

Beyond The Scroll: Short-form Media Consumption & Adolescent Cognitive Competence

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Abstract

Cognitive competence refers to the ability to process information and solve problems to effectively navigate the challenges of everyday life. With the increasing integration of short-form media platforms such as Tiktok, Instagram, and X into daily life, debates have intensified regarding whether excessive usage of these apps have a detrimental effect on the cognitive competence of adolescents. Despite the growing relevance of this topic, the influence of short-form media consumption on adolescent cognitive competence remains largely understudied. This study examines the possible effects of algorithmic systems commonly present in short-form media apps on adolescent neurological development and key components of cognitive competence, such as critical thinking, information processing, and attentional systems. The findings indicate a positive correlation between high short-form media consumption and effects on adolescent cognitive competence and development. However, it may be difficult to distinguish the specific effects of short-form media usage and naturally occurring neurological changes during adolescence. Future research should address this issue by including more longitudinal studies to clarify whether observed effects reflect typical adolescent development or the influence of short-form media consumption.

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Introduction

Global social media users grew from ~2.08 billion in 2015 to a projected 5.6 billion in 2026. Usage is especially high among teens: 63% report using TikTok and 61% Instagram (Faverio & Sidoti, 2024).

Building on Sun & Hui (2012), cognitive competence is the combination of "thinking styles", namely critical thinking, information processing, attention, and memory applied to solve problems, form inferences, and make decisions.

The Gap

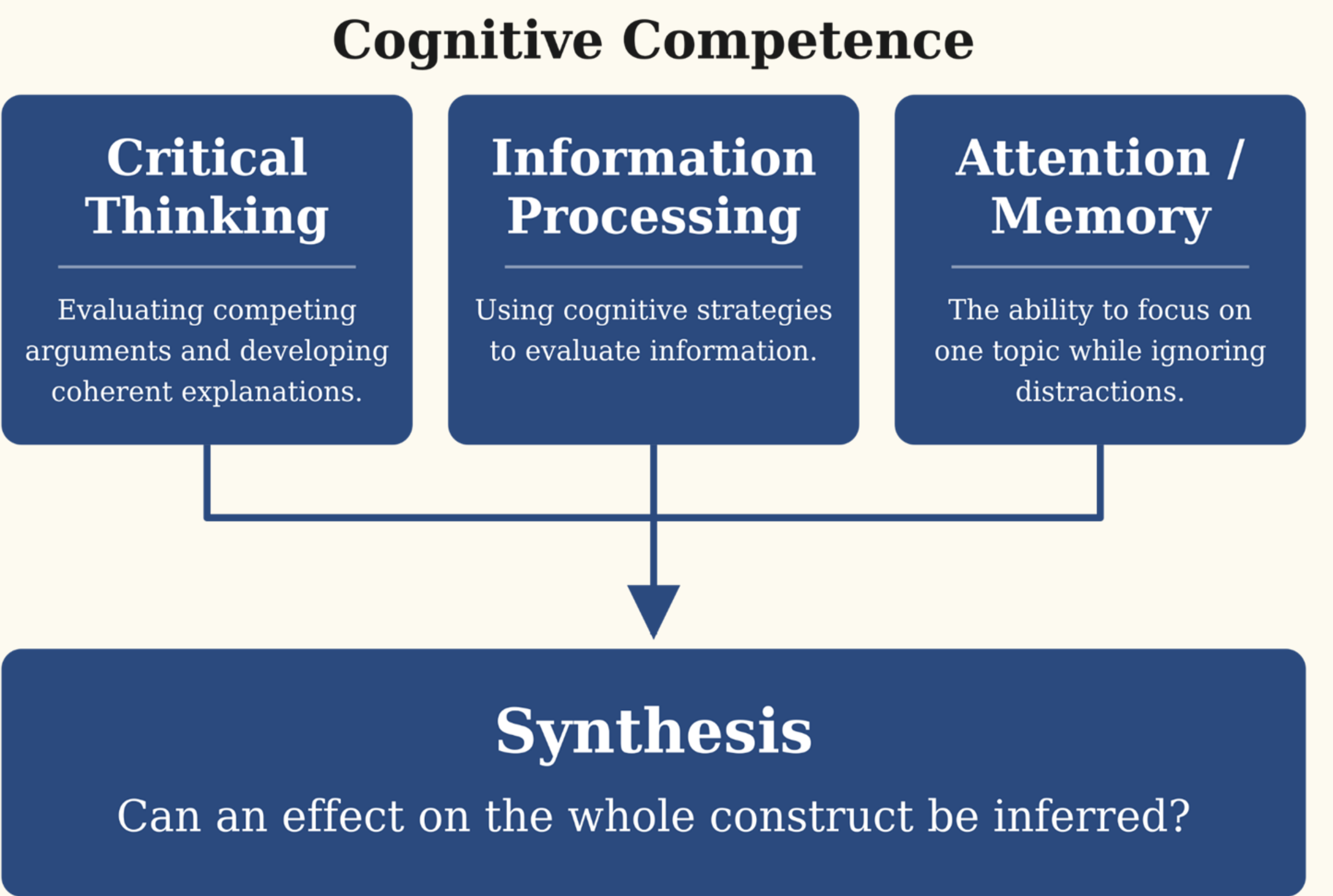
Existing research isolates single processes (attention, working memory, impulsivity) rather than how they collectively shape cognitive competence (Naik et al., 2025). Most work is correlational, so it is unclear whether short-form media produces a consistent, generalized effect.

Research Question

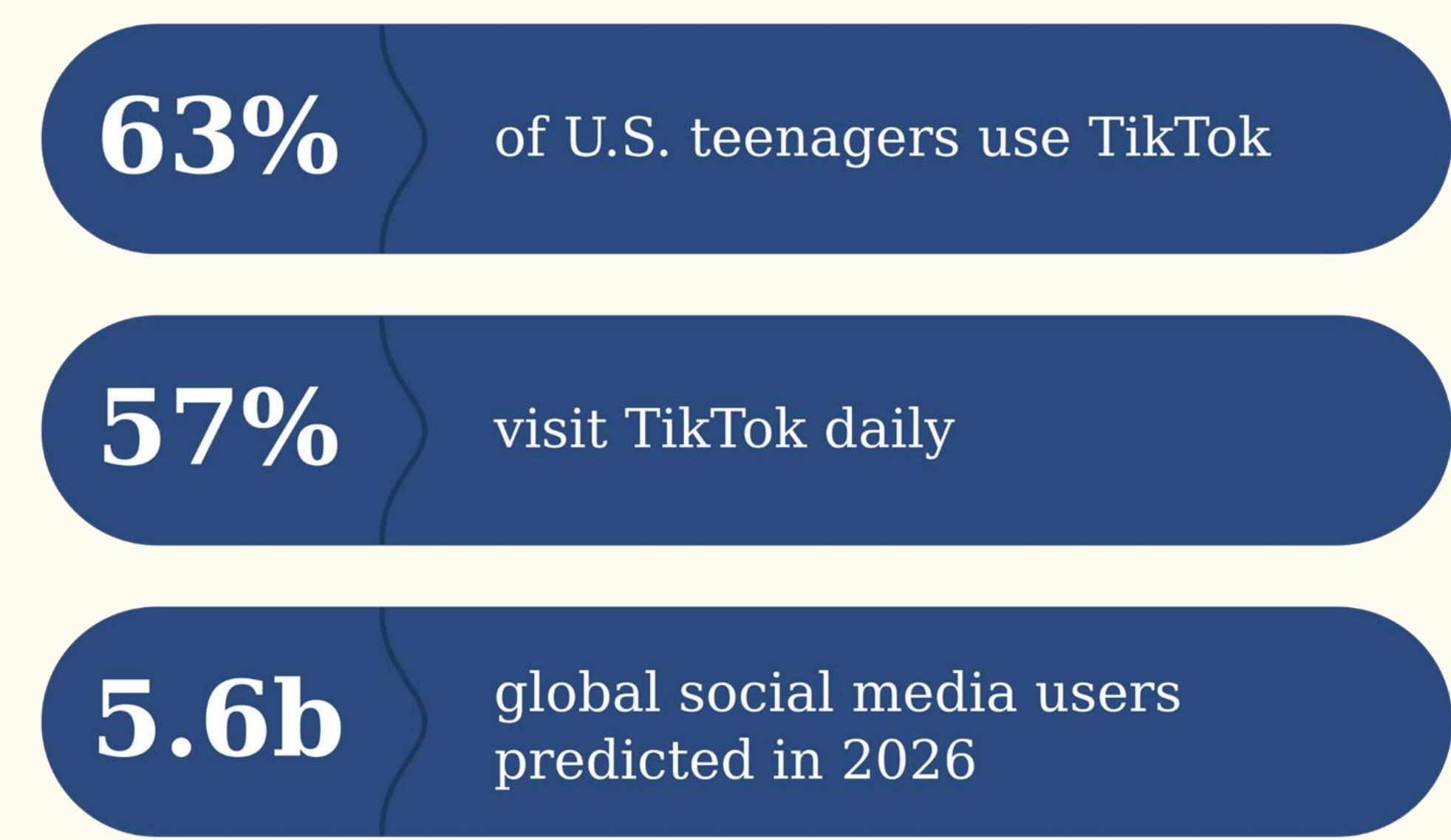
Does the consumption of short-form media affect overall cognitive competence in adolescents?

Approach

By combining findings on the sub-processes, the review tests whether an effect on the whole construct can be inferred.



Adolescent Reach of Short-Form Media



Sources: Faverio & Sidoti (2024); Backlinko (2026).

Key Findings

Algorithmic Environments

Filter bubbles (Pariser, 2011) and echo chambers (Jamieson & Cappella, 2008) narrow exposure to opposing viewpoints and reduce the cognitive effort of evaluating competing perspectives limiting critical engagement.

Attention and Memory

Constant content-switching drives a desire for immediate gratification and interferes with attentional control (Xie et al., 2023). Heaviest TikTok users showed reduced sustained attention and lower memory performance (Chen, 2025).

Information Processing

Short-form media favors shallow over deep (semantic) processing. Watching short videos reduces pupil diameter, an index of lower attention, processing and impairs later learning (Mahmoudi et al., 2024); heavy usage is linked to information overload and procrastination (Caponnetto et al., 2025).

Critical Thinking

High-use adolescents (ages 11–13) performed worse on social, mathematical, and strategic problems that involve clarification, analysis, inference and self-monitoring with the largest gap in source evaluation (Yan et al., 2024).

Discussion

The evidence converges on decreased cognitive productivity across attention, memory, processing, and critical evaluation that are the very components of cognitive competence.

However, a major complication remains: adolescence is itself a period of rapid maturation in these same functions. Observed differences may reflect normal development (Mastorci et al., 2024). About 88% of studies here are cross-sectional (Ebster et al., 2026), and platforms are often treated as a single monolith (Maheux et al., 2025).

Conclusion

Cognitive and clinical evidence shows a strong positive correlation between high short-form media use and negative effects on components of cognitive competence.

Yet current evidence which is largely correlational and cross-sectional is not sufficient to confirm a causal impact, because natural adolescent brain development cannot yet be ruled out.

Future Research

- Longitudinal studies over months/years to separate development from media effects
- Platform-specific comparisons rather than "social media" as a whole

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