, feelings of loneliness emerged as a non-dominant theme triggering young adults to engage in digital scrolling behavior.

To address the second research question concerning the dynamics that occur when emerging adults obtain instant gratification through digital scrolling, the researchers provide a detailed presentation in Tables 2, 3, and 4, followed by a synthesis of these dynamics summarized in Figure 1.

Based on the data obtained (see table 2), it can be seen that instant gratification participants generally experience during digital scrolling behavior is intangible in nature such as entertainment, inspiration, information, or a temporary escape from everyday problems. Tangible forms of instant gratification do exist, such as obtaining and purchasing a long-desired product, however they are not dominant. It can be concluded that the type of instant gratification sought by participants tends to be more intangible than tangible. Many participants engaged in digital scrolling behavior to obtain gratification in the form of entertainment, whereas a smaller number of participants sought gratification in the form of news consumption.

Based on the findings presented in the table 3, it can be seen that instant gratification in the form of entertainment or information (table 2) ultimately leads to a positive emotional impact on participants (table 3). After obtaining entertainment, many participants experienced happy emotions. This positive emotional impact is what makes digital scrolling behavior a rewarding activity. In going through their daily routines, participants often need a pause of a brief diversion to experience emotional release through digital scrolling behavior. Therefore, although the triggering events may vary (physical-related, emotional-related, external-related, or activity-related) (see table 4), in the end, by consuming or engaging with content whether information or entertaining, what participants truly seek is the positive emotional effect they experience after engaging in digital scrolling behavior.

The findings from table 1 to table 4 can be summarized in a single thematic summary model (See figure 1). First, participants experienced various situations that triggered digital scrolling behavior, including internal conditions such as boredom, fatigue, busyness or the need for a short break, as well as external triggers such as notifications that prompted them to engage in scrolling activities. Among all emerging themes, many participants were particularly triggered to engage in digital scrolling during relaxed situations. In these situations, instant gratification was highly accessible through digital scrolling behavior. Generally, participants were able to obtain the gratification or rewards they sought almost immediately during the initial phase of scrolling. The rewards sought by participants included inspiration, relaxation or brief respite, entertainment, and product-related information. Among all forms of gratification sought, many participants primarily sought entertainment resulting in happy emotions.

However, after prolonged engagement, the gratifications no longer generated positive outcomes and instead began to produce negative effects affecting participants cognitively, physically, emotionally, and in terms of productivity. Due to their prolonged happy emotional state, they continued engaging in digital scrolling behavior until they eventually experienced signs

of physical fatigue or illness. These physical signals were experienced by many participants and reminded them that they had been excessively engaged in digital scrolling. These findings suggest that excessive gratification no longer produces beneficial outcomes for emerging adults.

In contrast, participants' bodily feedback, such as hunger, physical discomfort and fatigue became signals that they had been excessively engaged in digital scrolling, leading them to realize that they had wasted time and become less productive.

Table 3. Emotional outcomes during gratification seeking in digital scrolling

Category	Sub-category	Quotes
Effect of emotion	Happy	I felt happy after scrolling through several funny videos. (Participant CVEH)
		I feel a sense of happiness because, even in a draining situation, small moments continue to uplift me. (Participant KT)
	Excited	Reading over 20 chapters of a captivating online comic left me feeling energized. (Participant AHL)
		The experience was momentary, yet it succeeded in increasing my enthusiasm (Participant BAM)
	Calm	The act of watching helped my loneliness fade, leaving me feeling significantly calmer. (Participant CPK)
	After the panic of a deadline, scrolling through TikTok served as a tool to help me feel calmer and more relaxed. (Participant JKS)	

Table 4. The negative effects of instant gratification following the unlimited scrolling phase.

Category	Sub-category	Quotes
Cognitive-related impact	Regret	I regret having wasted so much time. (Participant EW)
		I regret walking away from my assignment back then. (Participant CPK)
	Confused	I looked for simple recipes, but the sheer volume of cooking videos that appeared only made my decision more difficult. (Participant NF)
		Unfortunately, the more I searched, the more confused I became. (Participant RCF)
Emotional-related impact	Sad	I also felt saddened by the realization that I had wasted my time. (Participant EW)
		The fact that my assignment is still incomplete makes me feel quite sad. (Participant AS)
	Mixed Feelings	My feelings are mixed. (Participant CPP, EW)
	Envy	However, after 30 minutes, I became annoyed and my mood soured. (Participant MLPP)
		Initially, viewing friends' posts about holidays and tournament wins was enjoyable; however, I eventually began to feel a sense of jealousy. (Participant ATL)
Physical-related impact	Anxious	I felt anxious after wasting 3.5 hours on unclear tasks with little benefit. (Participant LTAR)
	Fatigued/Physically Unwell	I experienced physical discomfort after staring at my phone screen for an extended period. (Participant EW)
		Two hours of scrolling left my eyes watering and feeling extremely itchy. (Participant MLPP)
	Delayed Meals	I scrolled through TikTok until I neglected basic needs like eating and showering. Eventually, my stomach began to hurt, and I felt nauseous because I thought my gastritis had flared up. (Participant FA)
Productivity-related impact	Difficulty Stopping	I intended to spend only half an hour looking at media, yet I ended up scrolling through Instagram and TikTok for nearly three hours. (Participant KS)
	Wasting Time	I spent hours on TikTok watching videos that felt like a poor use of my time. (Participant MHL)
		I became so absorbed in the content that I lost track of time and was nearly late. (Participant BAM)

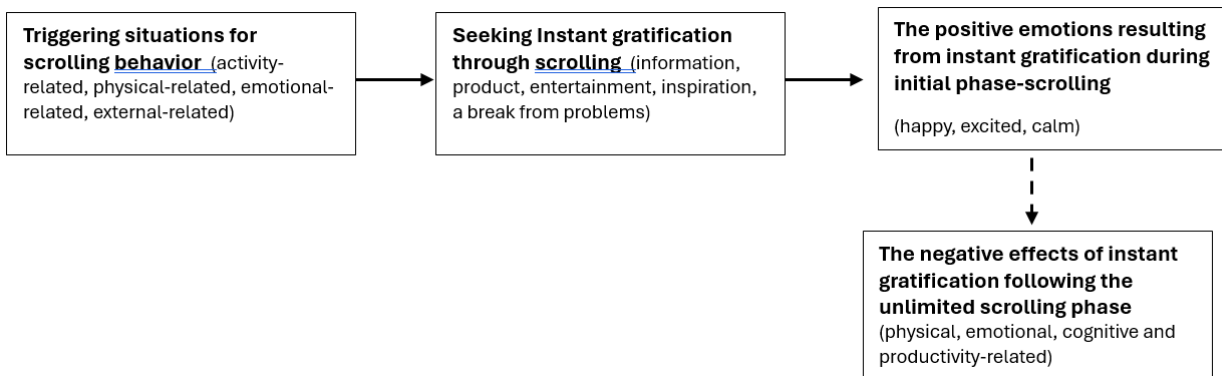


Figure 1. The dynamic of digital gratification: a thematic summary model

DISCUSSION

This study aims to address the following research questions: (RQ1) What situations encourage individuals to engage in scrolling through digital media? And (RQ2) What dynamics occur once individuals have experienced instant gratification?

This study contributes to the existing literature in two ways. First, it explores the theory of gratification within the context of scrolling behavior, an area that has received limited attention. In contrast to prior studies that have largely focused on gratification in tangible, real-world contexts, our research reveals that gratifications in the context of scrolling behavior are often more intangible. Second, while the theory of gratification has emphasized the dimension of time, often framed as small now, bigger later, our findings highlight the importance of quantity in gratification theory, suggesting that less is better, excess is a strain. In this context, less is better refers to the quantity of gratification obtained.

When gratification is regulated or limited, individuals may experience a more proportional state of happiness. In contrast, excessive gratification obtained (GO) may lead to physical and psychological burden. This occurs because individuals tend to maintain their digital scrolling behavior when they experience positive outcomes in the form of a state of happiness. The occurrence of continuance usage when the gratification obtained exceeds the gratification sought was also reported by Rokito et al. (2019). However, over time, the state of happiness derived from the gratification obtained gradually diminishes and may eventually shift into physical and psychological strain. In brief, when gratification is regulated or limited, individuals may experience a more proportional state of happiness. Regulated gratification appears to be more adaptive compared to unregulated gratification. This underscores the need for a more nuanced understanding of gratification dynamics.

RQ1. Situations encourage individuals to engage in scrolling through digital media

Based on Table 1, it can be seen that the situations encouraging individuals to engage in scrolling through digital media are highly diverse. Four categories of situations drive individuals to engage in this activity; activity-related situations, emotional situations, physical situations, and external situations. Almost any activity can trigger a person to start scrolling. The most dominant triggering situation in many participants was being in a relaxed situation. Emotional situations such as boredom that trigger digital scrolling behavior are consistent with

the findings of Stockdale and Coyne (2020) and Jovicic (2020), who also identified similar situations among emerging adults in the United States. External-related triggering situations, such as notifications, are also consistent with the findings of Davis et al. (2025). However, their context was limited to Instagram use rather than scrolling behavior in general. In addition, activity-related triggering situations, such as being in a relaxed state, did not emerge in the findings of Davis et al. The finding of this study place greater emphasis on the situations that individuals to start scrolling, in contrast to Rixen et al. (2023) who focus more on the situations that acts as distractors or interruptions during scrolling, such as real-world related factors, device-related factors, internal, undefined factors or switching between applications.

Existing research (Gao, Jiang, Xie, and Cheng, 2021) has emphasized antecedents or triggering points from the perspective of the digital environment, such as the characteristic of informational and emotional content. It also identifies antecedents within the digital environment, namely the presence of notifications that prompt users to engage in scrolling. In contrast, the present study offers a more comprehensive approach by highlighting participants' internal conditions as well as external conditions such as notification. This study differs from Hämäläinen et al. (2024), who focused more on situations occurring after scrolling. Their findings described post-scrolling conditions such as decreased boredom tolerance, procrastination, difficulty in adopting different perspectives and fatigue caused by excessive information intake. In contrast, this research emphasizes the situations that occur before scrolling takes place and the consequences that follow the behavior.

RQ 2. The dynamics that emerge following an individual's experience of instant gratification.

Figure 1 illustrates the instant gratifications experienced by participants, which were predominantly intangible, such as information and entertainment rather than tangible gratifications. The findings reveal a wide range of intangible gratifications sought by participants, with many participants predominantly seeking entertainment. These results differ from those reported by Hämäläinen et al. (2024) who categorized gratifications into three types; hedonic, social, and utilitarian.

Digital media platforms enable individuals to consume hundreds—even thousands—of posts each day, conditioning users to scroll, swipe, click, and skim content rapidly. This instantaneous reward further motivates individuals to seek additional forms of instant satisfaction across other digital platforms they use (Mokry, 2024). Individuals continue

scrolling because it offers immediate satisfaction. Due to the ease of digital access, entertainment as the gratification sought (GS) was readily fulfilled as the gratification obtained (GO), resulting in happy emotions. Scrolling is sustained by the immediate gratifications that users actively seek. This finding is consistent with the gratification discrepancies approach proposed by Shahab et al. (2022), which suggests that positive emotions emerge when gratification obtained exceeds gratification sought. Gratification sought refers to the anticipated reward or pleasurable outcome expected by users, whereas gratification obtained refers to the actual reward received through media use. In the present study, the rewards obtained during scrolling initially generated positive emotional experiences. Consequently, these positive feelings reinforced participants' tendency to repeat or prolong their scrolling activities.

The gratification obtained during the early stage of scrolling produces positive effects for individuals. However, when scrolling becomes unlimited (without time boundaries), these positive effects shift into negative consequences, predominantly beginning with signs of discomfort or fatigue due to prolonged engagement in digital scrolling behavior. The findings align with previous studies indicating that digital overload may increase physical distress (Holton & Chyi, 2012; Maier et al., 2012; Tafesse et al., 2024), and behavioral issues such as wasting time and difficulty disengaging from media use (Hu & Krishen, 2019). This study's findings align with those of Sarraf and Varmayzar (2022) and Susilowati et al. (2022), who found that physical impacts of scrolling and excessive smartphone use cause posture-related musculoskeletal problems such as neck and back pain caused by prolonged non-ergonomic positions. With the physical fatigue experienced by participants, the state of happiness they initially experienced from entertainment as a form of gratification gradually diminished and shifted toward the negative impacts they subsequently perceived. The findings of this study are consistent with Galak and Redden (2018), who explained that repeated and continuous exposure to stimuli may reduce positive hedonic experiences.

The signs of reduced positive hedonic experiences were reflected in the emergence of feelings of regret, confusion, sadness, anxiety and mixed emotions and envy. The results of this study regarding negative emotional impacts are consistent with the findings Misra and Stokols (2012) who found psychological distress which may arise. The dominant emotional impact experienced by many participants was sadness. According to Holmgren and Coyne (2017), this may occur due to upward social comparison when viewing digital platform content.

Students today face an abundance of choices regarding how they allocate their time. Moreover, the rapid expansion of digital media platforms has increased both the variety of options available and the ease of access, as these platforms can be used anywhere through personal smartphones. Consequently, the time spent on digital media may replace time that would otherwise be devoted to academic or school-related activities. The state of happiness experienced as a result of the gratification obtained may lead to physical distress, such as fatigue or delayed meals. This condition may have detrimental effects on young adults. Therefore, efforts to regulate digital scrolling behavior and promote more proportional consumption are necessary, for example by limiting gratification through setting scrolling time limits or using reminders to stop scrolling (Loid et al., 2020; Roffarello & De Russis, 2023). As gratification obtained may

continuously reinforce scrolling behavior, externally designed triggers are needed to interrupt the behavior before physical distress and other negative consequences occur.

CONCLUSION

This study provides an exploratory understanding of digital scrolling behavior among emerging adults through a qualitative instrumental case study approach. The findings indicate that scrolling is commonly triggered by relaxed situations, boredom, and fatigue. Participants primarily sought instant gratification in intangible forms, especially to seek entertainment. After obtaining entertainment, many participants experienced happy emotions. Unlimited scrolling gradually shifted into negative outcomes, including physical fatigue and regret. These findings should be interpreted cautiously as preliminary propositions rather than definitive evidence regarding instant gratification theory, given the exploratory qualitative design and case-study focus of the research. Whereas prior research highlighted the instant-delayed gratification framework using the terms smaller now, larger later, the present study proposes a new proposition emphasizing the amount of gratification, namely; small brings ease, excess brings [strain](#). Several limitations should also be acknowledged, including the reliance on self-report diary data and the possibility of recall bias. At the same time, the diary approach enabled a deeper exploration of both the positive and negative subjective experiences associated with scrolling behavior. Future research is encouraged to employ mixed-method, longitudinal, or grounded theory approaches, as well as ecological momentary assessment, to further examine the dynamics of scrolling behavior and strengthen theoretical modeling regarding instant gratification in digital contexts.

DECLARATION

Ethics approval and consent to participate

All participants in this study took part voluntarily and provided written informed consent as an indication of their agreement. To ensure confidentiality, all participants were anonymized.

Consent for publication

We hereby, declare our consent for the publication of this manuscript.

Availability of Data and Material

The data are available in Bahasa Indonesia and can be accessed through personal correspondence.

Competing interests

The authors declare that there are no competing interests related to this publication.

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Authors' contribution

The first author developed the research ideas, conducted data collection, performed analysis and wrote the manuscript. The second author contributed to data collection, data analysis and manuscript writing.

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