

Frequent Technology Use and Reading Anxiety: Examining School Social Environment Using a Twin Sample

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INTRODUCTION

Reading is foundational for long-term development and academic success, making it important to understand factors that contribute to reading-related stress in children. One outcome that has received relatively little attention in research is reading anxiety, which refers to feelings of stress, worry, or discomfort that occur when children are presented with reading tasks. These emotional responses can negatively influence reading engagement, confidence, and overall academic experiences.

At the same time, rapid technological advancement has made digital devices easily accessible and increasingly integrated into children's daily lives. Although digital tools can support learning, communication, and access to information, concerns have emerged regarding the potential impact of frequent technology use on children's cognitive and emotional development. Prior work suggests that heavy digital engagement may influence factors such as attention regulation, academic engagement, and symptoms of anxiety.

In addition to technology use, children's school social environment may play an important role in shaping how they respond to academic demands. Experiences such as peer support, positive classroom interactions, and a sense of belonging at school can influence students' emotional responses to challenging academic tasks. A supportive school environment may therefore help reduce negative emotional experiences associated with learning.

Despite growing interest in technology use and school climate, relatively little research has examined how these factors relate specifically to reading anxiety in children. The present study examines whether frequent technology use is associated with higher levels of reading anxiety and whether school social environment moderates this relationship using a sample of twin pairs.

AIM

This study examines whether frequent technology use is associated with higher levels of reading anxiety in children and whether school social environment moderates this relationship. Using a twin sample, we test whether students who report greater technology use also report higher reading anxiety and whether peer support and school belonging reduce this association.

HYPOTHESIS

We hypothesized that greater technology use would be associated with higher reading anxiety, and that a more positive school social environment would weaken this relationship.

BACKGROUND

The rapid expansion of digital technology has significantly changed the environments in which children learn and interact. Recent national surveys indicate that children spend increasing amounts of time using digital devices for entertainment, communication, and school-related activities (Rideout & Robb, 2021). Although technology offers important educational opportunities, researchers have raised concerns about potential associations between high levels of screen use and emotional or behavioral difficulties, including symptoms of anxiety and reduced academic engagement (Twenge & Campbell, 2018).

At the same time, students' emotional experiences in academic contexts play an important role in learning outcomes. According to Pekrun's control-value theory of achievement emotions, emotions such as anxiety can influence students' motivation, persistence, and academic performance. When students experience negative emotions toward academic tasks, they may avoid those tasks or engage with them less effectively (Pekrun, 2006).

Reading motivation research has also emphasized the importance of social and motivational factors in shaping children's engagement with reading. Students who feel supported by peers and teachers and who experience a sense of belonging in school tend to show greater reading motivation and engagement (Wigfield & Guthrie, 1997). These findings suggest that supportive school environments may help reduce negative emotional responses to reading tasks and promote more positive academic experiences.

Together, this body of research highlights the importance of examining how technology use and school social environments relate to children's emotional experiences with reading, particularly reading anxiety.

METHOD

Participants

- Twin pairs from a child development research sample
- Children in Kindergarten through 6th grade
- $N \approx 395$ participants

Measures

- Technology Use: Frequency of children's digital engagement (child report)
- Reading Anxiety: Emotional responses to reading tasks
- School Social Environment: Peer support and sense of belonging at school

Analysis

- Bivariate correlations examined relationships among study variables
- Linear mixed-effects regression models tested whether technology use predicted reading anxiety
- School social environment was tested as a moderator
- Models accounted for the nested structure of twins within families

Statistical Software

- Analyses conducted in R

RESULTS

INTERACTION OF TECHNOLOGY USE AND SCHOOL SOCIAL ENVIRONMENT ON READING ANXIETY

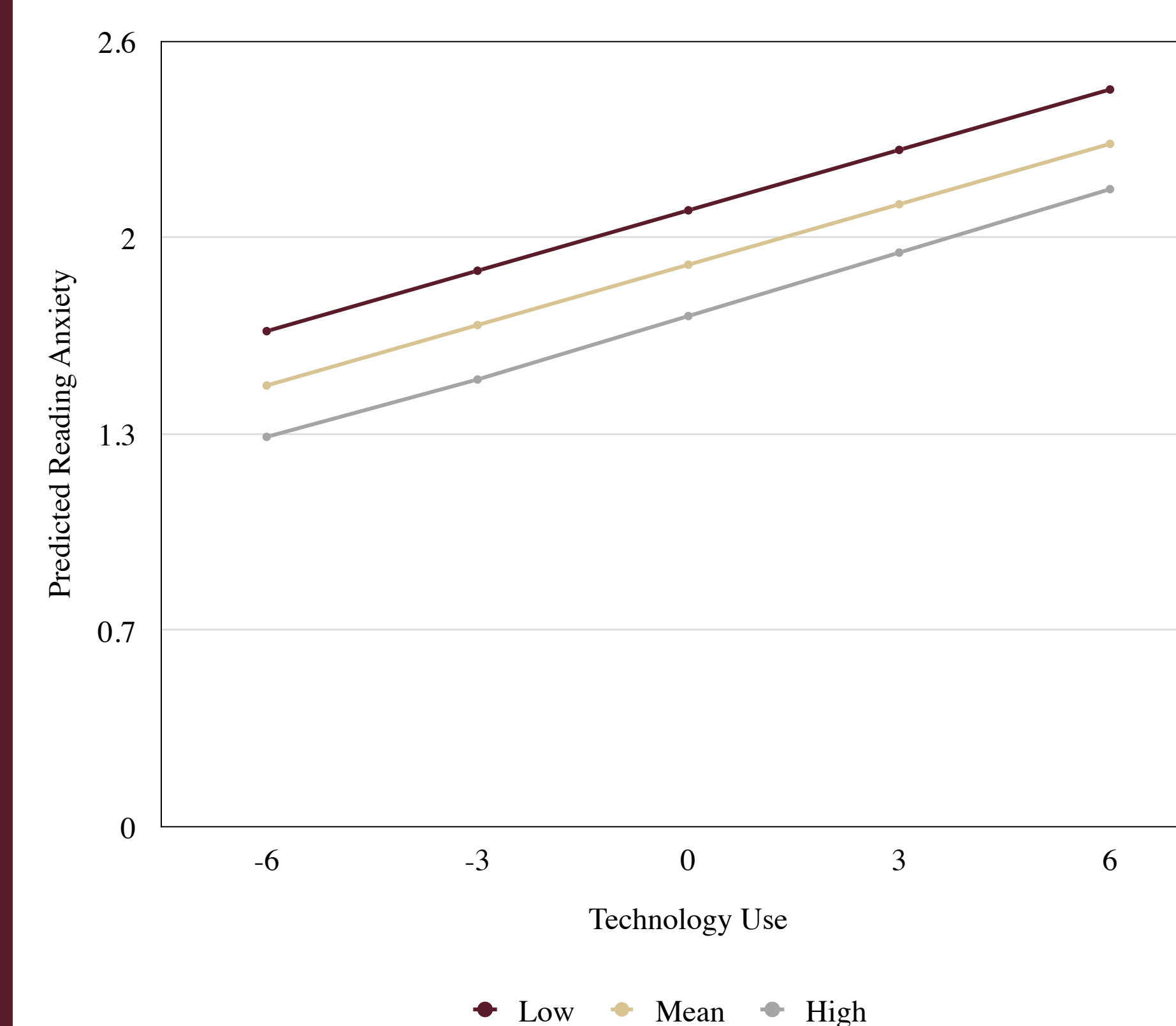


Figure 1. Predicted reading anxiety across levels of technology use for low (-1 SD), mean, and high ($+1$ SD) school social environment. Similar slopes across lines indicate that school social environment did not significantly moderate the relationship between technology use and reading anxiety.

BIVARIATE CORRELATIONS

Pair	r
Technology Use ↔ Reading Anxiety	0.263*
School Social Environment ↔ Reading Anxiety	-0.217***
Technology Use ↔ School Social Environment	-0.188***

Table 1. Bivariate correlations among study variables. Higher technology use was associated with greater reading anxiety ($r = .263^*$), while more positive school social environments were associated with lower reading anxiety ($r = -.217^{***}$). Technology use was also negatively related to school social environment ($r = -.188^{***}$).

CONCLUSION

- Frequent technology use was associated with higher levels of reading anxiety in children.
- More positive school social environments were associated with lower reading anxiety.
- School social environment did not significantly moderate the relationship between technology use and reading anxiety.
- Findings suggest that digital habits and school climate independently contribute to children's emotional experiences with reading.

FUTURE DIRECTIONS

Future research should examine the longitudinal relationship between technology use and reading anxiety to better understand the directionality of these associations. Because the present study uses cross-sectional data, it cannot determine whether increased technology use contributes to reading anxiety or whether children who experience higher anxiety toward reading may turn to digital media more frequently. As well as, different types of technology use rather than treating technology engagement as a single construct. Prior research suggests that educational technology, social media use, gaming, and passive screen consumption may have different cognitive and emotional effects on children. Distinguishing between these forms of technology use may provide greater insight into which types of digital engagement are most strongly associated with reading-related stress or anxiety.

REFERENCES

- Pekrun, R. (2006). The control-value theory of achievement emotions: Assumptions, corollaries, and implications for educational research and practice. *Educational Psychology Review*, 18, 315–341.
- Rideout, V., & Robb, M. B. (2021). *The Common Sense census: Media use by kids age zero to eight*. Common Sense Media.
- Twenge, J. M., & Campbell, W. K. (2018). Associations between screen time and lower psychological well-being among children and adolescents. *Preventive Medicine Reports*, 12, 271–283.
- Wigfield, A., & Guthrie, J. T. (1997). Relations of children's motivation for reading to the amount and breadth of their reading. *Journal of Educational Psychology*, 89, 420–432.

