Mechanisms of Short Video Addiction: A Human-Computer Interaction Perspective

Authors: Dong Wanghao, Wang Weijun, Xingchao Wang, Li Wenqing, Wang Weijun

Date: 2025-04-22T00:00:00+00:00

Abstract

Short video addiction is a problematic behavior characterized by individuals' compulsive viewing of short videos, resulting in significant loss of behavioral control or attention disorders, and subsequently causing difficulties in interpersonal, academic, and/or occupational adaptation. With the continuous expansion of the short video user base and its trend toward younger demographics, the threat posed by short video addiction to users' physical and mental health has garnered widespread concern. From a human-computer interaction perspective, first, short video usage is categorized into "instrumental" and "ritualistic" types. Second, by considering the human-computer interaction process and user vulnerability characteristics, a framework for the mechanism of short video addiction development is constructed. Finally, theoretical explanations for short video addiction are provided from cognitive, emotional, motivational, and social perspectives. Future research should emphasize the mechanism of short video addiction development, focus on the media characteristics and technical attributes that trigger addiction, and commit to promoting the prevention and governance of short video addiction.

Full Text

The Mechanisms of Short Video Indulgence from a Human-Computer Interaction Perspective

DONG Wanghao[1], WANG Weijun[1]*, WANG Xingchao[2], LI Wenqing[3]

[1]Key Laboratory of Adolescent Cyberpsychology and Behavior, Ministry of Education, and School of Psychology, Central China Normal University, Wuhan 430079, China
[2]School of Educational Science, Shanxi University, Taiyuan 030006, China

[3]School of Psychology, South China Normal University, Guangzhou 510631, China

Abstract

Short video indulgence refers to a problematic behavioral pattern in which individuals compulsively watch short videos, resulting in significant loss of behavioral control or attentional impairment, and subsequently causing difficulties in interpersonal relationships, academic performance, and/or work adaptation. As the user base of short videos continues to expand and skew younger, the threat posed by short video indulgence to users' physical and mental health has attracted widespread concern. From a human-computer interaction perspective, this study first categorizes short video usage into two types: "instrumental" and "ritualistic." Second, by considering both the human-computer interaction process and user susceptibility characteristics, we construct a framework for the occurrence mechanisms of short video indulgence. Finally, we provide theoretical explanations of short video indulgence from cognitive, emotional, motivational, and social perspectives. Future research should prioritize investigating the mechanisms underlying short video indulgence, focus on the media characteristics and technical properties that trigger indulgence, and work toward promoting effective prevention and intervention strategies.

Keywords: short video indulgence, human-computer interaction, instrumental use, ritualistic use, algorithmic closed loop

---

Short videos refer to online videos ranging from several seconds to a few minutes in length, distributed and shared through social media platforms, video-sharing websites, and mobile applications. Due to their rich content, simple interaction design, and broad age appeal, short videos have gained widespread popularity among users. According to the *China Internet Network Development Status Statistical Report*, domestic short video users increased by 28.05 million in the first half of 2022, with total users exceeding one billion by year-end [**?**]. Short video user surveys indicate that average daily usage exceeds 2.5 hours [**?**], with over 60% of minors using short videos [**?**]. As short videos increasingly "encroach" on daily life and "spread" among younger populations, the phenomenon of short video indulgence and its associated harms have gradually attracted researchers' attention [**?**, **?**, **?**, **?**, **?**].

In related research, short videos are often treated as merely another form of social media, with their unique influences on users receiving insufficient attention. As online social services continue to differentiate, various platforms have developed distinct functions, user bases, and social interaction patterns [**?**]. Leung and Chen [**?**] suggested in their review that future research on internet addiction should focus on specific behavioral or content types. Other scholars have called for attention to the differences between short videos and traditional social services to truly understand how they impact users [**?**]. Compared to tra-

ditional social media, short videos possess inherently addictive properties such as high information stimulation density and low participation costs. Blurring the distinctions between short videos and general social media may lead to underestimation of short video indulgence problems and potentially create hidden dangers for both industry development and user mental health. This paper focuses on short videos as an information carrier and their unique properties. Through a systematic review of relevant literature and consideration of short video characteristics and usage patterns, we first analyze the facilitating mechanisms of short video indulgence from a human-computer interaction perspective. We then delve into user-level factors to identify susceptibility characteristics for short video indulgence. Finally, we provide theoretical explanations from psychological and social perspectives to offer systematic insights into this issue.

2 Short Video Use and Indulgence

Short video usage patterns significantly influence the formation and maintenance of short video indulgence. Excessive viewing of short videos recommended by "personalized algorithms" provides abundant reward stimuli and leads to neural adaptation, potentially exacerbating the severity of short video indulgence [**?**]. Simultaneously, indulgence tendencies affect usage behavior, as research shows that craving for short video use increases both frequency and duration [**?**]. However, short video use does not necessarily lead to indulgence. To better understand the development of short video indulgence, it is necessary to categorize usage behaviors.

2.1 Instrumental Use versus Ritualistic Use of Short Videos

In social media research, user behavior is commonly divided into "active use" and "passive use." Active use refers to behaviors that create and share information to facilitate interaction with others, such as posting updates or comments, whereas passive use involves merely viewing information without interaction, such as browsing others' updates [**?**, **?**]. Researchers have found that, after controlling for gender and age, active short video use positively predicts individual well-being, while passive use has the opposite effect [**?**, **?**]. With the emergence of personalized recommendation algorithms, short video content has gained the ability to "actively" match users [**?**]. Consequently, the primary usage pattern on short video platforms may involve passive information consumption on the "recommendation page"—so-called "passive use" [**?**]. Therefore, for short video usage, the "active versus passive" distinction is insufficient to reveal the developmental process from normal use to indulgence.

In drug addiction research, addicts' behaviors are generally considered to undergo a transition from "purposeful instrumental use" to "uncontrollable habitual use," depending on the interaction between conditional and unconditional reflexes [**?**, **?**]. In other words, in the initial stage, individuals use drugs purposefully, consciously pursuing stimulation, satisfying desires, or obtaining rewards.

However, as behavioral outcomes are continuously reinforced, the behavior gradually becomes habitual and difficult to control. Individuals begin to exhibit automated behavioral patterns, develop intense craving and dependence, and lose autonomous control over their behavior [**?**, **?**]. This transition from "instrumental use" to "habitual use" encapsulates the development of addictive behavior and provides important guidance for understanding, preventing, and treating addiction. The blurred boundary between normal and problematic short video use may result from this underlying transition between the two usage patterns.

Short video platforms emerged to meet societal demands for information diversity and have flourished due to their high accessibility and intelligent recommendation algorithms [**?**]. Given these inherently addictive characteristics, examining user-medium interaction is essential when discussing short video indulgence. Building upon the drug use classification mentioned above and incorporating communication scholar Rubin's categorization of television viewing behavior [**?**], we classify short video usage into two types: "Instrumental Use" and "Ritual Use." Instrumental use refers to goal-oriented usage behavior aimed at achieving specific objectives or satisfying particular needs, where short videos serve as a tool or means to reach the user's particular goals, such as learning new knowledge, obtaining information, or solving problems. Ritual use, by contrast, refers to usage behavior without subjective purpose, where short video consumption becomes a habitual behavior associated with specific contexts, times, or situations.

Compared to the "active versus passive" distinction, which focuses on interactions between users and social targets behind the media, the "instrumental versus ritual" classification concentrates on the interaction mode between users and the short video medium itself. This approach helps reveal the developmental process from short video use to indulgence and expands new horizons for short video indulgence research from a human-computer interaction perspective. Since instrumental and ritual use are classified based on users' subjective purposes and intentions, these two behaviors may coexist, overlap, and transform within each user's actual usage. For example, a user may initially use short videos out of curiosity or for entertainment—instrumental use. As the user continuously obtains satisfying stimulation from short videos, the behavior is progressively reinforced and may develop into a habitual pattern or even emotional dependence (ritual use), bringing the user closer to indulgence.

2.2 The Concept of Short Video Indulgence

Uncontrolled use of social media is generally considered to have addictive tendencies [**?**, **?**]. Since no research has yet identified specific symptoms or clinical diagnostic criteria for short video addiction, and to standardize terminology and reduce conceptual confusion, this paper adopts the term "short video indulgence" [**?**] to summarize this problematic usage pattern.

Li et al. [**?**] define short video indulgence as a chronic or periodic fascination

state resulting from repeated use of short video apps (Kuaishou, Douyin, etc.), producing strong, persistent craving and psychological and behavioral dependence. Other studies have examined short video "indulgence" or "problematic use" [?, ?, ?] without providing explicit definitions. As with Facebook addiction research, conceptual controversies have existed from the beginning and persist [?, ?]. Nevertheless, such controversies have not hindered ongoing research and may even motivate scholars in the field. The same applies to short video research; conceptual disputes may continue for some time but will not prevent the gradual emergence of short video indulgence studies [?]. Objectively speaking, existing definitions of short video indulgence are largely borrowed from related concepts (e.g., internet addiction [?]) and have not addressed the unique characteristics of short video indulgence behavior, indicating that research remains in its early stages.

In 1980, gambling addiction was included in the American clinical psychiatric diagnostic manual (DSM-III), opening the door for theoretical research on non-substance addictions such as internet addiction [?]. Public and academic attention to internet addiction has since increased. In 2014, Van Rooij and Prause compared three widely cited diagnostic criteria (or models) for internet addiction (Griffith's components model, Young's Internet Addiction Test, and Tao et al.'s diagnostic criteria) and found three commonly mentioned features: lack of control over internet use, resulting psychological, social, or occupational conflicts or problems, and mental distress. They also called for attention to specific addictive behaviors, as the concept of internet addiction had become too vague for various specific forms of inappropriate online behavior. Building upon these three features and integrating existing research, we propose a descriptive definition: short video indulgence is a problematic behavior in which individuals compulsively watch short videos, resulting in significant loss of behavioral control or attentional impairment, and subsequently causing difficulties in interpersonal, academic, and/or work adaptation. This descriptive definition aims to promote public and scholarly attention and research on short video indulgence and does not possess any diagnostic significance.

Current research on short video indulgence has primarily focused on its harmful consequences. For instance, short video indulgence may cause attention deficits, poor time management, and declining academic performance [?, ?, ?, ?, ?]. A recent study also found that short video indulgence leads to cognitive dissonance and emotional fluctuations, subsequently causing intermittent work stoppages [?]. Thus, preventing short video indulgence is an urgent social issue. However, the academic community has paid insufficient attention to the mechanisms underlying short video indulgence, preventing the development of targeted, scientifically grounded intervention strategies.

3 Short Video Indulgence from a Human-Computer Interaction Perspective

Short video indulgence represents a possible behavioral outcome of user interaction with short video services. To comprehensively understand the process from short video use to indulgence, this paper systematically reviews existing research from a human-computer interaction perspective, revealing the external mechanisms of short video indulgence across four levels: information technology, content service, human-computer interaction, and user experience. This approach also allows us to examine the inherently addictive properties of short video platforms.

3.1 Information Technology Level: Personalized Algorithms

A primary reason for the rapid popularity of short videos is the application of personalized recommendation algorithms [**?**]. These algorithms collect users' interest preferences and behavioral records, delivering short videos precisely to users' mobile devices through content filtering and collaborative filtering [**?**]. Personalized algorithms represent a revolutionary change for social media, liberating users from vast amounts of irrelevant information and eliminating the need for active searching or selection. Instead, users consume entertainment content based on algorithmic recommendations. This model dramatically reduces information acquisition costs and changes users' habits and experiences of obtaining information online. As user data accumulates, algorithms continuously optimize, making information delivery mechanisms increasingly refined and accurate [**?**, **?**, **?**]. If this cycle of "personalized push → user need satisfaction → behavioral data accumulation → algorithm optimization → personalized push → …" continues, it creates the so-called algorithmic "closed loop" (Figure 1 [Figure 1: see original paper]) [**?**]. This cycle drives users to develop dependence and loss of control over short videos through repeated satisfaction, potentially leading to indulgence or even addiction [**?**, **?**]. Research confirms that watching personalized short videos continuously stimulates the brain's ventral tegmental area (VTA), a neural circuit that generates pleasure and reinforces motivation. Sustained activation of this region produces craving and addiction [**?**].

3.2 Content Service Level: Multi-Channel Gratification

Short videos are brief online videos, typically lasting from several seconds to a few minutes. This compressed duration increases the accessibility of information and entertainment for people living fast-paced lives, enabling short videos to attract extensive user traffic [**?**, **?**]. Zea and Jung [**?**] found through behavioral case studies that most respondents considered short videos better suited to their busy lifestyles because they could obtain sufficiently rich information stimulation within limited time. Research also shows that the fragmented dissemination mode of short videos perfectly matches users' needs for mental pleasure during fragmented time periods [**?**, **?**, **?**].

Although most short videos last only seconds to dozens of seconds, they contain sufficiently rich elements [?]. This richness manifests in both information content and presentation methods. Taking Douyin as an example, short video themes cover news, beauty, cooking, movies, education, health, sports, technology, and other domains, satisfying various information needs. In terms of presentation, short videos typically combine bright melodies, eye-catching text, and corresponding video materials. This "multi-channel" sensory arousal enhances users' experiential engagement with content, further reinforcing short video usage. When users interact with a system, pleasant or stress-relieving experiences encourage repeated interaction [?, ?, ?], and the same applies to short video use. The rich stimulation activates users' pleasure, alleviates negative emotions, and leads users to increase usage frequency and duration to reinforce this behavior [?, ?]. The continuous repetition of emotions and reinforcement of behavior create dependence on short videos, potentially resulting in indulgence [?].

3.3 Human-Computer Interaction Level: The High-Reward Trap

Simple interaction patterns and rich information experiences are advantages and characteristics of short videos [?]. However, long-term access to highly accessible stimulation gratification carries significant indulgence risk [?], as evident in addiction research. Studies show that high accessibility of stimuli increases addiction risk [?, ?, ?]. The portability, immediacy, and ease of use of mobile electronic games can lead to more severe gaming addiction [?]. Communication scholar Wilbur Schramm proposed a formula to explain medium selection: probability of selection = potential reward / required effort [?]. In other words, when greater gratification can be obtained with less effort, the probability of selecting that channel increases. For short video users, a simple upward swipe provides a continuous stream of rich information, dramatically reducing the cost of obtaining information gratification [?, ?, ?, ?]. If we consider users' cognitive investment as cost and obtained stimulation gratification as reward, short video use is clearly a "low investment, high reward" resource exchange activity compared to activities requiring high cognitive engagement (e.g., gaming) or sustained attention (e.g., watching movies). This high reward nature continuously reinforces short video usage, thereby creating indulgence risk.

3.4 User Experience Level: Immersive Experience

Previous research on internet addiction indicates that immersion during usage is a key driver of indulgence [?, ?, ?, ?]. Immersion enables individuals to experience high control, heightened awareness, and concentrated attention while losing awareness of their surroundings and time [?, ?, ?]. When users interact with short videos—characterized by "active recommendation, rich information, and simple interaction"—they focus more on current stimuli and less on future or past concerns, creating "immersion." Research shows that short videos can create immersion through first-person perspective content [?]. Moreover, when

individuals watch algorithm-recommended videos on personal accounts, brain regions related to cognitive control are suppressed, facilitating easy entry into immersive states [?]. This low-cost immersion may pose significant indulgence risk for short video users.

It is important to note that while many studies on internet or gaming addiction have used flow to explain internal mechanisms [?, ?, ?, ?, ?], short video indulgence may differ. Flow and immersion are distinct concepts, and this difference is crucial for distinguishing short video indulgence from general internet addiction. Specifically, flow refers to a holistic sensation experienced when people are completely engaged in an activity—an optimal experience [?, ?]. This state includes high levels of competence and control, high challenge and arousal, concentrated attention, internal pleasure, and high goal orientation and achievement. A precondition for flow is a balance between individual ability and task challenge [?, ?, ?]. Short video use, which requires minimal interaction cost for rich information stimulation, does not meet flow's preconditions. Immersion, by contrast, is a subjective experience of feeling surrounded by an environment providing continuous stimulating experiences [?, ?]. Although flow and immersion differ only slightly in structure, they represent distinct psychological phenomena [?]. Immersion is not an extreme state and does not require high-level interaction balance or perceived pleasure. Thus, immersion may be more appropriate than flow for describing the focused state during short video use.

[Figure 2: see original paper] Short video indulgence from a human-computer interaction perspective

Through reviewing existing research and conducting novel human-computer interaction analyses, we argue that short videos possess greater addiction potential than general social media and warrant unique attention. Information technology, content service, human-computer interaction, and user experience constitute four components of user-short video medium interaction (Figure 2). Each level of the framework identifies the most critical element (though not the only one) to provide clear research entry points for future studies. Additionally, the framework incorporates the algorithmic "closed loop," creating a complete cycle that more vividly presents the behavioral reinforcement process of short video indulgence. However, to fully reveal the mechanisms of short video indulgence and systematically examine its influencing factors, focusing solely on the interaction component is insufficient; users' susceptibility characteristics are also crucial components of indulgence behavior.

4 Susceptibility Characteristics for Short Video Indulgence

In recent years, Brand et al.'s I-PACE model has gained attention and recognition in the field of problematic internet use [?, ?]. This model systematically investigates the occurrence and maintenance of problematic behaviors from an integrated perspective of individual, affective, cognitive, and executive factors, providing a theoretical foundation for related research and clinical practice [?].

Since short video indulgence also constitutes problematic internet use, this paper draws upon the I-PACE model's classification of individual core characteristics to summarize and prospect both general and unique susceptibility characteristics for short video indulgence.

4.1 General Susceptibility Characteristics

From a lifespan perspective, individuals' current behavioral manifestations result from genetic and experiential factors. Research shows that individuals with specific genotypes are more prone to internet stimulation indulgence [**?**]. Negative life events in early life [**?**] and resulting insecure attachment [**?**, **?**] may lead to dependence on immediate gratification. From a mental health perspective, individuals with social anxiety and high perceived social rejection are more likely to seek compensation online and exhibit indulgent behavior [**?**]. In terms of personality traits, neuroticism and impulsivity are consistently identified as risk factors [**?**]. Environmental factors such as peer pressure [**?**] and partner phubbing [**?**] also increase indulgent behavior. These factors, which generally facilitate addictive behaviors, remain applicable to short video indulgence. For example, Mao and Jiang [**?**] found that neuroticism significantly positively predicts short video indulgence, while Zhang et al. [**?**] found that individuals with social anxiety and high perceived social rejection are more likely to develop short video indulgence. Additionally, factors such as high self-control [**?**] and high perceived social support [**?**] are considered protective factors. Future research should conduct more targeted investigations incorporating short video characteristics.

4.2 Unique Susceptibility Characteristics

Compared to traditional social media, short videos feature personalized algorithmic recommendations, brief yet rich content, and low interaction costs. These characteristics may highly align with certain user personalities or needs, collectively forming a "booster" for indulgent behavior. From a need-motivation perspective and addressing the four aspects of the external mechanism (information technology, content service, human-computer interaction, user experience), we propose several potential susceptibility characteristics: (1) Personalized recommendation algorithms surround users with information matching their preferences, so individuals with low openness to experience or egocentric bias may better adapt to short videos' information distribution mechanisms and face greater indulgence risk; (2) Short videos' brief yet element-rich nature provides stimulation gratification during fragmented time, making users with boredom proneness, sensation seeking, and higher optimal arousal levels more vulnerable; (3) As an information medium, short videos' key features are simple interaction and low cognitive engagement, posing potential indulgence risk for users seeking instant gratification with low self-control; (4) Watching short videos allows users to escape stressful environments and relieve negative emotions, making users with high stress sensitivity, current perceived stress, de-

pressive emotions, and negative coping styles more susceptible [**?**, **?**]. It should be noted that these interaction-based susceptibility factors are primarily theoretical and urgently require empirical validation.

4.3 The Mechanism of Short Video Indulgence

Based on the human-computer interaction perspective, we have summarized factors involved in the development of short video indulgence, focusing on two main components: short video medium characteristics and their associated interaction features, and user susceptibility characteristics. The combination of these factors may push users' short video usage from "instrumental" to "ritualistic," ultimately resulting in indulgence. We have constructed a mechanism framework for short video indulgence occurrence, examining it from both human-computer interaction and susceptibility perspectives (Figure 3 [Figure 3: see original paper]). The first component includes four aspects: information technology, content service, human-computer interaction, and user experience, whose typical characteristics can be summarized as technological sophistication, content richness, high interaction reward, and immersive user experience. Moreover, under the drive of recommendation algorithms, users' short video usage behavior is continuously reinforced. The second component summarizes susceptibility factors for short video indulgence. The four categories of unique susceptibility characteristics correspond to the four aspects of the interaction mechanism, while general susceptibility characteristics represent categories that facilitate addictive behaviors generally. Given the similarities between short video indulgence and general internet addiction, "unique" and "general" susceptibility characteristics overlap and intersect. Overall, the interaction mechanism serves to activate susceptibility characteristics, making individuals more vulnerable to temptation and trapped in indulgence cycles, while susceptibility characteristics increase users' responsiveness and vulnerability to inducing factors. The various elements of the human-computer interaction component, driven by recommendation algorithms and intertwined with users' susceptibility characteristics, promote the transition from instrumental to ritualistic usage, ultimately leading to short video indulgence. This framework attempts to clarify the causes and processes of short video indulgence and provides researchers with a systematic thinking framework to promote scientific governance.

5 Theoretical Perspectives on Short Video Indulgence

While the mechanisms of short video indulgence can be revealed by examining multiple contributing factors and their interactions, deeper psychological understanding requires theoretical analysis. The following sections provide theoretical explanations from cognitive, emotional, motivational, and social perspectives to enhance public reflection on short video use and provide scientific foundations for research.

5.1 Cognitive Level: Dual Process Theory

Dual process theory posits that individual cognition and decision-making result from the coordinated operation of automatic and controlled processing systems [**?**]. The automatic system relies on environmental cues, is associative and automatic, and can directly control behavior without attentional involvement. The controlled system is decontextualized, rule-based, and requires intentional attention [**?**]. Dual process theory suggests that due to limited cognitive resources, when the controlled system is weak or impaired, the automatic system's influence on behavior increases; when the controlled system is strong or intact, the automatic system's influence decreases. To achieve goals rationally and effectively, individuals must ensure the controlled system can exercise its supervisory and control functions to inhibit intuitive impulsive behaviors driven by the automatic system [**?**]. Recently, dual process theory has been frequently used to explain addiction mechanisms. Research indicates that indulgent behavior formation is associated with enhanced automatic processing and weakened controlled processing [**?**, **?**], a view supported by neurophysiological studies [**?**]. Su et al. [**?**] also found that when participants watched personalized short videos, the brain's default mode network (DMN) was activated and showed enhanced coupling with visual and auditory pathways but reduced coupling with the precuneus and cingulate cortex. This suggests attentional resources become highly concentrated on audiovisual information processing, making attention regulation difficult, while cognitive control regions are suppressed, potentially causing loss of control over short video use. This study reveals the cognitive processing patterns in the brain during short video use from a neurobiological perspective. Consequently, due to low cognitive engagement during short video interaction, the automatic system becomes continuously reinforced while the controlled system is constrained, resulting in compulsive use and ultimately leading to short video indulgence.

5.2 Emotional Level: Opponent Process Theory

Opponent process theory, also called positive-negative reinforcement or hedonic dysregulation [**?**], is helpful for understanding addiction, child attachment, and thrill-seeking behaviors [**?**]. This theory describes underlying positive and negative reinforcement mechanisms, intuitively explaining why specific systems become addictive through two opposing processes [**?**, **?**].

Primarily an entertainment information medium, short videos trigger pleasure as a stimulus when users interact with them, activating positive emotions or hedonic states—positive reinforcement (or positive affect) is activated. In real-world contexts, users often must (temporarily) stop using short videos due to psychological or external factors. Once the stimulus stops or decreases, positive reinforcement is lost, triggering negative reinforcement (or negative affect) such as anger and stress. To maintain positive emotions and reduce negative emotions, users must repeatedly activate short video usage, potentially leading to indulgence [**?**].

5.3 Motivational Level: Uses and Gratifications Theory

Uses and gratifications theory [?] is one of the most influential classic theories in communication research. Its emergence marked the breakdown of the media-centric paradigm, shifting focus to audience needs as the guiding force for content production. The theory helps explain medium selection and understand the basic needs driving media use. Early research applied uses and gratifications theory to traditional media such as television and radio, and the theory has been widely applied to new media research on platforms like Facebook and Instagram [?]. The theory suggests that individuals, influenced by psychological, social, and cultural factors, use information media to achieve gratifying purposes. Individual preference differences lead to variations in content/type usage. For example, teenagers who enjoy online games may follow bloggers sharing exciting gaming moments, while young people interested in military affairs may frequently browse battlefield footage for satisfaction. The popularity of short videos as a new medium undoubtedly meets various societal needs.

Previous research shows that short video use satisfies users' interpersonal/belonging needs [?, ?], self-presentation needs [?], entertainment needs [?, ?], stress release [?], and trend pursuit [?]. During usage, users continuously discover new needs that stimulate new usage motivations [?]. Wang et al. [?] also found that users' compensatory expectations of satisfying various needs through short videos may promote excessive usage tendencies. In summary, users' different needs evoke different usage motivations, leading to different content focus and usage intensity. As society progresses and mainstream platforms evolve, new trends and fashions emerge from new media's satisfaction and stimulation of public needs [?]. Therefore, systematically discussing short video users' psychological needs from a uses and gratifications perspective and clarifying usage forms and intensity driven by different needs will provide scientific guidance for rational short video use and regulatory standards.

5.4 Social Level: Social Shaping of Technology

Social shaping of technology theory posits that technology's consequences emerge from a combination of supporting factors—individuals, technology, and related institutions—that collectively influence technological development and subsequent use [?, ?]. This theory explains how technology design and application are influenced by social and economic factors beyond narrow technical considerations [?]. Emerging as a critique of technological determinism, this perspective differs from traditional views focusing solely on technological advancement outcomes by examining the specific processes involved in technology content and innovation. Specifically, social shaping of technology theory's core argument is that every stage of new technology generation and implementation involves choices among different technical solutions (though not necessarily conscious choices), with each choice directly or indirectly influenced by social or human factors, which in turn affect people and society [?]. In other words, we must open technology's "black box" and analyze the socioeconomic patterns

in technological innovation processes to understand technology and its true impacts.

The realization of personalized short video content recommendations relies on recommendation algorithms, whose continuous "evolution" is not accomplished by engineers alone but is gradually achieved through user feedback. As internet application service levels improve, users' demands for internet content become more specific and precise. Personalized recommendation algorithms emerged accordingly and have developed through continuously accumulated behavioral data. However, when addressing short video indulgence, we cannot simply attribute responsibility to recommendation algorithms or short video platforms. Instead, we should rationally examine technological products (such as short videos) from the perspectives of social development and user needs. For example, is the existence of short video media "reasonable by default"? Why do different individuals hold different attitudes toward short videos? If we ignore social and human shaping of technology and only unidirectionally investigate technology's (or products') impact on individuals and society, preventive measures will always lag behind.

6 Future Research Directions

6.1 Methodological Limitations: Enriching Research Approaches

Different research approaches to the same scientific problem satisfy methodological needs from various perspectives while revealing multiple facets of the issue. Our review reveals that existing short video indulgence research predominantly relies on questionnaire reports from participants [**?**] without considering the specificity of short video indulgence. Luo [**?**] employed qualitative research to propose a targeted measurement method for short video indulgence, but this approach included other platform usage content (such as coin collection) beyond short videos, resembling addiction measurement for specific platforms rather than short videos generally. Similar issues occurred when constructing measurement schemes for internet addiction and Facebook addiction [**?**, **?**]. Future research could enrich methodological approaches through: (1) developing short video indulgence scales via interviews or expert evaluation [**?**] to specifically identify indulgence; (2) employing neuroimaging techniques [**?**] such as functional magnetic resonance imaging (fMRI) or electroencephalography (EEG) to observe brain activity during short video viewing, analyzing attention, emotion, and reward system mechanisms to reveal the neural basis of short video indulgence; and (3) conducting behavioral experiments such as randomized controlled trials (RCT) or delay discounting tasks (DDT) to examine users' choice preferences, decision-making abilities, and self-regulation strategies under different conditions, thereby understanding the behavioral characteristics of short video indulgence.

6.2 Insufficient Technology Focus: Emphasizing Addiction-Inducing Technology Improvement

Gaming addiction and problematic social media use have been extensively studied, yet few scholars have examined addiction causes from technological or device perspectives [**?**, **?**]. This is especially true for short video indulgence, an emerging problem facilitated by technology. Short video platforms' recommendation algorithms continuously evolve based on market feedback, with specific parameters adapting to users' personal information and accumulated usage behavior. The more users engage with short videos, the more the recommendation algorithms cater to their preferences, leading to deeper user involvement [**?**]. Unlike general social platforms where interaction occurs primarily between users and their social networks, short video interaction keyly involves users and their "algorithmic selves" [**?**]. This suggests a possible closed loop between short video use and algorithm optimization (Figure 1), whose continuation may cause more user indulgence and even broader social impacts. Treating the technology behind short video services as a black box is unsustainable, as bypassing personalized algorithms to study short videos' impact on users may fail to address the core issue. We should consider the "supply side": if platforms unilaterally pursue rich user profiles and precise content recommendations, more users will develop ritualistic usage patterns or even indulgence. Since short video platforms can use intelligent algorithms to accurately locate user preferences, they should also pursue harmonious coexistence between short video media and users within a human-centered AI framework. We recommend that short video platforms adopt user-centered approaches and develop more responsible, transparent algorithms [**?**]. Algorithm researchers should also focus more on recommendation algorithms' negative effects rather than simply targeting increased user stickiness. This would return usage initiative to users and enable short video media to achieve broad development prospects by forming a more harmonious ecosystem with users.

6.3 Unclear Formation Mechanisms: Deepening Mechanism Research

Fundamental solutions require profound understanding of problem essence. However, current research primarily focuses on the harms of short video indulgence while neglecting its mechanisms, resulting in superficial understanding and preventing the development of effective intervention strategies. Our proposed mechanism framework (Figure 3) aims to provide systematic research directions for scholars. Information technology, content service, human-computer interaction, and user experience are four components of short video use and potential causes of indulgence. The technological sophistication, content richness, interaction simplicity, and user experience quality in short video services all differ from traditional social media. These characteristics may intertwine with user needs and psychological traits to facilitate short video indulgence. Future research should not only deepen understanding of external facilitating mechanisms but also investigate psychological and behavioral

factors underlying user indulgence. External mechanism analysis and internal mechanism exploration will jointly serve to clarify the entire problem behavior's development, providing scientific guidance for prevention and intervention measures. Additionally, public education about potential mechanisms may enhance awareness and understanding of these risks, achieving fundamental preventive effects.

6.4 Insufficient User Characteristics Research: Emphasizing Susceptibility Factors

In internet addiction research, Van Rooij and Prause [**?**] noted that examining individual differences causing high usage rates may be more useful than diagnosing internet addiction. The same applies to short video indulgence research, which must examine not only the medium but also user susceptibility. Qin [**?**] found among Chinese university students that neuroticism and extraversion significantly positively predict short video indulgence, while agreeableness negatively predicts it. Zhang et al. [**?**] also found that individuals with social anxiety and high perceived social rejection are more vulnerable. From the short video perspective, personalized recommendation algorithms are key facilitating factors [**?**], making more users part of the susceptible population. When users respond appropriately to recommendation algorithms and actively avoid indulgence, algorithmic literacy may constitute important knowledge reserves [**?**]. Therefore, disseminating knowledge about algorithms and their operation modes, and improving users' rational thinking and coping abilities regarding algorithms, may reduce the possibility of users being "enslaved" by algorithms, thereby achieving population-level prevention. We recommend future research design randomized controlled intervention experiments to examine the protective effects of improving users' algorithmic literacy against short video indulgence. Subsequent research should further investigate susceptibility factors from environmental contexts, stress states, social support systems, and personality traits to provide more targeted recommendations for scientific prevention.

References

Cui, Y. (2023). Jointly preventing youth short video indulgence. *People's Daily*. http://gd.people.com.cn/n2/2023/0414/c123932-40375947.html

Fang, Y., Ji, W., Shen, J., Yang, B., Ji, L., & Ye, J. (2022). *Blue Book on Youth: Report on Internet Use Among Chinese Minors (2022)*. China Society Press.

Li, X., Qin, H., Zeng, M., He, Y., & Ma, M. (2021). The relationship between short video addiction symptoms and personality in college students. *Chinese Mental Health Journal*, 35(11),

Liu, Q., Niu, G., Fan, C., & Zhou, Z. (2017). Passive social network site use and self-esteem and self-concept clarity: A moderated mediation model. *Acta*

Psychologica Sinica, 49(1), 60–71.

Luo, G. (2022). Development and application of a short video addiction scale for college students (Master's thesis). Yangtze University, Jingzhou.

Mao, Z., & Jiang, Y. (2022). The influence of neuroticism on problematic short video use: The chain mediating role of loneliness and boredom proneness. *China Journal of Health Psychology*, 1–13.

Qin, H. (2020). Research on the influence mechanism and intervention strategies of short video addiction among college students (Master's thesis). Jiangxi Science and Technology Normal University, Nanchang.

QuestMobile. (2022). *China Mobile Internet Annual Report*. https://www.questmobile.com.cn/research/report

Schramm, W. (1984). *Introduction to Communication Studies* (Chen, L., et al., Trans.). Xinhua Publishing House, p. 114.

Yan, W., Liu, S., Zhang, R., & Xu, P. (2021). The vulnerability of compulsive traits in drug addiction behavior and its neural basis in the prefrontal-antireward system. *Advances in Psychological Science*, (08), 1345–1357.

Zhang, J., Chen, C., Liu, F., Deng, L., & Fang, X. (2012). The relationship between peer network overuse behavior and attitudes, peer pressure for internet use, and internet addiction among college students. *Psychological Development and Education*, (06), 634–640.

China Internet Network Information Center (CNNIC). (2022). *The 51st Statistical Report on China's Internet Development Status*. https://www.cnnic.cn/NMediaFile/2022/0926/MAIN16641

Alvarez-Monjaras, M., Mayes, L. C., Potenza, M. N., & Rutherford, H. J. (2019). A developmental model of addictions: Integrating neurobiological and psychodynamic theories through the lens of attachment. *Attachment & Human Development*, 21(6), 616–637.

Bakshy, E., Messing, S., & Adamic, L. A. (2015). Exposure to ideologically diverse news and opinion on Facebook. *Science*, 348(6239), 1130–1132.

Baym, N. K. (2010). *Personal connections in the digital age*. Malden, MA: Polity Press.

Baym, N. K., Zhang, Y. B., & Lin, M. C. (2004). Social interactions across media: Interpersonal communication on the internet, telephone and face-to-face. *New Media & Society*, 6(3), 299–318.

Bhandari, A., & Bimo, S. (2020). TikTok and the "algorithmized self": A new model of online interaction. *AoIR Selected Papers of Internet Research*. https://doi.org/10.5210/spir.v2020i0.11172

Bobadilla, J., Ortega, F., Hernando, A., & Gutiérrez, A. (2013). Recommender systems survey. *Knowledge-Based Systems*, 46, 109–132.

Boczkowski, P. J., Matassi, M., & Mitchelstein, E. (2018). How young users deal with multiple platforms: The role of meaning-making in social media repertoires. *Journal of Computer-mediated Communication*, 23(5), 245–259.

Brand, M., Wegmann, E., Stark, R., Müller, A., Wölfling, K., Robbins, T. W., & Potenza, M. N. (2019). The Interaction of Person-Affect-Cognition-Execution (I-PACE) model for addictive behaviors: Update, generalization to addictive behaviors beyond internet-use disorders, and specification of the process character of addictive behaviors. *Neuroscience & Biobehavioral Reviews*, 104, 1–10.

Brand, M., Young, K. S., Laier, C., Wölfling, K., & Potenza, M. N. (2016). Integrating psychological and neurobiological considerations regarding the development and maintenance of specific Internet-use disorders: An Interaction of Person-Affect-Cognition-Execution (I-PACE) model. *Neuroscience & Biobehavioral Reviews*, 71, 252–266.

Chaney, A. J., Stewart, B. M., & Engelhardt, B. E. (2018, September). How algorithmic confounding in recommendation systems increases homogeneity and decreases utility. In *Proceedings of the 12th ACM conference on recommender systems* (pp. 224–232).

Chen, W., Fan, C. Y., Liu, Q. X., Zhou, Z. K., & Xie, X. C. (2016). Passive social network site use and subjective well-being: A moderated mediation model. *Computers in Human Behavior*, 64, 507–514.

Chen, Y., Li, M., Guo, F., & Wang, X. (2022). The effect of short-form video addiction on users' attention. *Behaviour & Information Technology*, DOI: 10.1080/0144929X.2022.2151512

Chou, T. J., & Ting, C. C. (2003). The role of flow experience in cyber-game addiction. *CyberPsychology & Behavior*, 6(6),

Cinelli, M., De Francisci Morales, G., Galeazzi, A., Quattrociocchi, W., & Starnini, M. (2021). The echo chamber effect on social media. *Proceedings of the National Academy of Sciences*, 118(9), e2023301118.

Czikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience* (pp. 75–77). New York: Harper & Row.

De Neys, W., & Glumicic, T. (2008). Conflict monitoring in dual process theories of thinking. *Cognition*, 106(3),

Doñamayor, N., Ebrahimi, C., Garbusow, M., Wedemeyer, F., Schlagenhauf, F., & Heinz, A. (2021). Instrumental and pavlovian mechanisms in alcohol use disorder. *Current Addiction Reports*, 8, 156–180.

Dong, W., Li, S., & Wang, X. (2022). Parental phubbing and chinese adolescents' SNSs addiction: Loneliness as a mediator and self-esteem as a moderator. *Current Psychology*, 1–13.

Elahi, M., Jannach, D., Skjærven, L. et al. (2022). Towards responsible media recommendation. *AI and Ethics*, 2, 103–114.

Everitt, B. J., & Robbins, T. W. (2005). Neural systems of reinforcement for drug addiction: From actions to habits to compulsion. *Nature Neuroscience*, 8(11), 1481–1489.

Fang, J., Wang, Z., & Hao, B. (2019). Analysis of "Anesthesia" Mechanism in Mobile Short Video Applications. In *The First International Symposium on Management and Social Sciences (ISMSS 2019)* (pp. 348–351). Atlantis Press.

Feng, Y., Li, L., & Zhao, A. (2022). A cognitive-emotional model from mobile short-form video addiction to intermittent discontinuance: The moderating role of neutralization. *International Journal of Human–Computer Interaction*, DOI: 10.1080/10447318.2022.2147714

Geschke, D., Lorenz, J., & Holtz, P. (2019). The triple-filter bubble: Using agent-based modelling to test a meta-theoretical framework for the emergence of filter bubbles and echo chambers. *British Journal of Social Psychology*, 58(1),

Griffiths, M. (2000). Internet addiction-time to be taken seriously? *Addiction Research*, 8(5), 413–418.

Gillespie, N. A., Kendler, K. S., Prescott, C. A., Aggen, S. H., Gardner, C. O., Jr, Jacobson, K., & Neale, M. C. (2007). Longitudinal modeling of genetic and environmental influences on self-reported availability of psychoactive substances: Alcohol, cigarettes, marijuana, cocaine and stimulants. *Psychological Medicine*, 37(7), 947–959.

Gillespie, N. A., Neale, M. C., & Kendler, K. S. (2009). Pathways to cannabis abuse: A multi-stage model from cannabis availability, cannabis initiation and progression to abuse. *Addiction*, 104(3), 430–438.

Hahn, E., Reuter, M., Spinath, F. M., & Montag, C. (2017). Internet addiction and its facets: The role of genetics and the relation to self-directedness. *Addictive Behaviors*, 65, 137–146.

Henden, E. (2017). Addiction, compulsion, and weakness of the will: A dual-process perspective. In N. Heather, & G. Segal (Eds.), *Addiction and choice: Rethinking the relationship* (pp. 116–132). Oxford, UK: Oxford University Press.

Hernández, C., Ottenberger, D. R., Moessner, M., Crosby, R. D., & Ditzen, B. (2019). Depressed and swiping my problems for later: The moderation effect between procrastination and depressive symptomatology on internet addiction. *Computers in Human Behavior*, 97, 1–9.

Ho, R. C., Zhang, M. W., Tsang, T. Y., Toh, A. H., Pan, F., Lu, Y., … & Mak, K. K. (2014). The association between internet addiction and psychiatric co-morbidity: A meta-analysis. *BMC Psychiatry*, 14(1), 1–10.

Hogarth, L., Balleine, B. W., Corbit, L. H., & Killcross, S. (2013). Associative learning mechanisms underpinning the transition from recreational drug use to addiction. *Annals of the New York Academy of Sciences*, 1282(1), 12–24.

Hsu, W. Y., Lin, S. S., Chang, S. M., Tseng, Y. H., & Chiu, N. Y. (2015). Examining the diagnostic criteria for Internet addiction: Expert validation. *Journal of the Formosan Medical Association*, 114(6), 504–508.

Huang, Q., Hu, M., & Zhang, N. (2022). A techno-psychological approach to understanding problematic use of short-form video applications: The role of flow. *Frontiers in Psychology*, 13, 971589.

Kang, I., Shin, M. M., & Park, C. (2013). Internet addiction as a manageable resource: A focus on social network services. *Online Information Review*, 37(1), 28–41.

Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and gratifications research. *The Public Opinion Quarterly*, 37(4),

Kayiş, A. R., Satici, S. A., Yilmaz, M. F., Şimşek, D., Ceyhan, E., & Bakioğlu, F. (2016). Big five-personality trait and internet addiction: A meta-analytic review. *Computers in Human Behavior*, 63, 35–40.

Kennett, J., Matthews, S., & Snoek, A. (2013). Pleasure and addiction. *Frontiers in Psychiatry*, 4, 117.

Koob, G. F., & Volkow, N. D. (2010). Neurocircuitry of addiction. *Neuropsychopharmacology*, 35(1), 217–238.

Kwak, K. T., Choi, S. K., & Lee, B. G. (2014). SNS flow, SNS self-disclosure and post hoc interpersonal relations change: Focused on Korean Facebook user. *Computers in Human Behavior*, 31, 294–304.

Lavoie, R., & Zheng, Y. (2023). Smartphone use, flow and wellbeing: A case of Jekyll and Hyde. *Computers in Human Behavior*, 138, 107442.

Lee, Z. W., Cheung, C. M., & Chan, T. K. (2014). Explaining the development of the excessive use of massively multiplayer online games: A positive-negative reinforcement perspective. In *2014 47th Hawaii International Conference on System Sciences* (pp. 668–677). IEEE.

Lei, H., Li, S., Chiu, M. M., & Lu, M. (2018). Social support and Internet addiction among mainland Chinese teenagers and young adults: A meta-analysis. *Computers in Human Behavior*, 85, 200-209.

Leung, L. (2020). Exploring the relationship between smartphone activities, flow experience, and boredom in free time. *Computers in Human Behavior*, 103, 130–139.

Leung, L., & Chen, C. (2021). A review of media addiction research from 1991 to 2016. *Social Science Computer Review*, 39(4), 648–665.

Li, S., Ren, P., Chiu, M. M., Wang, C., & Lei, H. (2021). The relationship between self-control and internet addiction among students: A meta-analysis. *Frontiers in Psychology*, 12, 735755.

Liang, X. (2021). Research on how to perceive their behavior for international high school students based on using TikTok with semi-structured interview. In *2021 6th International Conference on Humanities Education and Social Development (ICHESD 2021)* (pp. 796–799). Atlantis Press.

Lindgren, K. P., Hendershot, C. S., Ramirez, J. J., Bernat, E., Rangel-Gomez, M., Peterson, K. P., & Murphy, J. G. (2019). A dual process perspective on advances in cognitive science and alcohol use disorder. *Clinical Psychology Review*, 69, 83–96.

Liu, C. C., & Chang, I. C. (2016). Model of online game addiction: The role of computer-mediated communication motives. *Telematics and Informatics*, 33(4), 904–915.

Liu, Y., Ni, X., & Niu, G. (2021). Perceived stress and short-form video application addiction: A moderated mediation model. *Frontiers in Psychology*, 12, 747656.

Lortie, C. L., & Guitton, M. J. (2013). Internet addiction assessment tools: Dimensional structure and methodological status. *Addiction*, 108(7), 1207–1216.

Lu, X., & Lu, Z. (2019). Fifteen seconds of fame: A qualitative study of Douyin, a short video sharing mobile application in China. In *International Conference on Human-computer Interaction* (pp. 233–244). Springer, Cham.

Luigjes, J., Lorenzetti, V., de Haan, S., Youssef, G. J., Murawski, C., Sjoerds, Z., … & Yücel, M. (2019). Defining compulsive behavior. *Neuropsychology Review*, 29, 4–13.

Masciantonio, A., Bourguignon, D., Bouchat, P., Balty, M., & Rimé, B. (2021). Don't put all social network sites in one basket: Facebook, Instagram, Twitter, TikTok, and their relations with well-being during the COVID-19 pandemic. *PloS One*, 16(3), e0248384.

Michailidis, L., Balaguer-Ballester, E., & He, X. (2018). Flow and immersion in video games: The aftermath of a conceptual challenge. *Frontiers in Psychology*, 9, 393107.

Mu, H., Jiang, Q., Xu, J., & Chen, S. (2022). Drivers and consequences of Short-Form Video (SFV) Addiction amongst adolescents in China: Stress-Coping Theory Perspective. *International Journal of Environmental Research and Public Health*, 19(21), 14173.

Nong, W., He, Z., Ye, J. H., Wu, Y. F., Wu, Y. T., Ye, J. N., & Sun, Y. (2023). The Relationship between Short Video Flow, Addiction, Serendipity, and Achievement Motivation among Chinese Vocational School Students: The Post-Epidemic Era Context. *Healthcare*, 11(4), 462.

Omar, B. & Dequan, W. (2020). Watch, Share or Create: The Influence of Personality Traits and User Motivation on TikTok Mobile Video Usage. International Association of Online Engineering. Retrieved October 21, 2022 from

https://www.learntechlib.org/p/216454/.

Pan, W., Mu, Z., Zhao, Z., & Tang, Z. (2023). Female Users' TikTok Use and Body Image: Active Versus Passive Use and Social Comparison Processes. *Cyberpsychology, Behavior, and Social Networking*, 26(1), 3–10.

Pearson, A. D., Young, C. M., Shank, F., & Neighbors, C. (2021). Flow mediates the relationship between problematic smartphone use and satisfaction with life among college students. *Journal of American College Health*, DOI: 10.1080/07448481.2021.1910274

Qin, Y., Omar, B., & Musetti, A. (2022). The addiction behavior of short-form video app TikTok: The information quality and system quality perspective. *Frontiers in Psychology*, 13, 932805.

Rubin, A. M., & Perse, E. M. (1987). Audience activity and soap opera involvement a uses and effects investigation. *Human Communication Research*, 14(2), 246–268.

Ryan, T., Chester, A., Reece, J., & Xenos, S. (2014). The uses and abuses of Facebook: A review of Facebook addiction. *Journal of Behavioral Addictions*, 3(3), 133–148.

Saunders, C and Over, D.E. (2009). In two minds about rationality. In: J. St. B. T. Evans and K. Frankish, (eds.). *In Two Minds: Dual Processes and Beyond*. Oxford: New York, pp. 317–334.

Scherr, S., & Wang, K. (2021). Explaining the success of social media with gratification niches: Motivations behind daytime, nighttime, and active use of TikTok in China. *Computers in Human Behavior*, 124, 106893.

Schneider, L. A., King, D. L., & Delfabbro, P. H. (2017). Family factors in adolescent problematic internet gaming: A systematic review. *Journal of Behavioral Addictions*, 6(3), 321–333.

Seo, D., & Ray, S. (2019). Habit and addiction in the use of social networking sites: Their nature, antecedents, and consequences. *Computers in Human Behavior*, 99, 109–125.

Smith, T., & Short, A. (2022). Needs affordance as a key factor in likelihood of problematic social media use: Validation, latent profile analysis and comparison of TikTok and Facebook problematic use measures. *Addictive Behaviors*, 129, 107259.

Solomon, R. L., & Corbit, J. D. (1974). An opponent-process theory of motivation: I. Temporal dynamics of affect. *Psychological Review*, 81(2), 119–145.

Su, C., Zhou, H., Gong, L., Teng, B., Geng, F., & Hu, Y. (2021). Viewing personalized video clips recommended by TikTok activates default mode network and ventral tegmental area. *NeuroImage*, 237, 118136.

Tao, R., Huang, X., Wang, J., Zhang, H., Zhang, Y. & Li, M. (2010). Proposed diagnostic criteria for internet addiction. *Addiction*, 105(3), 556–564.

Tian, X., Bi, X., & Chen, H. (2023). How short-form video features influence addiction behavior? Empirical research from the opponent process theory perspective. *Information Technology & People*, 36(1), 387–408.

Turel, O., & Serenko, A. (2012). The benefits and dangers of enjoyment with social networking websites. *European Journal of Information Systems*, 21(5), 512–528.

Van Rooij, A., & Prause, N. (2014). A critical review of "Internet addiction" criteria with suggestions for the future. *Journal of Behavioral Addictions*, 3(4), 203–213.

Volkow, N. D., Michaelides, M., & Baler, R. (2019). The neuroscience of drug reward and addiction. *Physiological Reviews*, 99(4), 2115–2140.

Wang, J., Sheng, J., & Wang, H. (2019). The association between mobile game addiction and depression, social anxiety, and loneliness. *Frontiers in Public Health*, 7, 476493.

Wang, Y. (2020). Humor and camera view on mobile short-form video apps influence user experience and technology-adoption intent, an example of TikTok (DouYin). *Computers in Human Behavior*, 110, 106373.

Williams, R., & Edge, D. (1996). The social shaping of technology. *Research Policy*, 25(6), 865–899.

Witmer, B. G., & Singer, M. J. (1998). Measuring presence in virtual environments: A presence questionnaire. *Presence*, 7(3), 225–240.

Wu, L. (2020). Comparative Analysis of Video Stories and User Behaviors on WeChat and Tik Tok. In *2020 3rd International Conference on Humanities Education and Social Sciences (ICHES 2020)* (pp. 329–333). Atlantis Press.

Wu, Y., Wang, X., Hong, S., Hong, M., Pei, M., & Su, Y. (2021). The relationship between social short-form videos and youth's well-being: It depends on usage types and content categories. *Psychology of Popular Media*. 10(4),

Xu, X. Y., & Tayyab, S. M. U. (2021). How the intensity of the immersive experience impels the extent of Social Streaming App dependency? An empirical assessment with mediation and moderation effects. *Telematics and Informatics*, 63,

Yang, S., Lu, Y., Wang, B., & Zhao, L. (2014). The benefits and dangers of flow experience in high school students' internet usage: The role of parental support. *Computers in Human Behavior*, 41, 504–513.

Yao, N., Chen, J., Huang, S., Montag, C., & Elhai, J. D. (2023). Depression and social anxiety in relation to problematic TikTok use severity: The mediating role

of boredom proneness and distress intolerance. *Computers in Human Behavior*, 145, 107751.

Ye, J. H., Wu, Y. T., Wu, Y. F., Chen, M. Y., & Ye, J. N. (2022). Effects of short video addiction on the motivation and well-being of Chinese vocational college students. *Frontiers in Public Health*, 10, 847672.

Zea, Q., & Jung, H. (2019). Learning and sharing creative skills with short videos: A case study of user behavior in Tiktok and Bilibili. International Association of Societies of Design Research (IASDR), Design Revolution.

Zenone, M., Ow, N., & Barbic, S. (2021). TikTok and public health: A proposed research agenda. *BMJ Global Health*, 6(11), e007648.

Zhang, M., & Liu, Y. (2021). A commentary of TikTok recommendation algorithms in MIT Technology Review 2021. *Fundamental Research*, 1(6), 846–847.

Zhang, N., Hazarika, B., Chen, K., & Shi, Y. (2023). A cross-national study on the excessive use of short-video applications among college students. *Computers in Human Behavior*, 145, 107752.

Zhang, X., Wu, Y., & Liu, S. (2019). Exploring short-form video application addiction: Socio-technical and attachment perspectives. *Telematics and Informatics*, 42, 101243.

Zhao, Z. (2021). Analysis on the "Douyin (Tiktok) Mania" Phenomenon Based on Recommendation Algorithms. In *E3S Web of Conferences* (Vol. 235, p. 03029). EDP Sciences.

Zhou, T. (2013). The effect of flow experience on user adoption of mobile TV. *Behaviour and Information Technology*, 32(3), 263–272.

Note: Figure translations are in progress. See original paper for figures.