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The Impact of Short-Form Video Addiction on Attention Control and Cognitive Regulation in Young Adults: A Systematic Review and Evidence Synthesis

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Abstract

Background: Short-form video addiction (SVA) among young adults raises significant concerns regarding executive dysfunction, yet its neurocognitive profile remains fragmented. Methods: Guided by PRISMA 2020 and SWiM frameworks, five databases were searched for empirical studies assessing SVA alongside attentional control or reward/decision-making outcomes in youth aged 10–35. Results: Six empirical studies (N = 3959) were synthesized. Higher SVA severity consistently correlated with poorer attentional and self regulatory control (r = -0,09 to -0,64). Go/No-go event-related potentials revealed attenuated No-go N2 amplitudes in addicted individuals, demonstrating impaired early response conflict monitoring. Concurrently, behavioral tasks and fNIRS neuroimaging indicated heightened risk-taking, shortened decision latencies, diminished loss aversion, and hyperactivation in the orbitofrontal cortex and frontopolar area during video-cue exposure and loss feedback. Conclusion: SVA impairs top-down attentional control and distorts reward processing through prefrontal dysregulation. Interventions must emphasize proactive self regulation and curb algorithmic cue reactivity.

Keywords **:** *Short-form Video Addiction, Attentional Control, Cognitive Regulation, Young Adults*

I. INTRODUCTION

Short-form video addiction (SVA), alternatively conceptualized as problematic use of short video (PUSV), has emerged as a pervasive public health and psychological concern. Propelled by algorithmic personalization, global mobile video applications have achieved billions of downloads, with leading platforms surpassing 150 million daily active users within their initial launch year. In China alone, short-video consumers have exceeded 1,02 billion individuals, encompassing more than 95% of the national internet demographic. University students and young adults represent a particularly susceptible cohort, with platform dependence and addiction rates reported between 21,63% and 31,99%. Clinically and behaviorally, this condition manifests through compulsive engagement, loss of usage control, distress upon withdrawal, and continued immersion despite adverse academic and psychosocial outcomes.

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Underlying the phenomenology of SVA is a complex neurocognitive disruption characterized by an imbalance between hyperactive reward sensitivity and compromised top-down cognitive control. Underlying the phenomenology of SVA is a complex neurocognitive disruption characterized by an imbalance between hyperactive reward sensitivity and compromised top-down cognitive control. Short-video platforms deliver brief, fragmented stimuli engineered to satisfy transient psychological needs, which frequently recruits the ventral tegmental area (VTA) and default mode network (DMN) to generate sustained motivational reinforcement. Over time, chronic engagement weakens prefrontal executive regulation. Electrophysiological evidence indicates that excessive users demonstrate diminished conflict monitoring during the early stages of response inhibition, indexed by attenuated No-go N2 event-related potentials (ERPs). Furthermore, functional neuroimaging reveals altered prefrontal hemodynamics: individuals displaying severe addiction tendencies exhibit abnormal activation within the orbitofrontal cortex (OFC), frontopolar area (FPA), and dorsolateral prefrontal cortex (DLPFC) when exposed to platform cues or loss related outcomes. Behaviorally, this prefrontal dysregulation translates into impaired attentional control, elevated distractibility, heightened risk taking propensity, diminished loss aversion, and pervasive academic procrastination.

Although empirical investigations have individually linked short-video overuse to deficits in attention, inhibitory control, and reward related decision making, the findings across behavioral, ERP, and hemodynamic paradigms remain fragmented. Existing systematic reviews have largely concentrated on general mental health morbidities such as anxiety and depression, leaving the precise cognitive architecture of SVA systematically unexamined. Therefore, this systematic review synthesizes current empirical and neurocognitive evidence to clarify how problematic short-form video consumption disrupts attentional control and reward processing among young adults, providing a consolidated framework to inform targeted cognitive and behavioral interventions.

II. METHOD

This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA 2020) guidelines to ensure transparent and reproducible reporting. A comprehensive electronic search was executed across PubMed, PsycINFO, ScienceDirect, Scopus, and EBSCOhost. The search algorithm integrated Medical Subject Headings (MeSH) and free-text terms across three core clusters: short-form video terms ("short-form video*", "short video*", "micro-video*", "TikTok", "Reels", "YouTube Shorts"); addiction/problematic usage terms ("addiction*", "problematic use*", "dependence*", "compulsive use*"); and cognitive/reward domains ("attention*", "attentional control*", "executive function*", "cognitive control*", "inhibitory control*", "decision-making*", "reward processing*", "loss aversion*"). Reference lists of included studies and relevant review articles were manually screened to identify additional eligible records.

Study selection adhered to the Population, Exposure, Comparison, and Outcome (PECO) framework, restricting inclusion to peer-reviewed empirical studies published in English across cross sectional, longitudinal, experimental, and neuroimaging designs (e.g., fNIRS, ERP, EEG, eye tracking). Eligible populations comprised adolescents and young adults aged 10 to 35 years. The primary exposure was defined as problematic use of short video (PUSV) or short-form video addiction (SVA), identified through validated measurement instruments assessing core symptoms such as withdrawal, loss of control, and escapism. Studies were required to compare addicted cohorts against healthy or low exposure control groups, or evaluate continuous variations in addiction severity against cognitive and reward related outcomes. These outcomes encompassed psychometric and behavioral measures of attentional control (e.g., attentional focus, shifting, and span) as well as reward processing and decision making metrics (e.g., risk taking propensity, loss aversion, Go/No-go behavioral accuracy, ERP N2/P3 amplitudes, and prefrontal hemodynamic activation). Studies were excluded if they were non empirical

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publications (such as narrative reviews, commentaries, or editorials), grey literature, or conference abstracts lacking full peer reviewed reports. Additionally, investigations were excluded if they lacked a distinct adolescent or young adult subgroup or evaluated generalized internet or smartphone use without isolating short-form video engagement. Following systematic deduplication, independent reviewers screened titles, abstracts, and full texts, resolving discrepancies via consensus or third party adjudication.

Extracted data included study identifiers (first author, year, country), sample demographics (sample size, age, gender distribution), addiction measurement instruments, experimental/task paradigms (e.g., BART, Go/No-go), and quantitative cognitive/neurophysiological outcomes (reaction times, accuracy, event related potential amplitudes, hemodynamic beta values, and bivariate correlations). Given the marked methodological and paradigm heterogeneity across the identified literature spanning psychometric surveys, functional neuroimaging (fNIRS), and electrophysiology (ERP), a narrative evidence synthesis was performed following Synthesis Without Meta Analysis (SWiM) reporting guidelines. Findings were structured and synthesized across two primary cognitive domains, that is attentional control and executive functioning, and reward processing and risk related decision making. Where applicable effect sizes were calculated and tabulated alongside direction of effect summaries and evidence matrices to contextualize the magnitude of cognitive alterations

III. RESULT AND DISCUSSION

1. Result

a. Study Selection

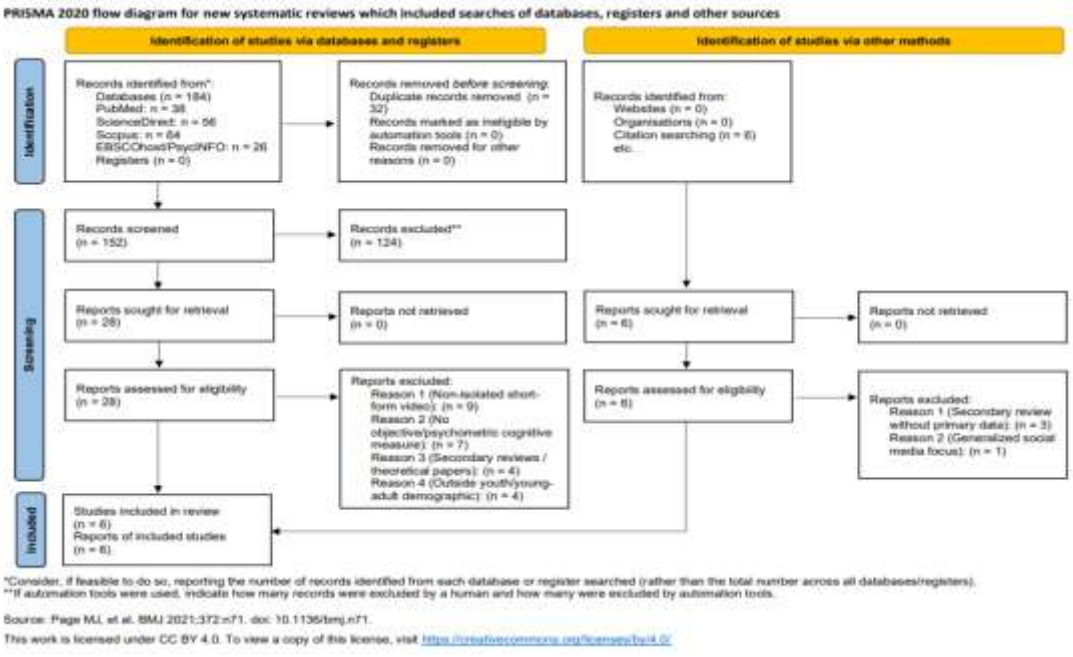

Image 1. Prisma 2020 Flow Diagram

The preliminary electronic database searches yielded a total of 184 records across PubMed (n = 38), ScienceDirect (n = 56), Scopus (n = 64), and EBSCOhost/PsycINFO (n = 26). Following the removal of 32 duplicate records, 152 unique records underwent title and abstract screening, resulting in the exclusion of 124 off-target records. The remaining 28 full-text articles were evaluated against the PECO criteria, resulting in the exclusion of 24 studies (due to non-isolated video exposure, absent cognitive metrics, secondary

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theoretical review format, or inappropriate age cohorts). Manual citation tracking identified 6 additional candidate records, of which 4 were excluded. In total, 6 empirical peer-reviewed studies met all criteria and were included in the qualitative and quantitative synthesis.

Table 1. Study Characteristics Table

Study	Sample (N, Age)	Design & Task	SVA Tool	Cognitive Target	Key Findings
Zhang & Li (2025)	N=45 (M=19,6 years)	Exp; BART + 34-ch fNIRS	CSVAS	Risk decision-making; PFCΔ[HbO]	Video cues increased balloon bursts (p < 0,01); OFC/FPA hyperactivation under cues and loss (p < 0,05).
Xie et al. (2023)	N=1047 (M=20,1 years)	Cross-sectional survey; PROCESS	SFVAS	Attentional control (ACS); Procrastination	SVA negatively linked to attentional control (r = -0,23); mediated procrastination; moderated by boredom.
Liu et al. (2025)	N=2239 (M=19,2 years)	Cross-sectional survey; SEM & LPA	SVAS	Dual self control (BMSCS); Time focus	SVA negatively linked to initiatory control (r = -0,64); identified 4 risk profiles (10,9% high-risk).
Zhang et al. (2024)	N=523 (M=19,3 years)	2-wave survey (1 mo); PROCESS	BSMAS (adapted)	Trait self control (BSCS); Boredom	SVA negatively linked to self control (r = -0,37); boredom and low self control sequentially mediated SVA.
Li et al. (2026)	N=61 (M=20,4 years)	Exp; Go/No-go + 64-ch ERP	SPAI & IAT	Inhibition (RT, acc); No-go N2/P3	Addicted group had lower No-go N2 amplitude (p = 0,035); P3 showed no significant group difference.
Chen et al. (2022)	N=44 (M=21,0 years)	Exp; Video watching + Stroop (Eye-tracking)	SFVAS & ASRS	Fixations; Stroop RT & accuracy	Addicted users had shorter video fixations (p < 0,01); longer Stroop RT (p < 0,001) and lower accuracy (p = 0,04).

Notes: ACS = Attentional Control Scale; ASRS = Adult ADHD Self Report Scale; BART = Balloon Analogue Risk Task; BMSCS = Brief Multidimensional Self Control Scale; BSCS = Brief Self Control Scale; BSMAS = Bergen Social Media Addiction Scale; CSVAS = College Students' Short Video Addiction Scale; Exp = Experimental; FPA = Frontopolar Area; IAT = Internet Addiction Test; LPA = Latent Profile Analysis; OFC = Orbitofrontal Cortex; PFC = Prefrontal Cortex; SEM = Structural Equation Modeling; SFVAS = Short-Form Video Addiction Scale; SPAI = Smartphone Addiction Inventory; SVAS = Short Video Addiction Scale.

Across the six included empirical studies, sample sizes ranged from 44 to 2,239 participants, representing a cumulative cohort of 3,959 young adults and university students with mean ages ranging from 19.16 to 21.00 years. All six studies were conducted in China. Most investigations adopted cross sectional survey designs using validated instruments such as the Short-Form Video Addiction Scale or adapted Internet Addiction Test, while recent work integrated experimental tasks (BART, Go/No-go paradigms) and neuroimaging methodologies including fNIRS and event-related potentials (ERP).

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Table 2. JBI Quality Assessment Table

Study	Design	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Score	Risk Rating
Zhang & Li (2025)	Experimental	Y	Y	Y	Y	Y	Y	Y	Y	8/8	Low Risk (High Quality)
Xie et al. (2023)	Cross-Sectional	Y	Y	Y	Y	U	U	Y	Y	6/8	Mod Risk (Moderate Quality)
Liu et al. (2025)	Cross-Sectional	Y	Y	Y	Y	Y	Y	Y	Y	8/8	Low Risk (High Quality)
Zhang et al. (2024)	Cross-Sectional	Y	Y	Y	Y	Y	Y	Y	Y	8/8	Low Risk (High Quality)
Li et al. (2026)	Experimental	Y	Y	Y	Y	Y	Y	Y	Y	8/8	Low Risk (High Quality)
Chen et al. (2022)	Experimental	Y	Y	Y	Y	Y	Y	Y	Y	8/8	Low Risk (High Quality)

Criteria: Q1 = Clear inclusion criteria; Q2 = Setting/subject detail; Q3 = Valid exposure measurement; Q4 = Standardized criteria; Q5 = Confounders identified; Q6 = Confounder management; Q7 = Valid outcome measurement; Q8 = Appropriate statistics. Responses: Y = Yes; U = Unclear. Score: 7–8 = High Quality; 5–6 = Moderate Quality; <5 = Low Quality.

Appraisal using the Joanna Briggs Institute (JBI) critical appraisal checklist indicated that the majority of cross sectional studies exhibited moderate to high methodological quality. Both quasi experimental and laboratory neuroimaging studies demonstrated low risk of bias regarding task standardization and signal artifact control, though common limitations across cross sectional surveys included convenience sampling and lack of longitudinal follow up.

Table 3. Synthesis Without Meta-Analysis (SWiM) Evidence Matrix across Cognitive Domains

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Cognitive Domain	Studies (k)	Sample (N)	Paradigms & Tools	Quantitative Metric / Effect Size	Direction of Effect
Attentional Focus & Visual Stability	2	1091	• ACS Survey SMI Eye-Tracking	• Attentional Control: r = -0,23 (p < 0,001) • Fixation Duration: Shorter under SVA (p = 0,011) Distraction Count: Higher under SVA (p = 0,001)	Attentional Degradation
Inhibitory Control & Conflict Monitoring	2	105	• 64-Channel Go/No-go ERP Oculomotor Stroop Task	• No-go N2: Attenuated amplitude (p = 0,035) • Stroop Response Time: Increased latency (p < 0,001) • Stroop Accuracy: Decreased (p = 0,040)	Executive Response Impairment
Dual Self Control & Proactive Regulation	2	2762	• BMSCS Survey (SEM & LPA) • BSCS 2-Wave Survey	• Initiatory Control: r = -0,09 to -0,64 (p < 0,01) • Trait Self Control: r = -0,37 (p < 0,01) • High-Risk Addiction Profile: 10.89% prevalence	Resource Depletion/Elevated Impulsivity
Risk Propensity & Feedback Valuation	1	45	• Modified BART Paradigm 34-Channel Prefrontal fNIRS	• Balloon Explosions: Increased under cues (p < 0,01) • Decision Latency: Shortened reaction time (p < 0,01) Cortical • Hemodynamics: Right PFCΔ[HbO] hyperactivation (p < 0,05)	Cue-Induced Risk Taking Increased

Notes: ACS = Attentional Control Scale; BART = Balloon Analogue Risk Task; BMSCS = Brief Multidimensional Self Control Scale; BSCS = Brief Self Control Scale; ERP = Event-Related Potentials; fNIRS = Functional Near-Infrared Spectroscopy; LPA = Latent Profile Analysis; PFC = Prefrontal Cortex; SEM = Structural Equation Modeling; SVA = Short-Form Video Addiction.

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2. Discussion

a. Synthesis of Findings: Attentional Control and Cognitive Regulation

Across survey-based and behavioral evaluations, short-form video addiction was consistently associated with diminished attentional control. Questionnaire assessments demonstrated significant negative correlations between addiction severity and attentional focus and shifting (r = -0.23, p < 0,001) as well as initiatory and trait self control (r = -0,09 to -0,64). In electrophysiological investigations using the Go/No-go paradigm, individuals exhibiting high addiction tendencies demonstrated a significantly attenuated No-go N2 mean amplitude relative to healthy controls (p = 0.035). This neurophysiological attenuation reflects an early impairment in response conflict monitoring and the initial mobilization of inhibitory control, preceding later motor inhibition indexed by the P3 wave.

In laboratory eye-tracking, Chen et al. (2022) demonstrated that addicted users exhibited shorter average fixation durations, greater fixation counts, and higher distraction frequencies while watching videos compared to non-addicted controls. In the Stroop task, addicted individuals exhibited longer response latencies (p < 0.001), lower accuracy (p = 0.04), and elevated saccades between targets and distractors during incongruent trials.

b. Synthesis of Findings: Reward Processing, Loss Aversion, and Decision-Making

Empirical and neuroimaging paradigms revealed significant alterations in reward valuation and risk propensity among individuals with short-video addiction. In balloon-analogue risk tasks (BART), exposure to short-video background cues precipitated higher rates of balloon explosions (p < 0,01) and abbreviated reaction times during gain outcomes, signifying cue induced impulsivity. Functional near-infrared spectroscopy (fNIRS) substantiated this behavioral pattern, demonstrating heightened cortical hemodynamic activation in the right orbitofrontal cortex (OFC) and right frontopolar area (FPA) when exposed to short-video cues. Furthermore, addicted cohorts exhibited exaggerated OFC activation specifically during loss feedback (p < 0,001), alongside documented behavioral reduction in trait self control (r = -0,37, p < 0,01).

c. Critical Synthesis and Theoretical Implications

The findings confirm that short-form video addiction (SVA) is fundamentally characterized by compromised attentional control and executive dysfunction. Across psychometric evaluations, elevated SVA severity consistently corresponds to marked impairments in attentional focus, attentional shifting, and overall attention span. This deficit is further substantiated by electrophysiological evidence from Go/No-go paradigms, where individuals with high addiction tendencies display significantly attenuated No-go N2 mean amplitudes compared to healthy controls. Because the N2 wave reflects conflict monitoring and the early mobilization of cognitive resources, this attenuation indicates an early-stage failure to detect response conflicts and suppress prepotent motor impulses. Consequently, excessive immersion in rapidly switching, highly arousing digital streams appears to degrade top-down attentional allocation, rendering young adults vulnerable to cognitive fragmentation, distractibility, and widespread academic procrastination.

Beyond attentional deficits, the synthesized evidence reveals significant neurofunctional and behavioral alterations in reward processing and risk-taking behavior. Laboratory paradigms such as the Balloon Analogue Risk Task (BART) demonstrate that exposure to short-video cues markedly increases risk propensity, leading to higher rates of balloon explosions and faster reaction times during gain outcomes. This behavior is driven by heightened cue reactivity in the prefrontal cortex, as evidenced by fNIRS imaging demonstrating selective hyperactivation within the right orbitofrontal cortex (OFC) and right frontopolar area (FPA) in addicted individuals. Furthermore, addicted cohorts display altered sensitivity to negative feedback, marked by pronounced OFC activation following loss outcomes and a documented behavioral decline in loss aversion. This suggests that personalized

algorithmic cues amplify reward valuation while dulling sensitivity to negative consequences, locking users into impulsive, reward seeking behavioral loops.

These convergent cognitive disruptions can be effectively conceptualized through the Interaction of Person-Affect-Cognition-Execution (I-PACE) model. Under this framework, short-video platforms exploit internal vulnerabilities, such as boredom proneness or past and present oriented temporal biases by delivering immediate, low cost psychological gratification. Chronic engagement steadily exhausts executive resources, leading to ego depletion and an overreliance on passive inhibitory control strategies that ultimately fail. Proactive self control, by contrast, serves as a vital protective factor against addictive use. However, several methodological limitations within the existing literature must be acknowledged. The reviewed body of evidence is disproportionately concentrated in Asian cohorts (specifically China), relies predominantly on cross sectional survey designs, and rarely integrates longitudinal follow up or multimodal neuroimaging, restricting causal inferences regarding whether prefrontal impairments are pre-existing risk traits or neuroplastic consequences of prolonged exposure.

IV. CONCLUSION

In conclusion, problematic short-form video use systematically impairs cognitive control by degrading early conflict monitoring (attenuated No-go N2 amplitude) and altering reward valuation circuits within the prefrontal cortex (OFC and FPA hyperactivation). These neurocognitive disruptions manifest behaviorally as fragmented attentional control, heightened impulsivity, heightened loss sensitivity and executive self control failure, and increased risk propensity. To mitigate the escalating academic and psychological toll among young adults, future public health initiatives, institutional interventions, and platform designs should emphasize strengthening proactive self control strategies, curbing algorithmic cue overstimulation, and advancing longitudinal, neuroimaging-informed research across culturally diverse populations.

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