DEVELOPMENT OF AN INTEGRATED CBT-MINDFULNESS MANUALIZED GROUP PROGRAM FOR SHORT-VIDEO ADDICTION AND SLEEP-RELATED DIFFICULTIES AMONG CHINESE JUNIOR HIGH-SCHOOL STUDENTS: PRELIMINARY FEASIBILITY STUDY

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ABSTRACT
Adolescent problematic short-video use and associated sleep-related difficulties constitute a growing public-health concern among Chinese youth. High rates of short-video consumption among junior-high-school students are accompanied by sleep insufficiency and emotion-regulation challenges linked to excessive digital exposure. Existing youth-targeted interventions are mostly either pure cognitive-behavioural approaches or standalone mindfulness training. Few culturally-adapted, brief manual-driven group programs simultaneously address maladaptive cognitive distortions and automatic scrolling habits that fuel the short-video-sleep vicious cycle. This paper reports the systematic development of a four-session manual-based psycho-educational group intervention integrating CBT and mindfulness for Chinese junior-high-school students, tailored for resource-limited off-campus tutoring contexts. The development process followed the 6SQuID framework and I-PACE model, including targeted literature synthesis, cultural adaptation, multidisciplinary expert consultation, and small-scale qualitative pilot testing with local adolescents. Expert and pilot feedback indicated satisfactory feasibility, cultural fit and participant acceptability within non-clinical educational settings. Core components target dysfunctional shor-video-related beliefs, impulsive scrolling urges, emotion-regulation vulnerabilities and pre-bed sleep-hygiene practices. As a non-clinical psycho-educational resource, the program is optimally facilitated by practitioners with professional psychological backgrounds. Front-line educators may implement this manual-guided intervention after dedicated brief training and under ongoing supervision from qualified mental-health specialists. This article presents program rationales, development workflows, revisions derived from expert and pilot feedback, study limitations, and multi-level directions for future formal empirical evaluation.

Keywords: CBT-Mindfulness, Manualized Group Intervention, Problematic Short-Video Use, Sleep Health, Junior High-School Students, Intervention Development, Psycho-Education
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INTRODUCTION

Early adolescence (ages 12-15, corresponding to Grade 7-9 junior high-school education in mainland China) constitutes a uniquely vulnerable developmental window. Neurodevelopmentally, the prefrontal cortex responsible for impulse control, executive function and delayed gratification remains under ongoing maturation, while the limbic reward system shows heightened sensitivity to novel digital stimuli. Socially, junior high-school students undergo rapid identity formation, peer-orientation intensifies, and peer-group shared culture is heavily mediated by short-video digital platforms. Short-video services bring accessible entertainment, peer conversation topics and informal knowledge-acquisition channels for millions of Chinese teenagers, yet pervasive problematic patterns of use also emerge as a well-documented side-effect of high digital penetration. Repeated pre-bed short-video consumption triggers physiological arousal and melatonin suppression, disrupting circadian rhythms and degrading sleep quality. Conversely, sleep deprivation further diminishes executive-control resources, rendering adolescents more susceptible to compulsive compensatory scrolling late at night and consolidating a stable self-reinforcing vicious cycle between short-video over-use and sleep impairment (Hu et al., 2021).

Beyond individual-level adolescent wellbeing, macro-level policy and institutional realities shape how these youth digital-health challenges are managed in China. National educational and health authorities have repeatedly issued official guidance calling for improved adolescent digital-literacy and sleep-health promotion, while recognising the uneven distribution of professional mental-health manpower across different educational contexts. Public junior high-schools have gradually expanded in-school psychological-counselling posts, yet staffing gaps persist. More critically, large numbers of adolescents spend substantial after-school time inside private off-campus tutoring and self-study institutions. Under current educational policies, these off-campus learning organisations undertake important supplementary educational functions, but very few employ full-time, professionally qualified school counsellors. Within such sites, teenagers finish supervised academic assignments and subsequently gain largely unsupervised access to smartphones, creating a notable regulatory vacuum for digital-media behaviour. In this real-world context, strict top-down prohibition-oriented management strategies such as blanket mobile-phone bans deliver only superficial short-term outcomes. Such restrictive rules frequently provoke adolescent psychological reactance, leading to covert, secretive phone usage rather than genuine internalised behavioural change, because prohibitive measures never modify the underlying cognitive-affective and habitual drivers behind problematic short-video consumption (King et al., 2017).

Against this practical background, theoretically-grounded psycho-educational group interventions become a promising alternative solution. It is important to draw a clear conceptual boundary between clinical psychotherapy and educational psycho-education. Clinical psychotherapy targets individuals with diagnosable mental-health disorders, requiring high-level clinical competency, risk assessment and therapeutic alliance building. By contrast, psycho-educational group work focuses on universal prevention and skill-building for general-population adolescents; it prioritises knowledge transfer, skill practice and peer mutual support, and is designed for implementation within ordinary educational settings by non-clinician educators after receiving appropriate basic training. This

distinction is highly practically meaningful for off-campus tutoring institutions that lack clinical mental-health personnel. Unfortunately, existing intervention resources suitable for such non-clinical educational contexts remain scarce. Many existing CBT or mindfulness-based digital-use interventions are designed for formal school-counselling rooms, require long-duration sessions, or assume high-level clinical facilitation competence (Wang et al., 2023).

The Interaction of Person-Affect-Cognition-Execution (I-PACE) theoretical framework for addictive digital-media behaviours provides a robust conceptual foundation for understanding adolescent short-video-related struggles (Brand et al., 2019). According to this model, problematic digital-media engagement originates from dynamic reciprocal interactions among personal predisposing traits, affective states, cognitive evaluations, and executive behavioural execution processes. Two change-ready modifiable mechanisms stand out for the adolescent short-video-sleep vicious-cycle phenomenon: maladaptive cognitive biases about the functions of short-video platforms, and highly automatised scrolling behavioural responses shaped by variable-ratio reward mechanisms embedded within short-video algorithm design. Interventions relying solely on cognitive-behavioural techniques can effectively identify and challenge irrational beliefs, yet possess limited tools for de-entrenching deeply learned unconscious habitual behaviours. Mindfulness-centred practice improves meta-cognitive impulse awareness but often lacks systematic cognitive-restructuring modules targeting adolescents' distorted appraisals of digital-media functions (Li et al., 2023). Therefore, integrating CBT and mindfulness techniques may generate synergistic intervention effects by simultaneously addressing cognitive-level distortions and automatic behavioural-level habits that fuel the vicious cycle. Even so, condensed, culturally-localised, manual-standardised group interventions combining these two therapeutic strands are rarely developed specifically for Chinese junior-high-school students, and particularly for resource-constrained off-campus educational environments.

Given the above contextual gaps and theoretical reasoning, this development project pursues two clear study objectives. First, to systematically develop a four-session manual-based psycho-educational group intervention integrating CBT and mindfulness skills, culturally customised for Chinese junior high-school students and technically suitable for delivery inside off-campus tutoring-institution contexts. Second, to transparently document the complete program-development workflow, multi-source expert evaluation feedback, qualitative pilot-testing participant experiences, and iterative revision history, establishing a complete documented foundation that can support subsequent formal efficacy-evaluation empirical research.

Steps in the Development of the Integrated CBT-Mindfulness Program

The full developmental lifecycle for this manualised group intervention strictly followed the well-validated 6SQuID framework for complex behavioural intervention development (Wight et al., 2016). Each sequential developmental stage guaranteed that the intervention was theoretically well-grounded, iteratively culturally-adapted to local adolescent lived realities, practically implementable within time-limited educational timetables, and preliminarily assessed for participant acceptability before any formal outcome-evaluation research is undertaken. Every revision produced during expert review and pilot-testing phases was

documented within project development archives, to support future replication and reporting transparency. The full developmental sequence is visually summarised in Figure 1.

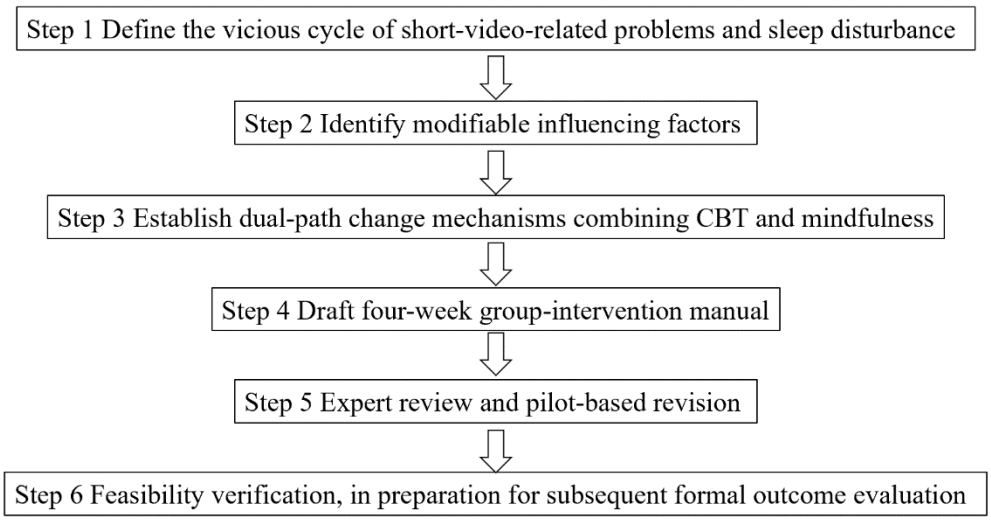


Figure 1 Research pathway for the development and evaluation of the integrated CBT-mindfulness group program

Note: Adapted from the author's unpublished master thesis (2026). Steps: Step 1 Define the vicious cycle of short-video-related problems and sleep disturbance; Step 2 Identify modifiable influencing factors; Step 3 Establish dual-path change mechanisms combining CBT and mindfulness; Step 4 Draft four-week group-intervention manual; Step 5 Expert review and pilot-based revision; Step 6 Feasibility verification, in preparation for subsequent formal outcome evaluation.

LITERATURE REVIEW

The vicious cycle linking problematic short-video use and sleep-related difficulties among Chinese adolescents

Problematic short-video consumption and sleep-quality deterioration constitute mutually reinforcing risk processes for early-adolescent populations. On the physiological dimension, screen-emitted blue light suppresses endogenous melatonin secretion, while the fast-rhythm, high-arousal short-video content maintains sustained central-nervous-system activation close to bedtime (Exelmans & Van den Bulck, 2017). On the psychological level, large numbers of Chinese junior high-school students resort to short-video platforms as a maladaptive emotion-regulation coping outlet for academic pressure, interpersonal frustration, boredom and negative mood states (Elhai et al., 2020). Social-media-driven fear-of-missing-out psychology further drives compulsive nocturnal phone-checking behaviours. Sleep loss generated by excessive late-night scrolling erodes prefrontal-cortex-dependent self-regulatory resources. Fatigued adolescents then become more prone to turn to short-video platforms as low-effort emotional escape, closing the self-amplifying feedback loop (Liu et al., 2023).

Existing domestic scholarly literature contains abundant cross-sectional correlational studies documenting statistical associations between short-video-use severity and adolescent sleep-quality impairment. Nevertheless, theory-driven intervention-development research specifically targeting this bidirectional vicious cycle remains comparatively scarce. Many existing publications stay within descriptive epidemiological investigation rather than

developing deployable, context-adapted practical intervention resources usable within everyday educational settings. A large proportion of existing intervention research concentrates on university-student samples, while junior-high-school-age early adolescents receive less research attention. This research gap highlights the practical necessity of building manualised group intervention resources that directly target the underlying maintaining psychological mechanisms of this vicious cycle, instead of merely reporting population-level correlational phenomena.

Theoretical framework: I-PACE model and dual-path intervention logic

The Interaction of Person-Affect-Cognition-Execution (I-PACE) model of problematic digital-media-use serves as the overarching theoretical foundation guiding the whole program-development process (Brand et al., 2019). Two modifiable intervention targets derived from this model are central for addressing adolescent short-video-related struggles: maladaptive cognitive bias and behavioural automaticity.

Maladaptive cognitive bias refers to distorted subjective belief systems held by adolescents. Representative examples include assumptions such as "short-videos constitute my main channel for relaxation", "I will be socially isolated if I miss online trending content shared among classmates". These internal cognitive-appraisal patterns operate as motivational triggers that push adolescents toward compulsive short-video consumption, corresponding to the Person-Affect-Cognition components within the I-PACE framework. Cognitive-behavioural-therapy-originated techniques including cognitive restructuring and the ABC model are incorporated within this intervention, guiding participants to identify, examine, question, and replace such dysfunctional thought patterns.

Behavioural automaticity describes unconscious, ingrained scrolling responses that operate outside full prefrontal executive monitoring. Infinite-scroll user interfaces and variable-ratio reward schedules built into mainstream short-video platforms heavily reinforce these habitual response patterns, mapping onto the Execution component in I-PACE. Mindfulness-practice components foster meta-cognitive awareness, constructing a mental "pause gap" between internal impulse generation and outward behavioural enactment. This allows adolescents to observe arising cravings without automatically acting upon them (Garland et al., 2014). It is critical to emphasise that the mindfulness modules within this program do not aim for forceful suppression of subjective urges; instead they cultivate participants' capacity to observe transient impulse experiences and exercise intentional behavioural choice.

Integrating CBT and mindfulness generates a dual-path intervention reasoning: CBT addresses *why* adolescents experience inner urges to consume short-video content, while mindfulness targets *how* compulsive scrolling behaviours unfold in daily lived contexts. Together they function to disrupt the self-reinforcing short-video-sleep vicious cycle. Figure 2 visualises this dual-path theoretical mechanism.

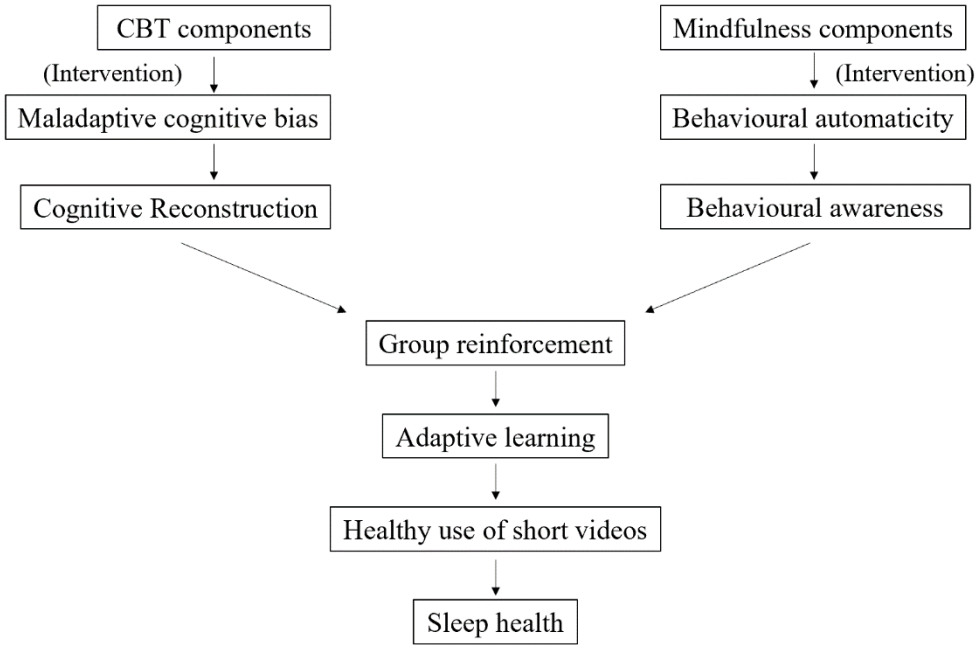


Figure 2 The dual-path mechanism model of integrated CBT-mindfulness intervention
Note: Adapted from the author's unpublished master thesis (2026). CBT components target maladaptive cognitive bias; mindfulness components target behavioural automaticity; group-intervention processes reinforce adaptive learning to support healthier digital-media habits and improved sleep-related functioning.

Known limitations of existing adolescent digital-behaviour intervention approaches

Traditional intervention strategies responding to adolescent digital-behaviour challenges carry well-recognised practical and theoretical constraints. Externally enforced screen-time restriction measures may temporarily decrease short-video exposure, yet they leave internal cognitive schemas and deep-rooted habitual response patterns untouched. Once external supervisory pressure disappears, relapse risks remain considerable (Domoff et al., 2019). Single-modality psychological interventions, whether purely CBT-oriented or purely mindfulness-oriented, only engage one side of these dual maintaining psychological mechanisms. Generic digital-literacy education frequently remains limited to superficial knowledge-popularisation content and fails to engage deep-seated cognitive-habit loops (Livingstone & Blum-Ross, 2020).

Moreover, many existing integrated psychological intervention protocols are originally designed for extended 8-12-week implementation cycles. Such long-duration schemes are difficult to accommodate inside the tightly-packed academic timetables of Chinese junior-high-school students or within resource-limited off-campus tutoring-institution contexts (Wang et al., 2023). Many imported western-origin intervention protocols also require substantial cultural adaptation before they can be meaningfully applied to Chinese adolescent populations. Direct mechanical translation of foreign activity scripts often yields metaphors, scenario examples and discussion prompts disconnected from local teenagers' peer culture, academic-pressure experiences and family-life realities (Barrera & Castro, 2006). Without deliberate cultural tailoring, imported intervention activities can feel alien to participants and lower overall program engagement and subjective relevance.

Group-based psycho-educational formats represent a viable solution for many of these constraints. Compared with one-on-one clinical counselling, group settings make use of peer-sharing dynamics, normalise youth digital-use-related struggles and reduce individual participant stigma, while enabling delivery by non-specialist educators working from standardised manuals. Nevertheless, few existing combined CBT-mindfulness group packages are condensed, manualised and locally adapted for Chinese junior-high-school students struggling with short-video-linked sleep-related problems. There exists clear practical demand for condensed, manual-standardised, culturally-localised group interventions balancing rigorous theoretical grounding and real-world implementability. This development-oriented project responds to these identified theoretical-practical research gaps.

Special challenges of psycho-educational intervention adaptation for Chinese off-campus educational contexts

Beyond general cultural-adaptation requirements, interventions intended for off-campus tutoring institutions face a unique set of contextual constraints that are less prominent inside formal public-school campuses. First, venue conditions are variable: most tutoring classrooms lack dedicated counselling rooms, so all group activities must be deliverable within ordinary general-purpose classrooms without specialised clinical equipment. Second, participant time is extremely scarce: adolescents arrive for tutoring after full-day formal school learning; intervention sessions cannot generate excessive additional homework burden, because teenagers already carry heavy academic-study workloads. Third, stakeholder expectations are mixed: institutional managers prioritise academic progress, parents may hold simplistic understandings of digital-behaviour management, and adolescent participants themselves may show variable initial motivation for joining mental-health-related group activities. Fourth, ethical-safety considerations gain extra importance: participants are minors in non-clinical settings, so comprehensive risk-identification, distress-response and referral pathways must be embedded within the manual, even though the program itself is non-clinical psycho-education rather than formal psychotherapy. These context-specific constraints guided every stage of subsequent intervention adaptation work.

ADAPTATION AND MODIFICATION OF THE FOUR-WEEK GROUP INTERVENTION

Built upon the 6SQuID development framework and I-PACE-derived dual-path theoretical logic, this four-session manualised psycho-educational group intervention underwent iterative cultural adaptation for Chinese junior high-school students aged 12-15, with explicit design consideration for off-campus tutoring-institution contextual constraints. Each session lasts for 50 minutes and is scheduled during after-school time so that regular academic study timetables remain undisturbed. All mindfulness-related exercises are condensed to 5-10 minutes in total duration, matching the limited sustained-attention capacity characteristic for this early-adolescent age bracket. The program consistently maintains a psycho-educational group format, not clinical psychotherapy; priority is assigned to practical, actionable skill-building instead of deep intra-psychic emotional processing. All activities are designed for ordinary classroom environments with zero requirement for specialised clinical hardware.

Cultural-adaptation guiding principles

All adaptation revisions followed established published frameworks for cultural adaptation of psychosocial interventions (Barrera & Castro, 2006). Three core guiding questions informed every activity modification decision: 1. Do the metaphors, scenarios and discussion prompts reflect real-world lived situations commonly experienced by Chinese junior-high-school-age adolescents? 2. Can this activity be smoothly implemented within standard tutoring-institution classroom spaces without special-purpose facilities? 3. Will associated homework and reflective assignments impose excessive extra study burden on participants already facing heavy academic-work demands?

Every activity, discussion prompt and written worksheet was repeatedly reviewed against these three evaluation criteria. Western-culture-specific scenario examples were systematically replaced with relatable local adolescent-life illustrations; homework tasks were strictly kept concise; no special hardware or supplies were introduced. Besides content adaptation, group-dynamic design was also considered: activities alternate between whole-group discussion, paired interaction, and individual written reflection, to accommodate adolescents with different levels of interpersonal-participation comfort. This mixed-activity arrangement avoids over-reliance on large-group public sharing, protecting more reserved participants from potential discomfort.

Table 1 provides comprehensive overview of the four-week intervention structure, presenting weekly themes, core objectives, principal activities, corresponding theoretical mechanisms, and explicit design rationale for each unit, following the table-design style demonstrated in sample reference intervention-development papers.

Table 1 Overview of four-week integrated CBT-Mindfulness group intervention

Week	Theme	Objective	Core Activities	Theoretical Mechanism	Rationale
1	Awareness and Reflection: Understanding short-video usage patterns and sleep triggers	Build safe inclusive group climate; recognise personal short-video use patterns; identify high-risk pre-bed situational triggers	Ice-breaking & collaborative group agreement; review self-recorded usage logs; jointly define pre-bed digital-use expectations	Heighten situational trigger awareness; lay preparatory groundwork for follow-up cognitive-restructuring work	Adolescents often lack clear meta-awareness of their own usage triggers; group agreement builds psychological safety within non-clinical educational-setting groups

2	Cognitive Correction: Addressing irrational beliefs around short-video use	Identify and examine maladaptive cognitions linked to short-video consumption; cultivate adaptive alternative thought responses	ABC cognitive-behavioural-model introduction; group discussion of locally-relevant adolescent irrational beliefs; individual written reflective practice	CBT cognitive restructuring targeting Person-Affect-Cognition components within I-PACE	Many teenagers do not consciously recognise automatic irrational thoughts driving scrolling behaviours; group discussion normalises such thought experiences and reduces participant self-blame
3	Mindfulness Practice: Managing impulsive urges for short-video scrolling	Acquire brief, usable mindfulness skills; master "Pause-Observe-Choose" coping response when scrolling impulses emerge	Guided breath-awareness practice; "impulses-as-passing-waves" metaphor; scenario-based paired role-play; simplified body-scan exercise	Mindfulness-based de-automatization targeting Execution component within I-PACE	Automatic scrolling impulses operate outside conscious deliberation; brief mindfulness fits adolescent limited attention spans and can be practiced at home without equipment
4	Consolidation and Transfer: Building sustainable healthy evening routines	Integrate learned intervention skills; develop personalised post-program coping plans; enhance self-efficacy for real-world daily-life application	Small-progress-experience group sharing; individual "healthy-evening-plan" worksheet; peer-support-exchange activity; group closing reflective summary	Consolidate cognitive-behavioural and mindfulness-derived skills; promote skill generalisation to everyday-life contexts	Skills learned inside group sessions will only generate benefit if participants can transfer them into real-world after-program evening-time scenarios

Note: Each session lasts 50 minutes. The program follows a psycho-educational group format and is not clinical psychotherapy.

Session-by-session thematic detailed description

Week 1 establishes a safe, inclusive, non-judgemental group atmosphere. Participants review self-documented short-vide-usage logs and reflect on frequently-encountered trigger scenarios, with special emphasis placed on the high-risk 60-minute time window right before bedtime. All group participants collaboratively draft a group agreement on shared digital-use expectations; the agreement emphasises respect, non-judgement and confidentiality for group discussion content rather than imposing strict external behavioural prohibitions. Homework assignments require participants to keep maintaining simplified usage logs together with brief sleep-tracking notes, without adding heavy writing workload.

Week 2 formally introduces the ABC cognitive-behavioural conceptual framework. Group members explore and discuss irrational belief patterns common among local Chinese adolescents, such as the thought "I must watch trending short-videos so I can keep up with my classmates' conversations". Participants complete in-session written-reflection exercises to identify their own automatic dysfunctional thoughts and draft corresponding adaptive alternative perspectives. Homework encourages participants to carry out casual self-observation for automatic thoughts triggered by short-video-related situational cues in day-to-day life, without requiring long written outputs.

Week 3 centres entirely on mindfulness-based impulse-regulation skill-building. Facilitators deliver guided breath-awareness practice and simplified body-scan practice of short duration. The accessible metaphor "impulses are like passing ocean waves" helps participants understand the transient, temporary nature of craving states, alongside the practical "brief-delay-before-acting" coping idea. Paired role-play activities simulate authentic high-risk everyday-life scenarios: for example lying in bed feeling bored and experiencing the subjective urge to open short-video applications. Participants repeatedly rehearse the "Pause-Observe-Choose" response pattern. Home-practice tasks assign short pre-bed mindfulness exercises that require no auxiliary equipment.

Week 4 focuses upon skill consolidation and real-world-context transfer of intervention learnings. Group members share observations of small-scale behavioural improvements they have personally noticed; emphasis is placed on small incremental progress rather than perfect outcomes. Each participant completes an individualised "healthy-evening-plan" worksheet covering pre-bed leisure-time activities, practical mobile-phone-placement arrangements, and concrete coping strategies for moments when strong scrolling impulses appear. Peer-support-exchange activities strengthen participant self-efficacy for applying learned skills after group sessions finish. Group-closing remarks summarise core take-away messages and make clear which external support resources are available for participants if further help is required.

Program delivery specifications and comprehensive ethical-risk considerations

Facilitators operate from a complete standardised intervention manual, containing full session scripts, activity guidance text, participant worksheet templates and implementation-fidelity checklists. Given that this program is psycho-educational rather than clinical treatment, comprehensive built-in risk-management protocols are embedded throughout the manual. If participants show obvious emotional distress or high-risk mental-health warning signals during group-session activities, facilitators are instructed to pause relevant ongoing exercises, provide basic supportive holding space, and initiate appropriate formal referral pathways

toward professional youth-mental-health services. All group-session activities deliberately avoid deep trauma-oriented emotional disclosure work. Formal written parental informed consent together with adolescent participant assent must be collected before any young person is permitted to join the group intervention. All group-discussion prompts are carefully worded to prevent participant public shaming; conversations centre on behavioural patterns rather than moral judgements about individual personal character. Facilitator guidance text also reminds educators to respect quieter participants and never force every group-member into mandatory public verbal sharing.

EXPERT CONSULTATION

Once the complete first draft of the intervention manual was fully finalised, structured formal expert-consultation work was conducted. Four multi-disciplinary specialists took part in the review process. Their professional backgrounds covered adolescent counselling psychology, digital-behaviour intervention academic research, front-line school-based youth-mental-health practical work, and group-counselling methodological expertise. Every expert received the complete intervention-manual manuscript plus a structured written feedback-evaluation form. Experts were invited to provide detailed commentary across four major evaluation domains: 1) Clarity of session-activity instructions and participant-worksheet wording; 2) Age-level suitability and cultural-context fit for Chinese junior-high-school-student populations; 3) Completeness of embedded risk-management, distress-response and ethical-safety procedures; 4) Practical operability of the whole program within non-clinical off-campus tutoring-institution environments.

Each expert submitted written feedback containing both general evaluative commentary and concrete item-specific revision suggestions. Representative key suggestions from expert reviewers included: shortening the total runtime of individual mindfulness-practice segments; adding more concrete real-life scenario examples reflecting ordinary Chinese adolescents' school-and-home daily-life realities; further simplifying homework-assignment requirements to lower participant time-consumption burden in view of heavy academic-study pressures; refining role-play-situation scripts so they better correspond to teenagers' typical after-school-life routines; supplementing clearer written guidance inside the manual for handling reserved participants who avoid public group-sharing.

All expert-proposed revision suggestions were systematically catalogued within project-development archives, with accompanying written notes explaining how each suggestion was addressed during revision cycles. Guided by these expert recommendations, researchers revised session-guide wording, adjusted activity-segment timing durations, rewrote role-play vignette content, optimised participant worksheet layouts, and added new facilitator-guidance paragraphs addressing quiet-participant management. After completing these rounds of revision informed by expert-consultation outputs, the program moved forward toward pilot-testing work.

PILOT TESTING AND PARTICIPANT FEEDBACK

Following revisions generated from expert-consultation outcomes, small-scale qualitative pilot-testing activities were carried out. Three volunteer junior-high-school-student participants were recruited; these pilot participants were completely separate from any future

formal-evaluation-study sample. For feasibility-assessment purposes, pilot-session activities adopted a condensed 30-minute format retaining all core activity components. The primary aims of pilot-testing were to examine overall activity comprehensibility, subjective participant acceptability, and real-world practical feasibility of program activities from the lived perspective of members belonging to the target user population. After each pilot-session concluded, researchers administered short semi-structured open-ended post-session interviews with every pilot participant. An independent observer with youth-work background also attended pilot sessions and kept written observational field notes. No quantitative-measurement instruments were deployed within this pilot-testing phase; all collected data remained qualitative feedback and observational records.

Qualitative Analysis Procedure

Thematic analysis following the six-phase framework proposed by Braun and Clarke was adopted to process interview transcripts and observer field notes. The analytical workflow included data anonymization, repeated reading for data familiarization, initial open coding, theme generation, theme review, as well as theme definition and labelling. Two researchers independently performed coding work. Any inconsistencies emerging during coding were resolved through group discussion to improve analytical trustworthiness. A full qualitative coding matrix documenting raw open codes, their corresponding assigned themes, and transcript excerpt locations was generated during analysis. This coding matrix, alongside de-identified interview transcripts and observer field notes, is securely stored within the project archive and can be made available upon reasonable formal request for transparency and secondary inspection purposes. Table 2 presents the extracted themes, corresponding codes and anonymized participant quotations.

Each post-session interview lasted approximately 8-12 minutes. All interviews were audio-recorded with adolescent assent and parental informed consent, then transcribed verbatim for subsequent qualitative coding; all personally identifiable information was removed during anonymisation.

It should be explicitly noted that this pilot work serves purely formative purposes for intervention revision rather than for formal outcome assessment. Given only three adolescent participants, thematic findings from Table 2 cannot be generalised to broader junior-high-school populations. This small-sample qualitative evidence is only used to detect practical defects within session activities, wording and transitional arrangements of the manual, providing directional evidence for iterative optimisation before large-scale empirical research.

Table 2 Session Feedback Thematic Analysis

Theme	Codes	Anonymized Participant Quotation
Comprehension of session materials	Worksheet readability, instruction clarity	P1: "Some items on the worksheet take me quite a while to read through."
Real-life relevance of scenarios	Relatability to adolescent daily life	P2: "The bedtime phone-scrolling example is exactly what I experience every day."
Homework and time	Task load, academic	P3: "The homework is acceptable, please

Theme	Codes	Anonymized Participant Quotation
burden	pressure	do not add more written assignments."
Session transition fluency	Activity switch, facilitator wording	P1: "Sometimes I felt confused when we switched from one activity to another."

Note: P1, P2, P3 = anonymized pilot participants. Quotations are extracted from semi-structured post-session feedback interviews. Minor grammatical edits were applied to selected excerpts for readability, while preserving original meaning.

The semi-structured interview guiding questions covered these main themes: How easy or difficult did you find understanding each activity? Which parts of the group-session felt most relevant for your own life? Which sections felt confusing or less meaningful? What adjustments would you suggest for these activities? Are the homework-related requirements reasonable in terms of your study-time burden?

Qualitative feedback aggregated from pilot-participant interviews and observer field-notes indicated that overall session themes were comprehensible, and participants perceived program content as relevant for their real-life short-video-use-related struggles. Pilot-participant subjective reports described increased self-awareness of their own impulsive scrolling urges and improved recognition of high-risk pre-bed situational contexts. Specific suggestions for program refinement are summarised in Table 2.

Synthesising outputs originating both from expert-consultation commentary and qualitative pilot-participant plus observer feedback, researchers further refined activity-prompt wording, streamlined participant worksheet content, fine-tuned timing distribution for each separate activity segment, supplemented two brand-new peer-pressure-themed role-play vignettes, and optimised interactivity transition text for facilitators. These cycles of iterative revision produced the final-version four-week manualised group-intervention program, ready for potential future formal efficacy-evaluation research. All pilot-interview transcripts and observer field-note records were preserved as qualitative documentation recording the full program-refinement history.

SUMMARY OF THE MODULE

This four-session manual-based psycho-educational group intervention is tailored for Chinese junior high-school students aged 12-15 who experience problematic short-video use and accompanying sleep-related difficulties, with practical optimisation for resource-constrained off-campus educational settings. Built upon the I-PACE model and developed following the 6SQuID framework for complex behavioural interventions, the program combines cognitive-behavioural restructuring and concise mindfulness exercises to target two key maintaining factors: maladaptive cognitive biases and automatic scrolling behavioural habits.

Delivered as four weekly 50-minute after-school sessions, the intervention follows a step-wise learning trajectory. It begins by raising situational awareness of short-video-related risk triggers, proceeds to cognitive restructuring of dysfunctional thought patterns, moves on to mindfulness-based impulse regulation skill-building, and ends with skill consolidation and transfer toward participants' real-world evening routines. Group discussion, experiential activities, brief individual reflection and light home practice are integrated across sessions.

Mindfulness components are kept short to match the limited attention capacity of early adolescents. As a non-clinical psycho-educational resource rather than formal psychotherapy, it prioritises practical skill acquisition instead of in-depth intra-psychic emotional processing. Several real-world contextual requirements from off-campus educational settings (described in Section 2.4) shaped module design, including classroom-environment limits and the need to keep participant homework burden low.

The iterative development cycle of this module includes targeted literature review, culturally informed adaptation of intervention activities, multidisciplinary expert consultation, and small-scale qualitative pilot testing with representatives from the target adolescent population. Revisions were implemented iteratively according to expert comments and end-user feedback, aiming to improve cultural fit, activity clarity and reduce participant burden. The complete facilitator package comprises session outlines, verbatim facilitator scripts, participant worksheets, implementation fidelity checklists, risk-management protocols and parental consent templates. While optimally delivered by practitioners with formal psychological backgrounds, this manualised toolkit allows front-line educators to facilitate group sessions after dedicated brief training and under ongoing supervision from qualified mental-health specialists.

The core objective of this manualised module is to help participating adolescents recognise personal short-video-use patterns, identify distorted cognitions behind compulsive scrolling urges, acquire mindfulness-rooted impulse-coping strategies, and build personalised pre-bed daily routines to mitigate the self-reinforcing cycle between excessive short-video consumption and sleep disturbance. It should be emphasised that the current manuscript documents only program development procedures, expert evaluation outputs and pilot-phase qualitative feedback. While this work provides foundational preparation for future formal empirical evaluation, efficacy-related conclusions cannot be drawn solely from development-phase data.

DISCUSSION

Qualitative insights drawn from expert consultation feedback and pilot-participant experiences collectively signal reasonable feasibility, cultural fit, and participant acceptability for the present CBT-mindfulness integrated psycho-educational group intervention. Expert reviewers highlighted practical adjustments around activity timing, homework burden, scenario realism, and handling quiet participants; pilot participants further illuminated comprehension barriers, scenario relatability, and concerns regarding additional academic workload. Taken together, these multi-source feedback underscore the importance of refining intervention materials for the contextual realities of Chinese junior-high-school students within off-campus tutoring environments. Although the manual can be delivered by front-line educators following brief training under specialist supervision, such delivery models carry notable on-the-ground implementation challenges. Real-world roll-out must address practical barriers including standardised pre-service facilitator training, sustained professional supervision, obtaining parental informed consent, and fitting four-session group activities into crowded after-school schedules.

Several important limitations specific to this program-development-only study should be explicitly acknowledged. Most notably, the current work comprises only intervention design,

expert appraisal and small-sample pilot qualitative feedback; formal quantitative outcome evaluation has not yet been performed. Therefore, definitive conclusions regarding the intervention's actual behavioural and sleep-related efficacy cannot be drawn, and robust empirical evidence must await dedicated future research. The small pilot sample cannot fully represent geographic and socioeconomic diversity among junior-high-school students. Since all adaptation and pilot work was completed with urban participants, transferability to rural adolescent populations remains untested. Furthermore, this module does not include structured family-oriented supplementary components, even though family digital-use norms and parental behavioural modelling exert considerable influence over adolescent short-video consumption. It also remains empirically open how different types of group facilitators and variation in implementation quality may shape participant experiences.

This study points to multiple layered avenues for future research. First, formal controlled-trial research is required to systematically test intervention effects on short-video-related symptoms and sleep-quality outcomes. Second, multi-site sampling covering both urban and rural adolescent subgroups will enable assessment of the manual-program's external validity and cross-context generalisability. Third, researchers may develop and test modified program versions with supplementary family-focused modules to examine whether family-level components improve overall intervention outcomes. Fourth, comparative implementation research can contrast outcomes between professionally trained counselling practitioners and regular educators receiving only brief manual-based training under specialist supervision, to generate evidence-based recommendations for facilitator-training standards and supervision requirements. Finally, further cultural-adaptation work may explore simplified or extended versions tailored for different adolescent age brackets or other special-population subgroups.

In summary, this development work yielded a culturally-adapted, manual-driven psycho-educational resource targeting short-video-related difficulties and sleep concerns among Chinese early adolescents. Iterative revisions informed by expert judgement and pilot-participant input improved its suitability for non-clinical educational settings. Rigorous formal empirical evaluation is essential before large-scale real-world dissemination can be responsibly considered.

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