The Relationship Between Media Usage and Mental Health Among Students Across Different Grades

Cici Wang, Applied Data Analysis, Wesleyan University

Introduction

- The impact of entertainment media on mental health is a growing concern, with studies highlighting its strong association with negative psychological outcomes, including anxiety, depression, and stress (Hamer et al., 2010; Li et al., 2022).
- The relationship between media usage and mental health outcomes also varies across different contexts; for example, patterns observed in rural China differ from findings in longitudinal studies conducted in Western countries (Li et al., 2022; Janicke-Bowles et al., 2022).
- Additionally, there is limited research on how the frequency of media use, rather than duration, influences mental health different grades (Rideout, 2015).

Research Questions

- Does the frequency of entertainment media usage, such as playing video games, watching online videos, or television, impact the mental health outcomes of adolescents, specifically in terms of anxiety, depression, and stress?
- Does the relationship between the frequency of entertainment media usage and mental health outcomes vary across different grade levels (grades 7 through 12)?

Methods

Sample

- Participants (n=6,504) were drawn from the first wave of the National Longitudinal Study of Adolescent to Adult Health (ADDHEALTH), a nationally representative study of adolescents in grades 7 to 12 from 80 U.S. middle and high schools during the 1994-1995 school year. Data were collected through in-home interviews using both Computer-Assisted Personal Interviews (CAPI) and self-administered Audio Computer-Assisted Self Interviews (ACASI).

Measures

- Grade level was measured by asking participants, *"What grade are you in?"* with responses ranging from 7th to 12th grade.
- Entertainment media usage frequency was assessed with the question, *"During the past week, how many times did you watch television or videos, or play video games?"* with responses ranging from 0 (not at all) to 3 (5 or more times).
- Mental health was measured through several statements about emotional experiences, such as *"You felt that you could not shake off the blues, even with help from family and friends," "You felt depressed," "You were happy," "You felt lonely," "You enjoyed life,"* and *"You felt sad."* Participants rated how often they experienced each on a scale from 0 (never or rarely) to 3 (most or all of the time). Statements that describe negative emotional experiences or states(e.g., "You felt lonely," "You felt sad") were reverse-coded so that higher scores indicated better mental health. These reverse-coded items were summed to create a composite mental health score.

Results

Univariate

- Mental health scores range from 0 to 18, with a positively skewed distribution concentrated in the upper range (16–18), where 16.53% scored 18 and 15.59% scored 16. Scores below 10 are rare, comprising less than 10% of the sample, indicating that most participants report positive mental health states.

Bivariate

- Analysis of variance (ANOVA) indicated **a significant increase** in mental health scores for students with higher media usage compared to those with no media usage ($F(3, 6469) = 8.072$, $p < 0.001$). These results were consistent across all levels of media usage.
- Post-hoc comparisons revealed **significantly lower mental health scores** for students **with no media usage** compared to those with low, medium, or high media usage levels ($p < 0.01$ for all comparisons). However, **no significant differences** were observed **among the low, medium, and high media usage groups.**
- Graphical trends **confirmed** that students with no media usage consistently had the lowest mental health scores. In contrast, students with any media usage reported similar scores, with slight increases for medium and high usage groups(Fig.1).

Figure 1: Mental Health Score for Students with Different Levels of Media Usage Frequency
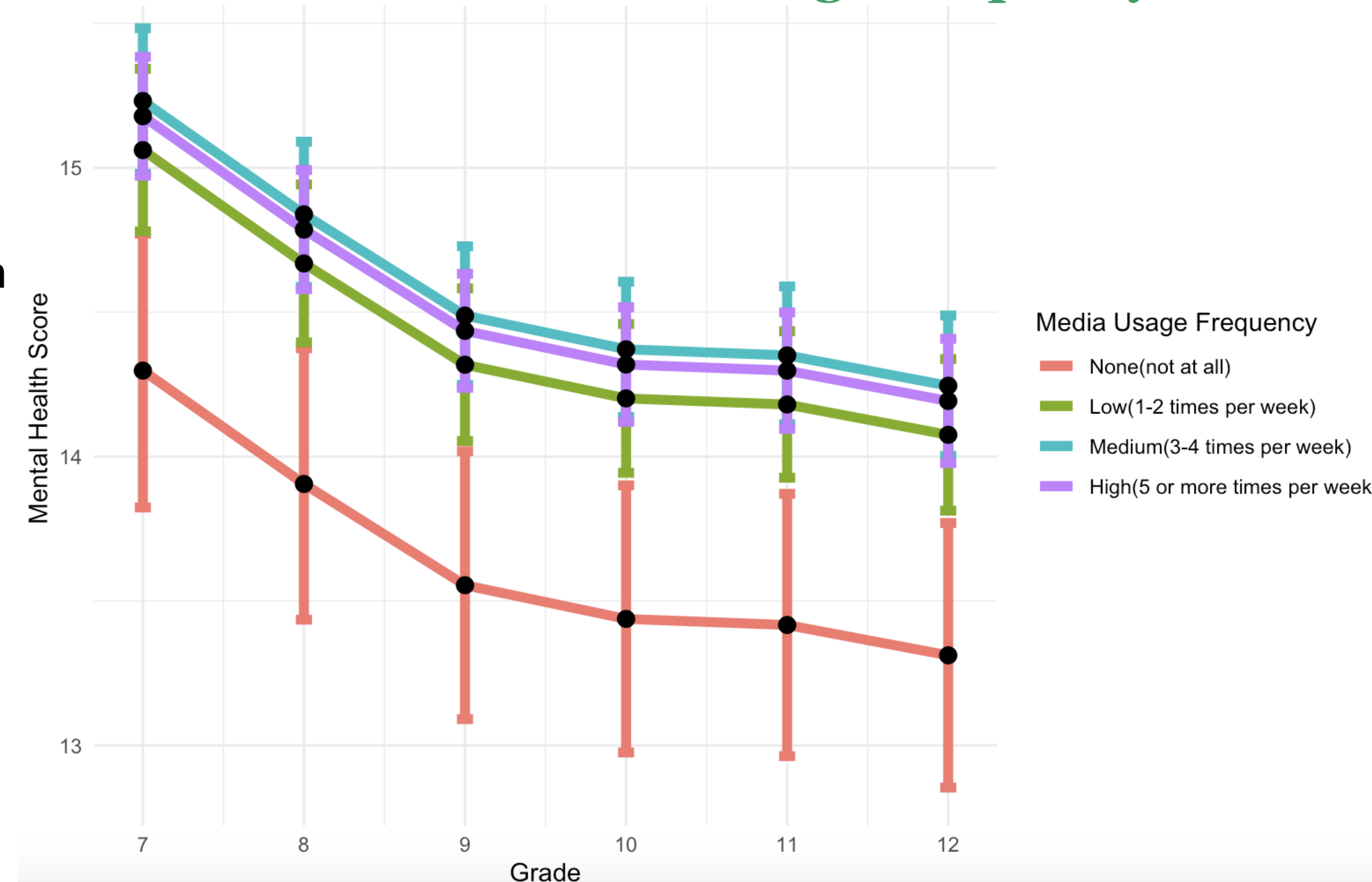
Figure 2: Interaction Between Grade Level and Media Usage Frequency on Mental Health Scores

Multivariate

- Linear regression analyses revealed that both grade level and media usage frequency **significantly influenced mental Health scores**. Mental health scores **decreased with higher grade levels**, with significant declines observed from grade 8 onward (e.g., Grade 9: $\beta = -0.743$, $p < 0.001$; Grade 12: $\beta = -0.985$, $p < 0.001$).
- Media usage frequency showed a **positive association with mental health scores**, with participants reporting higher media usage scoring significantly better on mental health measures (e.g., Low usage: $\beta = 0.763$, $p = 0.001$; Medium usage: $\beta = 0.933$, $p < 0.001$; High usage: $\beta = 0.881$, $p < 0.001$).
- The interaction plot (Fig. 2) suggests **that the positive effect of media usage on mental health is consistent across grades**, though the overall decline in mental health scores with increasing grade levels persists regardless of media usage frequency.
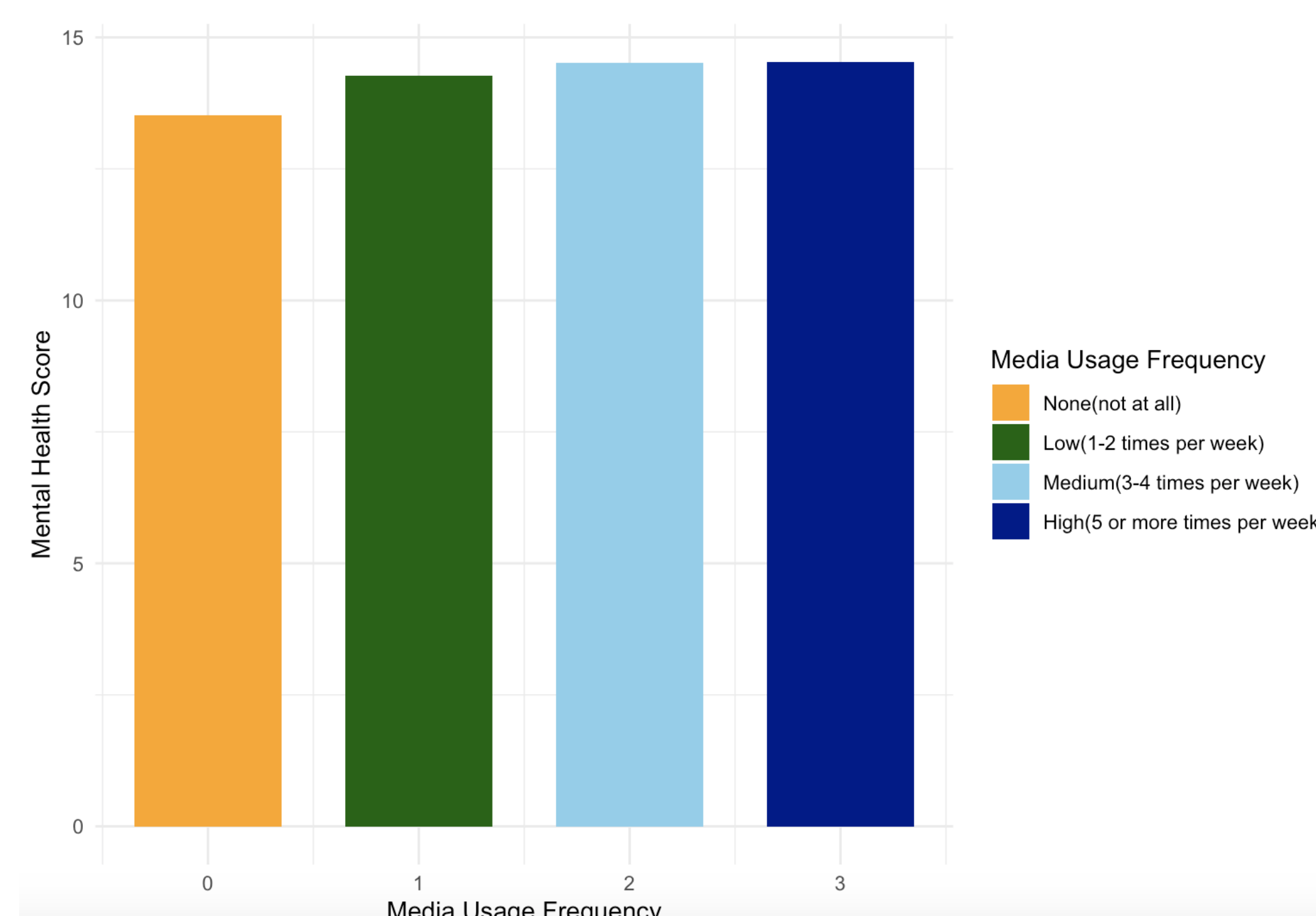
Discussion

- **Media Usage and Mental Health:** Students with no media usage had significantly lower mental health scores than those engaging in media usage, suggesting moderate media use may positively influence mental health.
- **Consistency Across Grades:** The stabilizing effect of media usage on mental health persisted across grade levels, regardless of academic pressures.
- **Grade-Level Decline:** Mental health scores declined significantly with increasing grade levels, likely due to heightened academic and social stress.
- **Limitations:** Self-reported data and the exclusion of missing observations may limit the study's generalizability. Media types were not differentiated.
- **Future Research:** Further studies should explore types of media usage, causal relationships, and additional demographic factors to better understand the interaction between media use and mental health.

References

Li, L., Abbey, C., Wang, H., Zhu, A., Shao, T., Dai, D., ... & Rozelle, S. (2022). The association between video game time and adolescent mental health: Evidence from rural China. International Journal of Environmental Research and Public Health, 19(22), 14815. https://doi.org/10.3390/ijerph192214815

Hamer, M., Stamatakis, E., & Mishra, G. D. (2010). Television- and screen-based activity and mental well-being in adults: Cross-sectional and longitudinal associations. *American Journal of Preventive Medicine, 38*(4), 375–380. https://doi.org/10.1016/j.amepre.2009.12.030

Janicke-Bowles, S. H., Narayan, A., & Seng, A. (2022). Inspiration on social media: Applying an entertainment perspective to longitudinally explore mental health and well-being. *Cyberpsychology: Journal of Psychosocial Research on Cyberspace, 16*(3), Article 3. https://doi.org/10.5817/CP2022-3-3

Rideout, V. (2015). The Common Sense Census: Media use by tweens and teens. *Common Sense Media.* Retrieved from https://www.commonsensemedia.org/