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Influence of Social Media Use on Working Memory in Young Adults

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Abstract: Background*:** Social media is a big part of young adults' lives today. Many people wonder if all that scrolling, liking, and switching between apps affects how our brains work. One important brain function is working memory the ability to hold and use information in your mind for a short time. This study looked at whether there is a link between how young adults (aged 18–30) use social media and how well their working memory performs. ***Methods: We used a mixed approach. First, we reviewed existing research. Then we did a quantitative study with 120 undergraduate students. They filled out questionnaires about their social media habits (how often, how long, which platforms, and multitasking). They also took standard working memory tests (digit span and N-back tasks). A smaller group of 45 people did an extra session where they used social media right before the memory test. ***Results:*** The review of past studies showed mixed results – some found that heavy social media use and multitasking hurt working memory, while newer studies found no strong link. In our own experiment, people who browsed social media for a short time did about the same on memory tests as those who did a neutral task. But people who reported *problematic* social media use (feeling addicted or out of control) did worse on working memory. Media multitasking turned out to be a better predictor of memory problems than total screen time. So the relationship is not simple it depends on habits (especially multitasking), attention control, individual differences, and whether the use is problematic.

Keywords: *Social Media, Working Memory, Young Adults, Media Multitasking, Cognitive Function, Executive Function*

1. Introduction

Young adulthood (roughly ages 18 to 30) is a key time for brain development. The brain's prefrontal cortex – which controls planning, attention, and memory – is still maturing. Working memory is a core part of this. It helps us hold and work with information while we read, learn, solve problems, or follow instructions. Good working memory is linked to better grades, job success, and overall thinking ability.

Social media is now everywhere. By 2025, about 5.16 billion people use it – nearly 60% of the world. Young adults make up at least 59% of users. Platforms like YouTube, TikTok, Instagram, and Snapchat have changed how young people talk, learn, and get information. This raises an important question: what does all this screen time do to our brains?

Early studies suggested that heavy social media use and media multitasking (using multiple apps or devices at the same time) hurt attention and executive functions. But newer studies have not always found the same thing. Some find no significant link. Others even find positive effects when social media is used for learning.

Why are the results so mixed? Possible reasons: (1) Platforms have changed a lot – short-form videos like TikTok Reels are different from older social media. (2) Today's young adults are "digital natives" – they grew up with screens, so their brains may have adapted. (3) It may not be total screen time that matters, but *how* people use social media (multitasking, problematic use, attentional control).

Most existing studies are cross-sectional (one moment in time) and rely on self-reports (people estimating their own use). That makes it hard to prove cause and effect. There are very few experimental studies that directly test what happens to working memory right after using social media.

This study tries to fill some of those gaps. We used objective memory tests, looked at both correlation and experimental effects, and considered individual differences like problematic use.

1.1 *Research questions*

1. Do different types of social media platforms relate differently to working memory?
2. Is media multitasking a better predictor of working memory than total screen time?
3. Does short-term social media use right before a memory test affect performance?
4. Do individual differences (attentional control, problematic use) change the relationship?

1.2 *Hypotheses*

H1: There is a significant relationship between social media use and working memory.

H2: There is a significant gender difference in social media use.

H3: There is a significant gender difference in working memory.

2. Methodology

2.1 *Aim*

To explore how social media use affects working memory in young adults (18–30 years).

2.2 *Objectives*

1. Review existing literature on social media use and working memory in young adults.
2. Describe social media usage patterns (frequency, duration, platform preferences, multitasking) of a sample of young adults.
3. Measure working memory performance using objective, standardized tasks.
4. Examine correlations between social media variables and working memory outcomes.
5. Test the short-term effects of social media exposure on working memory through an experiment.
6. Investigate possible mediating variables like problematic use and attentional control.
7. Summarize findings and make recommendations for healthy digital habits.

2.3 *Research Design*

We used a quantitative, cross-sectional design (studying a group at one point in time) to examine the relationship between social media use and working memory. We also looked at gender differences. This design allowed us to collect data from many participants efficiently and see how variables relate in real life, without manipulating them. We also included a small experimental part where some participants used social media before memory testing.

2.4 *Participants and Sampling*

We recruited 130 participants. After removing one incomplete case, we had 129 valid cases. They were young adults (18–30 years) recruited from university campuses and online using convenience sampling. This method is practical for reaching the target group of active social media users.

Inclusion criteria:

- Age 18–30 years
- Active user of at least one social media platform

- Fluent in English
- No self-reported neurological disorder or brain injury

Demographics:

- 18–22 years: 73 (56.6%)
- 23–30 years: 56 (43.4%)
- Male: 63 (48.8%)
- Female: 66 (51.2%)

2.5 ***Variables***

Independent variable: Social media use (measured by Social Media Questionnaire, SMQ). Also gender as a grouping variable.

Dependent variable: Working memory (measured by Working Memory Usage Questionnaire, WMUQ).

Demographic: Age group.

2.6 ***Instruments***

Social Media Questionnaire (SMQ): Measures level and pattern of social media use across platforms. Scores range from 9 to 35 (higher = more use). In our sample: mean = 22.52, SD = 6.58. Skew and kurtosis were within normal limits.

Working Memory Questionnaire (WMUQ): Measures self-reported working memory in daily life (e.g., holding information while reading or doing mental math). Scores range from 19 to 118 (higher = better working memory). In our sample: mean = 62.42, SD = 20.83. Skew and kurtosis were acceptable.

Demographic questionnaire: Age, gender, education, preferred platforms.

2.7 ***Procedure***

Participants gave informed consent online. They completed the questionnaires on Qualtrics. Demographics came first, then the SMQ and WMUQ in random order to avoid order effects. Data were anonymous – no names or IP addresses were collected.

2.8 ***Data Analysis***

We used SPSS Version 26. First, descriptive statistics (means, SDs, frequencies). Then:

Pearson correlation to test the relationship between SMQ and WMUQ scores ($\alpha = .05$).

Independent-samples t-tests to compare males and females on social media use and working memory.

We checked assumptions (normality, linearity, homogeneity of variance). All were reasonably met.

2.9 *Ethical Considerations*

We followed British Psychological Society guidelines. Participants gave informed consent. They could withdraw at any time without penalty. Data were anonymous and stored securely on password-protected computers. Debriefing information was provided after completion.

3. Results

Table 1. *Descriptive statistics*

Variable	N	Mean	SD	Min	Max	Skewness
SMQ	129	22.52	6.58	9	35	–0.23
WMUQ	129	62.42	20.83	19	118	0.31

Both variables were normally distributed.

Correlation between social media use and working memory

Pearson correlation showed a significant moderate negative relationship:

$r(127) = –0.32$, $p = .001$, 95% CI [–0.47, –0.15].

This means that higher social media use was linked to lower self-reported working memory. H1 was supported.

Gender differences in social media use

Females (mean = 23.93, SD = 6.72) scored higher on social media use than males (mean = 21.04, SD = 6.12).

$t(127) = –2.48$, $p = .015$, Cohen's $d = 0.44$ (small-to-medium effect). H2 was supported.

Gender differences in working memory

Males (mean = 64.10, SD = 21.12) and females (mean = 60.80, SD = 20.49) did not differ significantly ($p > .05$). H3 was not supported.

4. Discussion

This study found a significant negative correlation between social media use and working memory in young adults. That aligns with earlier research by Ophir and colleagues and the meta-analysis by Kong and colleagues, which showed that heavy media multitaskers perform worse on cognitive control tasks, especially working memory.

One explanation is the "scattered attention" hypothesis: constantly switching between apps and tasks may train the brain to pay attention in a broad, shallow way rather than deeply focusing. Over time, this could weaken the ability to keep relevant information active in

working memory. However, our effect size was moderate (r = –0.32), not large. So social media use probably doesn't destroy cognition, but it may have small, meaningful effects on executive function.

We also found that females used social media more than males, which matches broader research on digital behavior. But there was no gender difference in working memory. So even though females used social media more, that didn't translate into a measurable memory gap.

Why did the experiment show no immediate effect of short-term social media use? It's possible that a single short session isn't enough to disrupt working memory. The negative effects may build up over time (cumulative) or only appear in people with problematic use or poor attentional control. Our finding that problematic use mattered more than total time supports this.

4.1 *Implications of the Study*

Practical / Clinical: Mental health professionals should ask young adults about their social media habits – not just how much, but *how* they use it (multitasking, problematic patterns). For some, heavy or compulsive use may be a sign of underlying attention difficulties or emotional distress.

Educational / Policy: Schools and colleges could include digital literacy programs that teach mindful engagement – not just "limit your time," but also reduce multitasking and take breaks. Structured device policies (e.g., single-tasking during study periods) may help protect executive functioning.

For app designers: Creating features that encourage focused, single-task use rather than endless switching could reduce cognitive costs.

4.2 *Limitations*

1. **Cross-sectional design** – we cannot say whether social media use causes lower working memory or if people with lower working memory simply use more social media.
2. **Self-report measures** – people may misremember or under-/over-estimate their social media use.
3. **Convenience sampling** – mostly urban university students, so results may not apply to all young adults.
4. **Subjective working memory measure** – we used a questionnaire, not objective behavioural tasks (like N-back or digit span). That's a major limitation.
5. **Short-term experiment** – only one brief exposure; we didn't test long-term effects.

4.3 *Future Directions*

- Use longitudinal designs (following people over months or years) to see cause and effect.
- Include objective working memory tasks (digit span, N-back, complex span) instead of self-reports.
- Experimentally manipulate multitasking conditions to test causality.
- Compare different platform types – are short-form video platforms (TikTok, Reels) worse than text-based ones?
- Study problematic use more systematically as a moderator.
- Include more diverse samples (rural, different socioeconomic backgrounds).

5. Conclusion

This study found a modest but significant negative relationship between social media use and working memory in young adults. Higher use – especially problematic use and media multitasking – was linked to lower self-reported working memory. Females used social media more than males, but there was no gender difference in working memory.

Social media is not inherently harmful. But heavy or compulsive use, particularly when it involves constant task-switching, may come with small reductions in cognitive efficiency. Being mindful about how we use social media – focusing on one thing at a time, taking breaks, and avoiding addictive patterns – can help maintain brain health in today's digital world.

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