

# Effect of Short-Form Video Consumption Before Bedtime on Sleep Duration and Daytime Fatigue Among Young Adults: A Structured Evidence Synthesis

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## ABSTRACT

**Background:** Short-form video platforms combine brief audiovisual content, algorithmic personalization, autoplay and continuous vertical scrolling. These design features can extend use beyond intended stopping points, particularly at bedtime, when time displacement and cognitive arousal may directly compete with sleep. **Objective:** To synthesize evidence available on the relationship between pre-bedtime short-form video consumption, sleep duration and daytime fatigue among young adults, and to identify the behavioral pathways most relevant to intervention. **Methods:** A structured evidence synthesis was conducted using peer-reviewed studies of TikTok, Douyin and comparable short-form video use, supplemented by high-quality objective studies of in-bed screen exposure and experimental smartphone restriction where the mechanism was directly transferable. University and young-adult populations were prioritized. Because exposure definitions, sleep measures and fatigue outcomes were heterogeneous, no pooled effect estimate was calculated. **Results:** Short-form video addiction and loss-of-control use were repeatedly associated with poorer sleep-related outcomes. In 337 college students, short-video addiction predicted worse Pittsburgh Sleep Quality Index scores ( $\beta=0.458$ ,  $p<0.001$ ), with physical activity and procrastination accounting for part of the association. A two-sample TikTok study found that self-control failure was more strongly associated with bedtime procrastination than general TikTok-use frequency, including among 222 university students. Among 3,392 adult Douyin users, approximately 82% reported bedtime use; insomnia was strongly linked to this behavior and mediated associations with depression, anxiety, loneliness and well-being. Objective evidence from a repeated-measures JAMA Pediatrics cohort showed that each additional 10 minutes of in-bed screen use was associated with 3 minutes less total sleep, and interactive use with 9 minutes less sleep, supporting timing and engagement intensity as important mechanisms. In 2025, short-form video frequency, duration and scroll immersion were also associated with greater cognitive fatigue. **Conclusion:** The evidence supports a timing-sensitive pathway in which immersive or poorly controlled short-form video use at bedtime promotes bedtime procrastination and arousal, reduces available sleep opportunity, and may contribute to next-day fatigue. Interventions should focus on the in-bed period, stopping control, notifications and objective measurement of both sleep and platform use rather than on total daily screen time alone.

**Keywords:** short-form video; TikTok; Douyin; sleep duration; daytime fatigue; bedtime procrastination; scroll immersion; young adults; sleep quality

## 1. Introduction

Short-form video has become a distinct form of digital media consumption rather than simply another category of social networking. Platforms such as TikTok, Douyin, Instagram Reels and YouTube Shorts deliver an effectively continuous sequence of brief audiovisual clips selected through personalized recommendation systems. The user is required to make very few deliberate decisions to continue consumption: a swipe produces another novel stimulus, and there is no natural endpoint comparable with the end of a television episode, article or film.

This architecture is especially relevant to sleep. Sleep depends partly on the protection of a finite period of time during which

competing activities must cease. Media use that begins shortly before bed can become problematic when the user continues beyond the intended stopping time, moves the device into bed, or remains cognitively and emotionally engaged when sleep should begin. Short-form video may intensify each of these processes through rapid novelty, reward uncertainty and immersive scrolling.

The distinction between general use and failed self-control is important. Międzobrodzka et al. examined both ordinary TikTok use and TikTok self-control failure among adolescents and university students [1]. In the university sample, self-control failure was more strongly associated with bedtime procrastination than general duration or frequency of TikTok

use. This suggests that the ability to stop may be more proximal to sleep behavior than total exposure alone.

College-student evidence similarly links problematic short-video use with sleep disturbance. Zhao and Kou reported that short-video addiction predicted poorer sleep-quality scores among 337 university students and that physical activity and procrastination partially mediated the association [2]. In a larger adult sample, Luo et al. found bedtime Douyin use to be extremely common and closely intertwined with insomnia and mental-health characteristics [3].

The downstream consequence of reduced or disrupted sleep is not limited to subjective sleep quality. Short sleep can impair attention, mood, learning and daytime functioning, while prolonged immersive short-video consumption may itself generate cognitive fatigue. Alruwaili's 2025 study directly associated greater short-form video frequency and duration, together with scroll immersion, with perceived cognitive fatigue [8].

The present review therefore focused specifically on the period before sleep. Its aims were to determine whether short-form video exposure at bedtime is more informative than general use, identify the pathways linking use with sleep duration, examine the evidence connecting short-form video behavior with fatigue, and develop an evidence-informed intervention framework for young adults.

## 2. Methods

This manuscript used a structured evidence-synthesis design. Peer-reviewed literature published on or before 31 December 2025 was considered. University students and young adults were the primary population of interest. Adolescent and broader adult studies were included when they directly measured bedtime screen behavior or provided objective mechanistic evidence applicable to young-adult sleep.

Search concepts combined short-form video, TikTok, Douyin, Reels, short-video addiction, bedtime use, nighttime use, bedtime procrastination, sleep quality, sleep duration, insomnia, daytime fatigue, cognitive fatigue, smartphone restriction and pre-sleep cognitive arousal. Priority was given to studies with validated sleep or addiction instruments, objective exposure or sleep measures, experimental or repeated-measures designs, and clearly reported multivariable or mediation analyses.

Evidence was eligible when it contributed to at least one component of the proposed pathway: short-form video exposure or addiction, loss of control or scroll immersion, bedtime procrastination or pre-sleep arousal, sleep timing or duration, sleep quality, or next-day/cognitive fatigue. Studies dealing only with marketing, consumer purchasing or creator behavior were excluded from the core synthesis.

Meta-analysis was not attempted because the exposure and outcome definitions differed materially. Some studies measured addiction scores, others duration or frequency, others nighttime-specific use or self-control failure. Sleep outcomes included Pittsburgh Sleep Quality Index scores, insomnia severity, objective actigraphy-derived sleep time and bedtime delay. Fatigue studies likewise measured perceived cognitive fatigue rather than a common next-day physiological-fatigue scale.

Results were therefore synthesized by pathway and evidentiary strength. Cross-sectional associations were interpreted as non-causal. Objective and longitudinal evidence was used to assess whether the timing and context of screen use plausibly precede shorter sleep. The paper deliberately distinguishes daytime fatigue inferred from sleep loss from fatigue directly measured in short-form-video users.

*The evidence-selection and analytical framework is summarised in Table 1.*

## 3. Results

The evidence consistently indicated that problematic or poorly controlled short-form video use is associated with sleep-related difficulty, but the strength of the association depends on what is measured. General frequency and duration showed weaker or less consistent relationships than bedtime-specific use, addiction, self-control failure and procrastination.

Zhao and Kou surveyed 337 college students aged 17 to 25 years [2]. Short-video addiction correlated with poorer sleep quality ( $r=0.456$ ) and significantly predicted Pittsburgh Sleep Quality Index scores after adjustment for age, sex and grade ( $\beta=0.458$ ,  $p<0.001$ ). Approximately 25.2% of participants met the study's threshold for poor sleep. Physical activity and procrastination independently mediated the association, with the total indirect pathway accounting for 15.07% of the overall effect.

Międzobrodzka et al. provided a more specific behavioral distinction by separating TikTok use from TikTok self-control failure [1]. Across an adolescent sample and a university sample of 222 students, self-control failure was consistently more strongly related to bedtime procrastination than general TikTok use. Among university students, the correlations with bedtime procrastination were 0.259 for self-control failure and 0.055 for general use. Direct associations with sleep quality were weaker, supporting the interpretation that bedtime procrastination may be a more proximal mechanism than global sleep-quality scores.

Luo et al. examined 3,392 adults who used Douyin for at least one hour daily [3]. Approximately 82% reported using Douyin at bedtime. Insomnia was significantly correlated with both the frequency and duration of bedtime use and mediated substantial portions of the relationships between bedtime Douyin use and depression, anxiety, loneliness, life satisfaction and well-being. These cross-sectional pathways also demonstrate the possibility of reverse causation: people with insomnia may turn to short-form video because they are already unable to sleep.

Jiang and Yoo examined 1,629 adolescents and found a positive correlation between short-form-video addiction and poorer sleep-quality scores ( $r=0.404$ ) [4]. Social anxiety accounted for 37.6% of the total modeled association. Although the population is younger than the target group of the present review, the findings support emotional arousal as a plausible mechanism linking problematic use to sleep disruption.

*The principal short-form-video studies informing the synthesis are summarised in Table 2.*

### 3.1 Timing is more important than broad presleep exposure

Evidence from objective screen measurement indicates that the location of screen use within the sleep opportunity matters. Brosnan et al. used wearable and bedroom cameras with actigraphy over 323 nights [5]. Screen exposure during the two hours before bedtime had little association with most sleep outcomes. Once participants were in bed, however, each additional 10 minutes of total screen use was associated with approximately 3 minutes less total sleep, and each additional 10 minutes of interactive in-bed use was associated with approximately 9 minutes less sleep.

Although that cohort consisted of younger adolescents rather than young adults, its within-person objective design provides strong mechanistic evidence against a simplistic rule that all screen exposure before bed has the same effect. Short-form video is typically interactive or semi-interactive, requires

repeated swiping and provides continuous novelty. It therefore resembles the higher-engagement category more closely than passive television.

Experimental evidence supports the same timing principle. Tu et al. examined Chinese undergraduates with problematic smartphone use and found that restricting smartphone use while in bed improved sleep quality through reductions in pre-sleep cognitive arousal [6]. The intervention did not require elimination of smartphone use across the entire day; it targeted the interval in which device engagement competes most directly with sleep.

*The mechanistic pathways between bedtime short-form video use and next-day fatigue are summarised in Table 3.*

*The evidence-informed pathway linking bedtime short-form video use with sleep loss and daytime fatigue is illustrated in Figure 1.*

### 3.2 Daytime fatigue

Direct evidence on daytime fatigue is less mature than the sleep literature. Many short-video studies focus on psychological symptoms, attention, memory or academic outcomes rather than next-day somatic fatigue. It would therefore be inappropriate to infer a precise dose-response relationship between bedtime TikTok minutes and daytime fatigue from the current literature.

Nevertheless, two evidence streams converge. First, reduced sleep duration is an established pathway to next-day sleepiness and impaired cognitive endurance. The objective in-bed screen study demonstrates a direct reduction in total sleep time as in-bed exposure increases [5]. Second, Alruwaili's 2025 short-form-video study directly linked increased use and scroll immersion with perceived cognitive fatigue [8]. Average daily screen time moderated the use-fatigue relationship, suggesting that fatigue may reflect cumulative exposure as well as sleep disruption.

This distinction matters methodologically. A future study should separately measure general fatigue, daytime sleepiness and cognitive fatigue. The first reflects broad exhaustion, the second propensity to fall asleep, and the third the perceived difficulty of sustaining mental effort. Short-form video could affect all three through partially different mechanisms.

## 4. Discussion

The principal conclusion of this synthesis is that bedtime short-form video consumption should not be treated as a simple extension of daily screen-time research. The evidence increasingly points toward three more specific characteristics: when the use occurs, whether the user can stop when intended, and how immersive the interaction becomes.

This helps explain why studies of total TikTok use can produce small or inconsistent direct associations with sleep. A student may spend one hour viewing short videos in the afternoon without sacrificing sleep. Another may intend to watch for ten minutes after entering bed and continue scrolling for an hour. Total daily duration can be similar while sleep consequences differ substantially.

Bedtime procrastination is therefore one of the strongest candidate mediators. Międzobrodzka et al. found that TikTok self-control failure was more strongly related to bedtime procrastination than ordinary use [1], while Zhao and Kou showed procrastination to mediate part of the association between short-video addiction and poor sleep [2]. This convergent evidence suggests that interventions should target stopping behavior, not merely awareness that sleep is important.

Pre-sleep cognitive arousal provides a second pathway. Short videos are optimized for rapid attentional capture, emotional salience and novelty. A user who is physically in bed may remain cognitively activated by a sequence of unrelated, high-salience stimuli. Tu et al.'s smartphone-restriction study demonstrates that reducing in-bed use can improve sleep through reduced pre-sleep arousal [6]. Although the intervention was not TikTok-specific, the mechanism is highly transferable.

The evidence also warns against assuming one-way causation. Luo et al. found insomnia to mediate associations between mental-health factors and bedtime Douyin use [3]. This implies a feedback loop in which insomnia increases the opportunity to use short-form video, which can then prolong wakefulness. Cross-sectional associations between short-video addiction and sleep quality may therefore partly reflect reciprocal reinforcement.

Daytime fatigue should be examined as more than a secondary symptom. Short sleep is one plausible contributor, but short-form video consumption may impose an additional attentional burden. Alruwaili's findings indicate that frequent, prolonged and immersive short-form engagement predicts cognitive fatigue even outside a sleep-focused model [8]. A young adult who scrolls late into the night may therefore experience both reduced physiological recovery and cumulative attentional exhaustion.

The most useful practical implication is targeted rather than absolutist. Objective research suggests that broad bans on all screen use for one or two hours before bed may be unrealistic and may not correspond closely to measured sleep effects [5]. A more defensible intervention is to protect the period after getting into bed, disable autoplay or notifications where possible, create an explicit stopping cue, and move the device beyond immediate reach when sleep is intended.

Universities can incorporate this message into sleep-health programs without framing short-form video as inherently pathological. The risk appears highest when use becomes automatic, conflicts with planned sleep, or is used to cope with insomnia and distress. This distinction may improve adherence because it focuses on behavior students can observe and change.

*The evidence-informed intervention and future-research framework is presented in Table 4.*

*The targeted framework for reducing sleep-related harms from short-form video use is illustrated in Figure 2.*

### Strengths and Limitations

The strength of this review is its focus on bedtime-specific short-form video behavior rather than treating all screen exposure as equivalent. It integrates short-video addiction research with objective sleep measurement, smartphone-restriction evidence and emerging fatigue research and clearly distinguishes direct findings from mechanistic inference.

The main limitation is that the evidence base remains dominated by cross-sectional studies and self-report. Few studies objectively recorded short-form video sessions and sleep in the same young-adult participants. Definitions of short-video addiction and problematic use vary, and several relevant studies involve adolescents rather than university-age adults. Direct measurements of next-day fatigue are especially limited. The review therefore supports a plausible pathway but not a precise causal dose-response estimate.

### Future Research

Future studies should combine smartphone application logs with actigraphy and next-morning fatigue measures. The most informative design would record the exact timing of TikTok,

Reels or Shorts use relative to bedtime rather than relying on total daily screen time. Within-person analyses could determine whether nights with longer short-form sessions are followed by shorter sleep in the same individual.

Experimental studies should separately manipulate duration and loss of control. Participants could be randomized to unrestricted use, a fixed stopping time, or an in-bed restriction condition. Measuring bedtime procrastination, cognitive arousal, objective sleep duration and next-day cognitive fatigue would allow direct testing of the pathway proposed in this review.

## Conclusion

Evidence available through 2025 indicates that problematic and bedtime-specific short-form video use is associated with poorer sleep-related outcomes, while the strongest mechanistic signal concerns loss of control and bedtime procrastination rather than total daily viewing alone. Objective screen research shows that use after entering bed can reduce total sleep time, and experimental smartphone restriction demonstrates that reducing in-bed use can improve sleep through lower pre-sleep cognitive arousal. Emerging short-form-video research also links frequent and immersive scrolling with cognitive fatigue. Together, these findings support a pathway in which pre-bedtime short-form video use delays disengagement, reduces available sleep opportunity and contributes to next-day fatigue. The most defensible intervention is therefore targeted protection of the in-bed sleep window, combined with strategies that interrupt automatic scrolling and improve stopping control.

## Declarations

**Funding:** No external funding was received for this structured evidence synthesis.

**Conflict of Interest:** The authors declare no conflict of interest.

**Ethical Approval:** Not applicable because no new human-participant data were collected.

**Consent to Participate:** Not applicable.

**Data Availability:** All quantitative findings reported in this manuscript were obtained from the cited peer-reviewed studies available through 31 December 2025.

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Table 1. Evidence-selection and analytical framework

| Domain             | Included evidence                                                              | Excluded evidence                                     | Analytical purpose                                       |
|--------------------|--------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------|
| Publication period | Peer-reviewed through 31 December 2025                                         | 2026 onward                                           | Chronological fit for Volume 5                           |
| Population         | University students, young adults; mechanistically relevant adolescents/adults | Populations without transferable bedtime-use evidence | Maintains target relevance                               |
| Exposure           | TikTok, Douyin, short-video addiction, bedtime use, scroll immersion           | Non-video social media without mechanistic relevance  | Focuses on short-form behavior                           |
| Sleep outcome      | Duration, timing, latency, quality, insomnia, bedtime procrastination          | Outcomes unrelated to sleep                           | Maps the sleep pathway                                   |
| Fatigue outcome    | Daytime or cognitive fatigue, reduced endurance                                | Fatigue unrelated to digital behavior or sleep        | Addresses daytime consequence                            |
| Synthesis          | Comparative narrative by mechanism                                             | Pooled effect size                                    | Avoids false comparability across heterogeneous measures |

**Table 2. Principal short-form-video studies informing the synthesis**

| Study                          | Population/design                           | Exposure                                            | Sleep/fatigue outcome                     | Principal finding                                                                               | Interpretation                                            |
|--------------------------------|---------------------------------------------|-----------------------------------------------------|-------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Międzobrodzka et al., 2024 [1] | 249 adolescents and 222 university students | TikTok use vs self-control failure                  | Bedtime procrastination and sleep quality | Self-control failure was more strongly related to bedtime procrastination than general use      | Loss of control is more proximal than raw frequency       |
| Zhao & Kou, 2024 [2]           | 337 college students                        | Short-video addiction                               | PSQI sleep quality                        | Addiction predicted worse sleep; physical activity and procrastination partly mediated          | Supports behavioral-displacement pathway                  |
| Luo et al., 2024 [3]           | 3,392 adult Douyin users                    | Frequency/duration of bedtime Douyin use            | Insomnia                                  | About 82% reported bedtime use; insomnia was strongly embedded in the pathway                   | Shows prevalence and bidirectional sleep-use relationship |
| Jiang & Yoo, 2024 [4]          | 1,629 adolescents                           | Short-form-video addiction                          | Sleep quality                             | $r=0.404$ ; social anxiety mediated 37.6% of modeled total effect                               | Supports emotional-arousal pathway                        |
| Zhang et al., 2022 [7]         | Chinese TikTok users                        | Nighttime TikTok behavior and physical activity     | Sleep quality and bedtime delay           | Physical activity related to sleep partly through TikTok-related bedtime delay                  | Connects short-video behavior with timing                 |
| Alruwaili, 2025 [8]            | Saudi social-media users                    | Short-form frequency, duration and scroll immersion | Cognitive fatigue                         | Greater use and immersion predicted greater fatigue; screen time moderated fatigue relationship | Direct fatigue evidence                                   |

**Table 3. Mechanistic pathways between bedtime short-form video use and next-day fatigue**

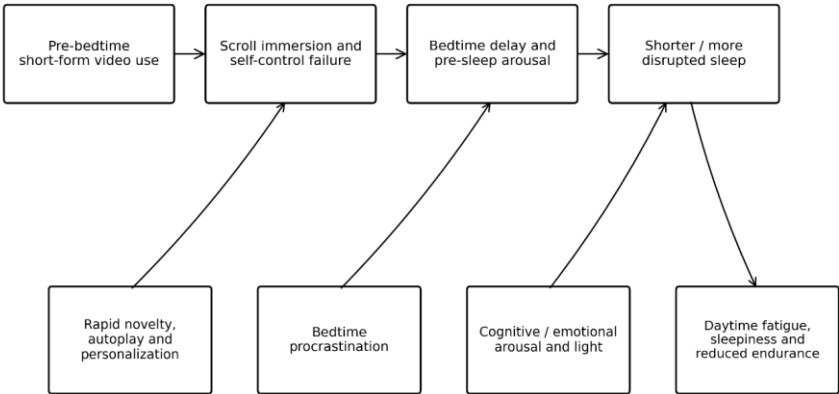
| Mechanism                 | Short-form-video characteristic                             | Immediate consequence                        | Sleep/fatigue consequence                        | Evidence base |
|---------------------------|-------------------------------------------------------------|----------------------------------------------|--------------------------------------------------|---------------|
| Time displacement         | Continuous feed without natural stopping point              | Later attempt to sleep                       | Reduced sleep opportunity and next-day tiredness | [1,2,5,7]     |
| Bedtime procrastination   | Self-control failure and immersive scrolling                | Planned bedtime is repeatedly deferred       | Shorter sleep and irregular timing               | [1,2]         |
| Cognitive arousal         | Rapid novelty, emotional content and interaction            | Difficulty disengaging mentally              | Delayed sleep onset and poorer perceived sleep   | [4,6]         |
| Insomnia-use feedback     | Awake users use short video to cope with inability to sleep | Bedtime use becomes reinforced               | Bidirectional persistence of insomnia and use    | [3]           |
| Light exposure            | Illuminated handheld screen close to the eyes               | Circadian and alerting effects               | Potential delay in sleep propensity              | [12]          |
| Scroll-related fatigue    | Rapid attentional switching and habitual immersion          | Cognitive exhaustion independent of sleep    | Greater daytime cognitive fatigue                | [8]           |
| Reduced physical activity | High problematic use displaces active behavior              | Lower sleep-promoting activity in some users | Indirect deterioration in sleep quality          | [2,7]         |

**Table 4. Evidence-informed intervention and future-research framework**

| Target           | Recommended approach                                          | Primary mechanism                | Measurement                                            | Expected benefit                       | Research priority                         |
|------------------|---------------------------------------------------------------|----------------------------------|--------------------------------------------------------|----------------------------------------|-------------------------------------------|
| In-bed use       | Stop short-form video before or immediately upon entering bed | Protect sleep opportunity        | Device logs plus bedtime diary                         | Earlier shut-eye time and longer sleep | Randomized restriction trial              |
| Loss of control  | Use planned stopping cues or app timers                       | Reduce bedtime procrastination   | Self-control-failure scale; actual session termination | Less unintended scrolling              | Test behavioral prompts vs passive limits |
| Notifications    | Enable do-not-disturb and remove lock-screen prompts          | Reduce re-engagement and arousal | Notification logs                                      | Fewer nocturnal checks                 | Component-specific experiment             |
| Scroll immersion | Interrupt infinite-feed sessions with friction                | Restore deliberate disengagement | Session length, swipe count, subjective immersion      | Lower cognitive fatigue                | Platform-level intervention study         |
| Sleep outcome    | Use actigraphy where feasible                                 | Reduce recall bias               | Total sleep time, latency, wake after sleep onset      | More reliable causal estimates         | Intensive longitudinal design             |
| Fatigue outcome  | Separate sleepiness, general fatigue and cognitive fatigue    | Clarify downstream pathway       | Validated fatigue and sleepiness scales                | Mechanism-specific interpretation      | Next-day repeated assessment              |

Figure 1. Evidence-informed pathway linking bedtime short-form video use with sleep loss and daytime fatigue.

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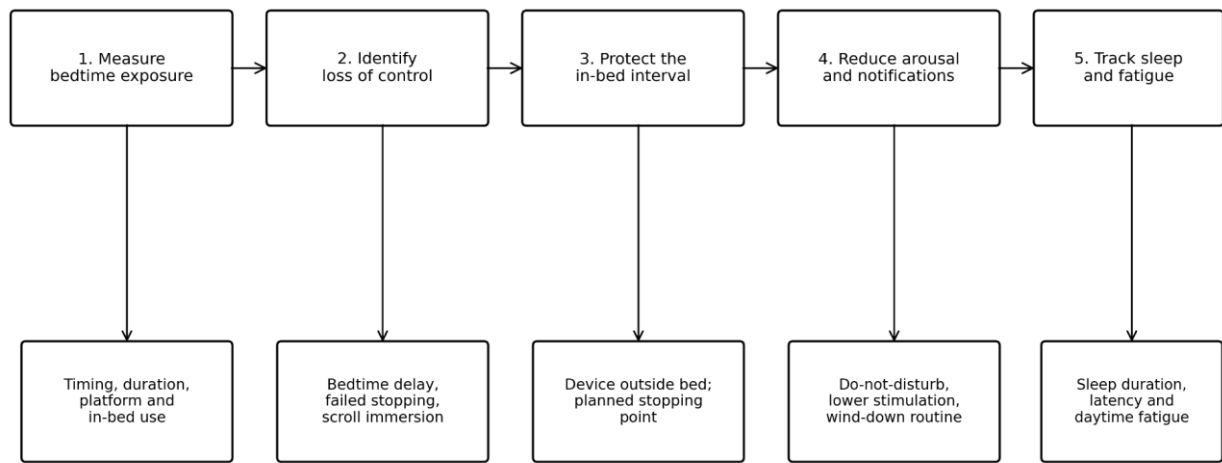
The evidence supports a pathway centered on timing and loss of control rather than total daily use alone; fatigue may arise through sleep loss and through prolonged immersive scrolling itself.

**Figure 1. Evidence-informed pathway linking bedtime short-form video use with sleep loss and daytime fatigue.**

*The evidence supports a pathway centered on timing and loss of control rather than total daily use alone; fatigue may arise through sleep loss and through prolonged immersive scrolling itself.*

Figure 2. Targeted framework for reducing sleep-related harms from short-form video use.

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Intervention target: reduce short-form video use after entering bed and interrupt automatic scrolling, rather than relying only on broad daily screen-time limits.

### Figure 2. Targeted framework for reducing sleep-related harms from short-form video use.

*Intervention target: reduce short-form video use after entering bed and interrupt automatic scrolling, rather than relying only on broad daily screen-time limits.*

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