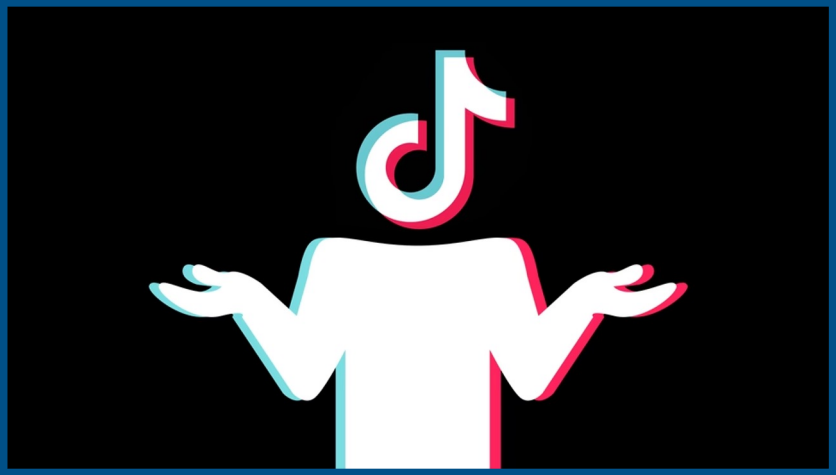
TikTok's Effect on College Student's Working Memory



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Introduction

- TikTok is one of the most used forms of social media, so we chose to explore what possible effects it could have on working memory, specifically on college students. Furthermore, Instagram Reels, Youtube Shorts, and Snapchat Spotlight all use a similar algorithms to maximize engagement.

- It is a thoroughly-researched fact that social media **negatively** affects the mental health/well-being of young adults, we are interested if TikTok affects their cognitive abilities.

- Past research suggests watching a lot of short videos can degrade memory capacity(Chiossi).

Research Question

- How much of an effect does TikTok Intensity has on the working memory of college students?

Study Design

- We will be collecting participants within our chosen population, and giving them a number of surveys and questionnaires to fill out.
- The specific questionnaires we used have also been found successful in other studies,which strengthen the reliability of its usage.

Hypothesis & Predictions

- An increase in TikTok intensity would result in diminished working memory

- **H0:** TikTok Intensity has zero effect on working memory
- **H1:** TikTok Intensity will result in an increase in working memory

Key Terms & Definitions

- **SMAS-SF:** Social Media Addiction Scale-Student Form
  - Measures the likelihood that each participant is to be addicted to social media
  - Uses a 5-point Likert Scale
  - Consists of 29 items, divided into 4 categories
    - Communication, problems, information, and tolerance
- **MMI:** Media Multitasking Index
  - Measures the use of multiple forms of media simultaneously
  - Different reasons why people media multitask
    - Reduce cognitive overload, emotionally gratifying, part of a routine
  - Each source of media has different levels of cognitive demands, and each individual will have different preferences in what they use

Key Terms & Definitions

- **BRIEF-A:** Behavior Rating Inventory of Executive Function-Adult
  - Measures the control functions of everyday activities in adults
  - Consists of 75 questions, divided into 9 clinical scales(different executive functions, including **working memory**). Forms 2 broader indexes: Behavioral Regulation(BI) and Metacognition(MI). Both form the overall score of the Global Executive Composite(GEC).
  - Higher Score indicates lower functioning of the 9 scales, in this case we are looking at the working memory
- **Tiktok Intensity:** level of engagement and usage of Tiktok of an individual
  - A quick 13-question assessment. Asks questions such as “Before going to sleep, i check TikTok once more.”

METHODS - Subjects

- **Sample Size and Characteristics**
  - 346 participants in total
  - UCR students in Psych 1 and/or 2
  - Average age: 19.9 years
  - 198 Females (57%), 148 Males (43%)

METHODS - Materials

- **Stimuli Used**
  a. Questionnaires
  b. TikTok intensity: 13 questions
  c. Social media addiction scale : 28 questions
  d. BRIEF-A: 76 questions total, but only questions geared towards working memory were used
  e. Additional factors PSQI- sleep quality, BIS scale-impulsivity, PHQ 9- depression, MMI -multimedia multitasking index

METHODS - Procedures & Stimulus Presentation

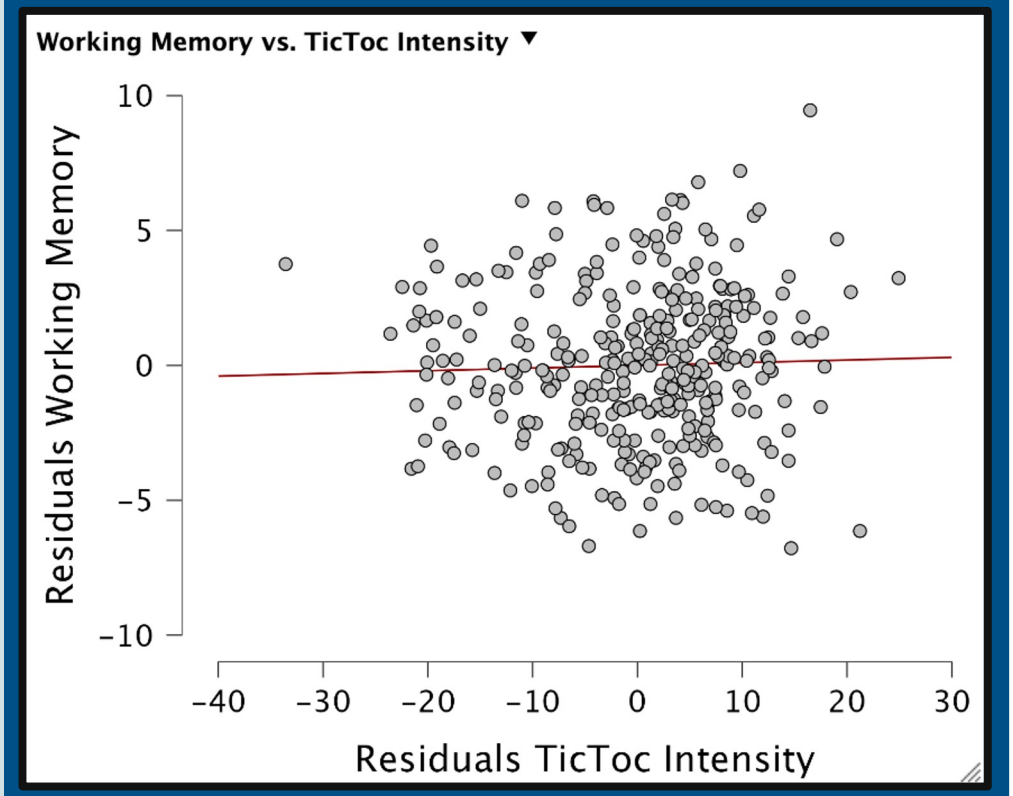
- **Procedures**
  - The Surveys were administered through an electronic device
  - The participants could use any device to answer each questionnaire
- **Types of Tests**
  - Self-report
  - Correlational analysis and multiple regression models were used to analyse the data
- **Repeated Measures**
  - There weren't multiple data entries for the same participant or question.

RESULTS - Key Findings

- **TikTok Intensity**: No significant relationship with working memory (p = 0.542)
  - *coefficient: 0.036*
- **SMAS-SF (Social Media Addiction)**: Significant positive relationship with working memory (p < 0.001)
  - *coefficient: 0.235*

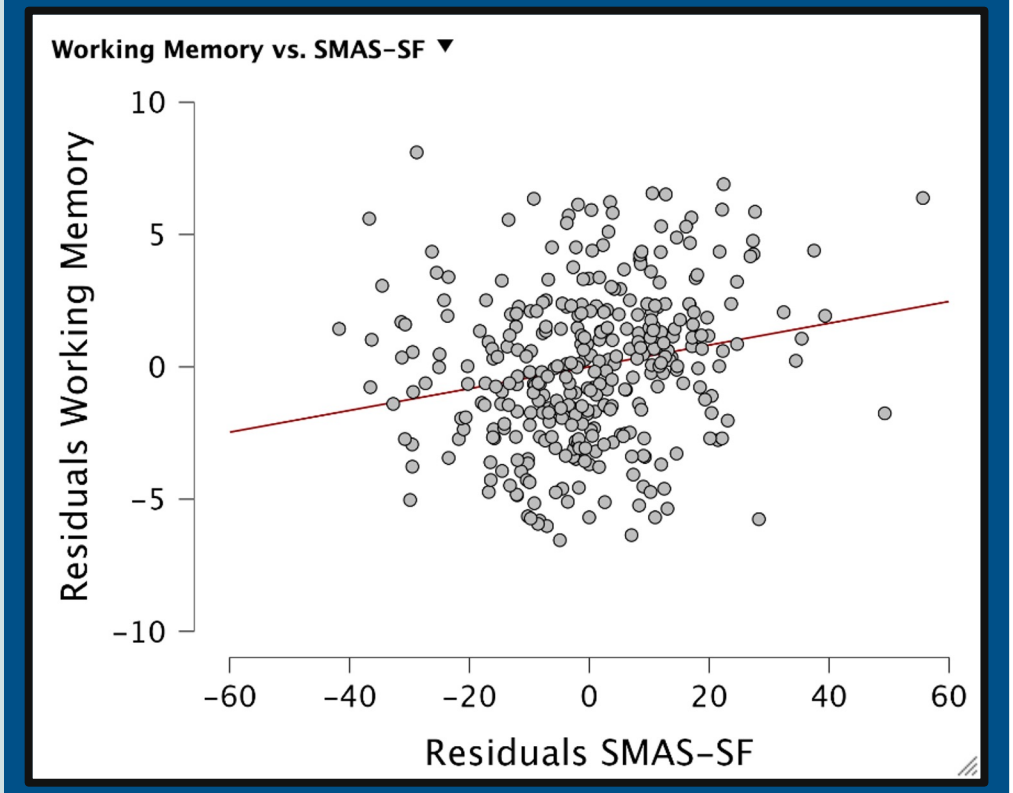
Working Memory V.S. TikTok Intensity

[**Figure 1:** indicates no discernible upward or downward trend. This suggests that as **TikTok Intensity** increases, there is **no consistent pattern** in the changes of **Working Memory** scores.]



Working Memory V.S. SMAS-SF

[**Figure 2:** The scatterplot shows a **positive linear relationship** between **SMAS-SF** and **Working Memory**. As **SMAS-SF scores increase** (indicating greater social media addiction), **Working Memory scores also increase** (indicating worse working memory performance). This trend is visible in the upward slope of the data points.]



Regression Results & Model Summary

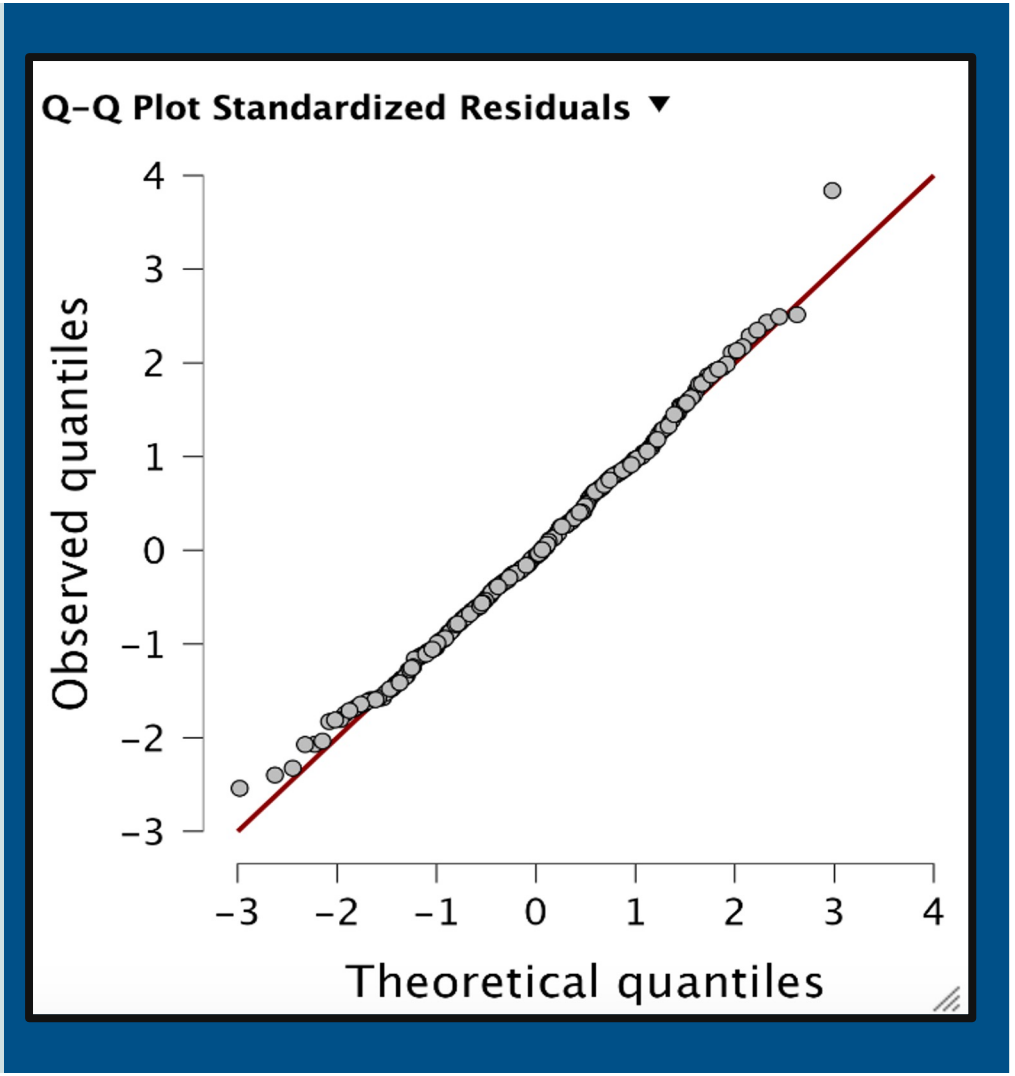
- **TikTok Intensity**: No significant effect ($p = 0.542$)
- **SMAS-SF**: Significant effect on working memory ($p < 0.001$)
- **R^2** (Model 1): 0.065, indicating a small but meaningful effect size.
- **Adjusted R^2**: 0.059, accounting for the number of predictors.

MLR - Figure 3

Multiple Linear Regression

[**Figure 3:** Both PSQI and SMAS-SF show positive associations with Working Memory scores, indicating that worse sleep quality (higher PSQI) and greater social media addiction (higher SMAS-SF) predict poorer working memory performance.]

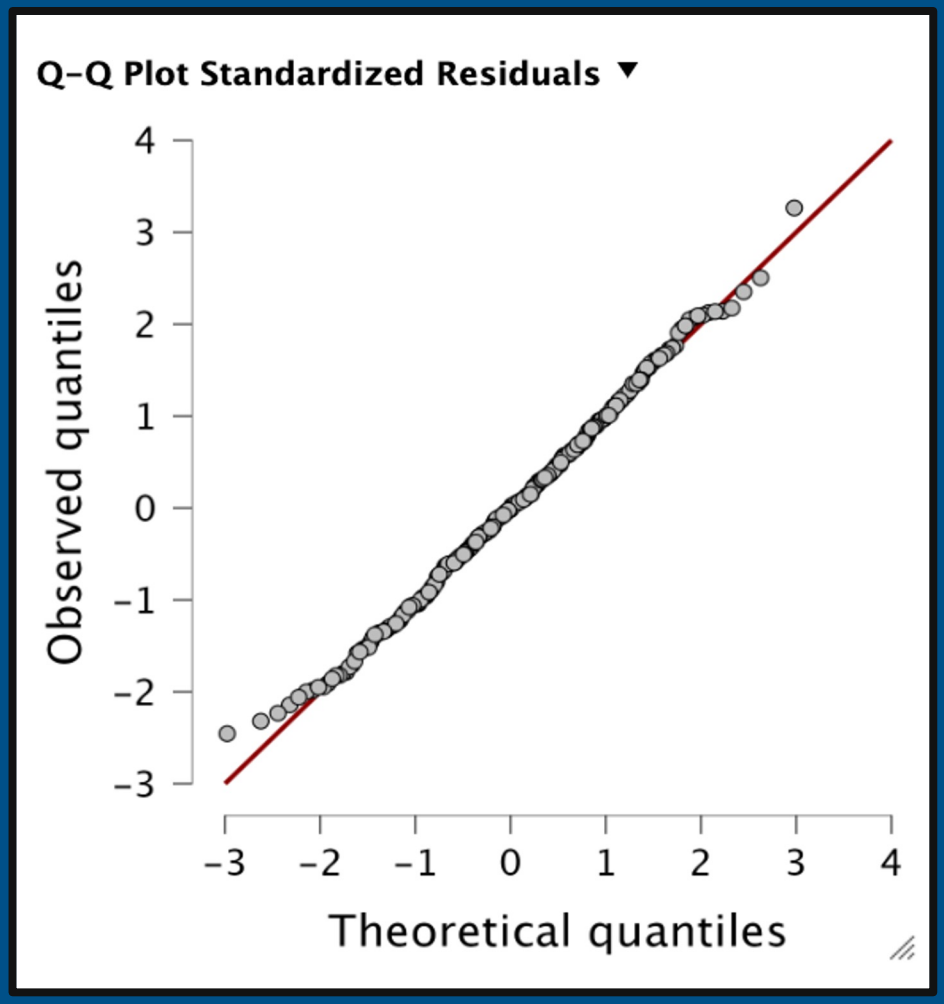
- The combined contribution of these two predictors explains 18.2% of the variance in Working Memory (R^2=0.182)



Q-Q Check - Figure 4

Residual Normality Check: Working Memory Model

[Figure 4:The Q-Q plot compares the standardized residuals from the regression model (Working Memory predicted by SMAS-SF and TikTok Intensity) to a theoretical normal distribution. The points align closely with the diagonal reference line, suggesting that the residuals are normally distributed. This supports the validity of the regression model and indicates the model is appropriate for analyzing the data.]



RESULTS - Support for Hypothesis

- TikTok intensity was expected to predict working memory.
- Findings:
  - TikTok Intensity did not meet expectations; it was **not a significant predictor** ($p = 0.542$).
  - SMAS-SF supported the hypothesis that **social media addiction negatively affects working memory** ($p < 0.001$).
- SMAS-SF captures broader social media usage, indicating the effect is not TikTok-specific.

RESULTS - Other Questions Raised By Results

- Does **social media addiction** (measured by SMAS-SF) have a **long-term** effect on working memory?
- What role do other factors, such as **impulsivity (BIS)** and **mental health (depression, anxiety, etc.)**, play in this relationship?

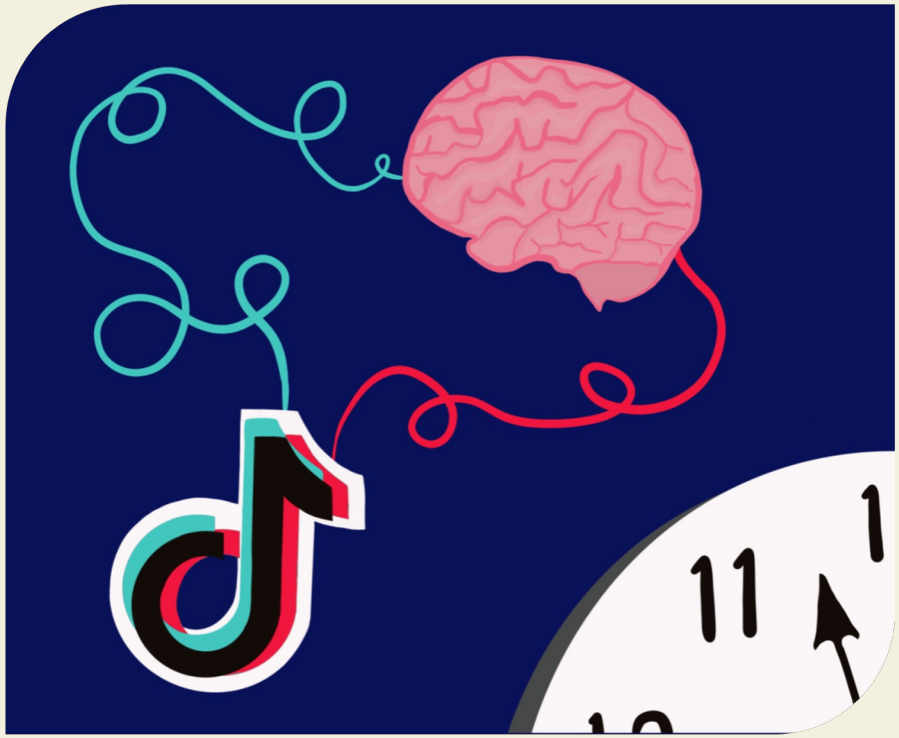
Conclusion

Summary

- There was a positive correlation between SMAS and working memory
- TikTok intensity by itself had no significant effect

Implications for Causality

- External Factors such as poor mental health or impaired cognitive function may be significant predictors



Limitations and Future Directions

- Limited Age Range
  - The current study's population is entirely made of UCR Psychology students
  - Could expand the population by targeting older adults and children
  - Self-report biases (response bias, social desirability, etc.)
- Long Term Effects of SMAS/TikTok Intensity on Working Memory
  - Implement a Longitudinal Study
  - May find behavioral mechanisms that make one more susceptible to SMAS
  - Measure types of engagement such as passive vs. active
  - Explore the neural mechanisms of SMAS, TTI, working memory

Any Questions?