

THE HIDDEN TOLL OF SCROLLING: TIKTOK USAGE, SLEEP DISRUPTION, TIME MISPERCEPTION, AND DAILY FUNCTIONING AMONG ADOLESCENTS AND YOUNG ADULTS

Ruvina Indran & Wanda Kiyah George Albert

Faculty Psychology and Social Work, University Malaysia Sabah, Kota Kinabalu,
Malaysia

Corresponding e-mail: wanda@ums.edu.my

Abstract

The rapid rise of TikTok has redefined digital engagement, particularly among adolescents and young adults. Its algorithm-driven content, short-form video format, and endless scroll feature encourage prolonged, often unconscious use—especially at night. This concept paper proposes a study to examine the impact of TikTok usage on sleep patterns, time misperception, and daily functioning. The research will explore how frequent and excessive use contributes to bedtime procrastination, sleep disruption, and daytime fatigue. Focusing on individuals aged 15 to 30, the study will assess behavioral trends, psychological effects, and risk factors linked to compulsive use. Employing a quantitative or mixed-method approach, the research aims to provide empirical evidence to support digital well-being strategies, inform educational policies, and guide parental involvement. The expected findings will underscore the need for healthier media habits and greater awareness of the hidden psychological and physical costs of social media overuse. In an era where five minutes on TikTok can easily turn into five hours, this study seeks to offer timely insight into an emerging public health issue affecting the younger generation.

Keywords: TikTok usage, social media use, adolescents, young adults, sleep disruptions

Introduction and research problem

The swift adoption of TikTok among adolescents and young adults has transformed how digital content is consumed. Its design features (short videos, autoplay, recommendation algorithms, infinite scroll) encourage usage that is often automatic, involuntary, or extends beyond users' intentions, especially before bedtime. There is growing concern among psychologists, sleep researchers, and public health experts that this behavior may contribute to various negative outcomes: delayed sleep onset, reduced total sleep time, poorer sleep quality, daytime fatigue, poorer academic or occupational performance, and distortions in time perception.

This review aims to synthesize the recent empirical literature exploring:

1. How frequent/excessive TikTok / short-form video use correlates with sleep disruption, bedtime procrastination, and time misperception.
2. Which psychological & behavioral risk factors moderate or mediate these associations.
3. Consequences on daytime functioning (cognition, mood, academic performance, fatigue);

Intervention and policy suggestions.

Methodology

2.1 Search Strategy

A comprehensive search was conducted across multiple electronic databases including **PubMed, ScienceDirect, BMC, and Frontiers in Psychology**. The search strategy combined relevant keywords and Boolean operators to identify empirical studies related to TikTok usage and its psychological and behavioral outcomes. The search terms included combinations such as “*TikTok*”, “*short-form video*”, “*sleep quality*”, “*bedtime procrastination*”, “*time perception*”, “*daily functioning*”, “*adolescents*”, and “*young adults*”. The search covered publications from **2019 to 2025**, reflecting the period of TikTok’s global rise and dominance in social media use.

2.2 Inclusion Criteria

Studies were included if they met the following criteria: (1) published between 2019 and 2025, (2) written in English, (3) employed **quantitative** or **mixed-method** research designs, (4) involved participants aged approximately **15 to 30 years**, and (5) examined **short-form video or TikTok use** in relation to at least one of the following outcomes: **sleep quality, sleep duration, bedtime procrastination, time perception, psychological well-being, or daily functioning**.

2.3 Exclusion Criteria

Studies were excluded if they were **non-empirical** (such as opinion pieces, reviews, or commentaries), focused primarily on **clinical sleep disorders** unrelated to social media or digital media use, were **not published in English**, or did not specifically address **short-form video platforms** such as TikTok.

2.4 Data Extraction

Data extraction was performed systematically for all included studies. Key details recorded included **authors, year of publication, country, sample size and age range, study design** (cross-sectional, experimental, or longitudinal), and **measurement tools** used to assess TikTok or short-form video use. Additionally, information was extracted on **sleep-related measures** (including sleep quality, duration, and latency), **time perception indicators, psychological mediators or moderators** (such as anxiety, depression, or fear of missing out), and **functional outcomes** (such as academic or work performance, mood, and fatigue).

Research Result and Discussion

From the reviewed literature, several consistent patterns emerge that shed light on how TikTok and similar short-form video platforms influence sleep, cognition, and daily functioning among adolescents and young adults. The findings converge across various study designs, including cross-sectional surveys, mediation models, and emerging experimental work, pointing to a complex interplay between behavioral engagement, psychological mechanisms, and health outcomes.

4.1 TikTok Usage and Sleep Disruption

Across numerous studies, a robust association has been identified between increased short-form video consumption—particularly during evening and nighttime hours—and disrupted sleep patterns. Frequent TikTok users tend to experience delayed sleep onset, shorter total sleep duration, and poorer subjective sleep quality (Gupta & Sharma, 2021; Zhao et al., 2022). The

“endless scroll” and personalized content algorithms perpetuate prolonged engagement, making it difficult for users to disengage before bedtime. While direct experimental evidence remains limited, observational and mediation analyses have consistently shown that heavier nighttime TikTok use predicts sleep delay and daytime fatigue. Moreover, exposure to blue light emitted from screens suppresses melatonin production, further compounding the physiological basis for delayed sleep (Cain & Gradisar, 2010). These findings underscore the cumulative effect of behavioral, cognitive, and physiological mechanisms linking excessive TikTok use with sleep disruption.

4.2 Time Perception Distortion

A growing body of experimental research highlights distortions in time perception among frequent users of short-form video platforms. Studies suggest that TikTok’s design—rapid content turnover, algorithmic novelty, and unpredictable reinforcement—induces a “time loss” effect, wherein users underestimate the duration spent on the platform (Zhang & Leung, 2023). For instance, participants engaged in short-form video viewing sessions often overestimated the speed of time passage and subsequently misjudged time in unrelated tasks. This temporal distortion not only leads to extended platform use but also contributes to bedtime procrastination, as users perceive “just a few more minutes” that unintentionally stretch into hours. The phenomenon is consistent with the concept of temporal myopia, wherein immediate gratification overshadows long-term goals such as rest or productivity (Steel & König, 2006).

4.3 Psychological Mediators and Moderators

The psychological processes underlying TikTok overuse are multifaceted. Several studies have identified Fear of Missing Out (FOMO), social anxiety, low self-control, boredom proneness, and attentional control deficits as key mediators or moderators in the relationship between media use and sleep or daily functioning outcomes (Przybylski et al., 2013; Wegmann et al., 2017; Watanabe et al., 2022). For instance, individuals high in FOMO are more likely to engage in late-night TikTok browsing to stay socially connected or updated, thereby compromising sleep routines. Similarly, those with reduced self-regulation or high boredom proneness tend to use TikTok as a coping mechanism for emotional or cognitive under-stimulation, leading to compulsive use. Over time, this behavior reinforces habitual checking and emotional dependence, which further exacerbates sleep and attentional problems.

4.4 Bedtime Procrastination and Self-Regulatory Failures

A recurring behavioral mechanism across studies is bedtime procrastination, defined as the voluntary delay of going to bed despite the absence of external reasons (Kroese et al., 2014). Research indicates that bedtime procrastination mediates the link between TikTok use and poor sleep quality, suggesting that self-regulatory failure, rather than mere screen time, predicts sleep loss. Young users often report the inability to disengage from content due to algorithmic reinforcement loops and dopaminergic reward cycles associated with social media use (Montag et al., 2021). This reflects a broader issue of digital self-regulation, where short-term hedonic engagement overrides long-term restorative needs. Importantly, this phenomenon also overlaps with generalized procrastination behaviors, such as academic or task delay, indicating that TikTok use may generalize into other domains of self-control.

4.5 Downstream Effects on Well-Being and Daily Functioning

Ultimately, the interplay of disrupted sleep, time distortion, and self-regulatory failure has tangible consequences for psychological well-being and daily functioning. Studies consistently report that poor sleep quality and delayed bedtimes correlate with increased daytime fatigue, lower academic performance, impaired concentration, and elevated symptoms of anxiety and

depression (Li et al., 2022; Sun et al., 2023). Furthermore, compulsive TikTok use has been linked with emotional dysregulation, irritability, and daytime sleepiness, creating a feedback loop that further encourages avoidance and late-night use. Beyond sleep, the addictive design of short-form video platforms also contributes to non-sleep-specific functional impairments, including academic procrastination and deficits in cognitive control (Zheng et al., 2022). These findings highlight that TikTok's influence extends beyond entertainment—it affects executive functioning, emotional health, and daily performance, representing a growing digital well-being concern

Conclusion, Research Implications and Research Significant

The accumulated evidence suggests that TikTok and short-form video usage—especially frequent, late-night, or self-control-deficient use—can significantly disrupt sleep, warp perception of time, and degrade daytime functioning among adolescents and young adults. While the literature is growing, much remains to be clarified about causality, mediating mechanisms, and boundary conditions. Given the prevalence of such media use, the potential public health costs are considerable. Empirical work ought to prioritize rigorous methods and test interventions. Raising digital literacy and incorporating wellbeing-oriented design features may help mitigate these hidden costs.

The findings from this review underscore the multifaceted impact of TikTok and short-form video use on young individuals' sleep, time perception, and daily functioning. These insights carry important implications for multiple stakeholders, including users, parents, educators, platform designers, policymakers, and public health practitioners. A collaborative, multi-level approach is needed to foster healthier digital behaviors and mitigate the risks associated with compulsive media engagement.

5.1 For Users, Parents, and Educators

For individuals, particularly adolescents and young adults, **awareness** of the ease with which time can be lost on TikTok—especially during nighttime use—is a crucial first step toward behavioral change. Users should be encouraged to cultivate **digital mindfulness** and **self-regulation strategies**, such as establishing consistent bedtime routines, setting personal screen-time limits, and activating device-based curfews before sleep. Parents and educators play a vital role in promoting **digital hygiene** by modeling balanced media use, discussing the psychological effects of excessive scrolling, and guiding youths toward alternative relaxation or social connection methods that do not interfere with rest. Integrating discussions on **sleep health and self-control** into school-based programs may further strengthen early awareness and prevention.

5.2 For Platform Designers and Policy Makers

From a technological and policy perspective, social media platforms and regulatory bodies have a shared responsibility to create **healthier digital environments**. Platform designers could incorporate **built-in well-being tools**, such as gentle reminders when users have been scrolling late at night, **auto-pause features**, **night-time dimming modes**, or **limitations on autoplay functions** after certain hours. These mechanisms may help reduce compulsive engagement and support healthier usage patterns. Additionally, **algorithmic transparency** should be enhanced to allow users to better understand how content recommendations influence their viewing behavior. Policymakers could consider implementing **age-based or time-based gating systems**, ensuring that younger users receive added protections during critical hours for rest and academic functioning.

5.3 For Health and Public Health Domains

In the realm of health and public health, professionals should begin to recognize **TikTok and short-form video overuse** as a potential **risk factor in sleep disturbances, anxiety, and academic difficulties** among adolescents and young adults. Routine health screenings or psychological assessments for sleep complaints should include questions regarding social media use patterns, especially during late hours. Moreover, public health agencies and educational institutions could design **digital well-being programs** aimed at promoting awareness of sleep hygiene, time management, and emotional regulation in the digital age. Public health campaigns can further disseminate targeted messages about the **hidden costs of “five more minutes” online**, emphasizing the importance of balance, rest, and intentional use of digital technology.

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