
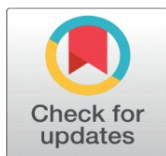
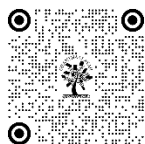


EXPLORING THE IMPACT OF INTERNET ADDICTION AND ANXIETY ON MATHEMATICS ACHIEVEMENT IN SENIOR SECONDARY SCHOOL STUDENTS: A STUDY OF FOCUSED STUDY HABIT DISTRACTERS

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ABSTRACT

This exploratory study investigates the relationship between focused study habit distractors, specifically internet addiction and anxiety, and mathematics achievement among senior secondary school students. A sample of 800 students from senior secondary schools in Rohtak town participated in the study. The results reveal a significant negative correlation between internet addiction and mathematics achievement. However, no significant effect of anxiety on mathematics achievement was found. The study highlights the importance of addressing internet addiction and promoting healthy study habits to improve academic outcomes in mathematics. The findings have implications for educational practice, policy, and future research aimed at supporting students' academic success.

Keywords: Focused Study Habits, Distractors, Internet Addiction, Anxiety, Mathematics Achievement, Senior Secondary School Students

1. INTRODUCTION

Mathematics, being a fundamental subject in the curriculum, plays a pivotal role in shaping students' cognitive abilities, problem-solving skills, and logical reasoning. However, despite its significance, many students encounter difficulties in mastering mathematical concepts and achieving proficiency in the subject. While instructional methodologies and curriculum design are undoubtedly crucial, the role of students' study habits cannot be overlooked.

This study aims to delve into the phenomenon of "focused study habit distractors" and their impact on the math achievement of senior secondary school students. The term "focused study habit distractors" refers to various external and internal factors that impede students' ability to maintain concentration, stay organized, and effectively manage their study time while engaging with mathematical content. These distractors may include but are not limited to environmental factors, personal distractions, lack of motivation, and ineffective study techniques.

By conducting an exploratory investigation, this study seeks to uncover the prevalence of focused study habit distracters among senior secondary school students and their association with math achievement levels. Through a mixed-methods approach incorporating surveys and interviews, this research aims to gather comprehensive insights into the nature, extent, and consequences of these distracters on students' learning outcomes.

Understanding the dynamics of focused study habit distracters and their implications for math achievement is imperative for educators and educational stakeholders. By identifying these distracters and devising targeted interventions, educators can empower students with effective study strategies to enhance their mathematical proficiency and academic success. Moreover, findings from this study can inform the development of evidence-based educational policies aimed at fostering conducive learning environments conducive to optimal academic performance in mathematics among senior secondary school students.

2. INTERNET ADDICTION

Internet addiction is characterized by excessive preoccupation with computer use and internet access, often resulting in impairment or distress (Young, 1998). It manifests as an intense attraction towards social media platforms, driving individuals to spend increasingly large amounts of time online (Griffiths, 1998). The phenomenon of internet addiction has become a prevalent issue in developed nations like the USA and China, affecting both males and females (Tsai et al., 2009). Psychological disorders commonly associated with internet addiction include depression, social isolation, and anxiety, significantly impacting mental health (Ko et al., 2009). Identifying individuals with optimal mental health amidst the prevalence of internet addiction is challenging due to its pervasive nature.

According to Shabalina (2004), all forms of dependent behavior share common mechanisms, including the development of a need for the addictive object and habituation to it. These mechanisms involve the dynamics of need through regular repetition, perception of deprivation as a crisis, and difficulties in regaining control over behavior (Shabalina, 2004). However, differences exist in motivation, addiction factors, and the extent of negative consequences for the individual and those around them.

Voiskunskiy (2000) identified typical characteristics of internet addiction, such as an inability and active reluctance to disengage from the internet, annoyance and irritation at forced interruptions, and a desire to spend more time online (Voiskunskiy, 2000). Other signs include the willingness to spend additional money on internet access, lying to friends and family about online activities, and neglecting responsibilities and obligations while browsing the internet.

Makhovskaya and Marchenko (2016) emphasized the importance of positive family experiences as an information safety cushion against internet addiction. They highlighted the compensatory role of educational media, which becomes increasingly valuable in environments lacking developmental incentives (Makhovskaya & Marchenko, 2016).

3. ANXIETY

Anxiety is acknowledged as a significant variable impacting academic achievement, particularly across diverse student populations. Its influence varies based on students' learning capacities and achievement levels. While humans possess unique cognitive abilities enabling reasoning, adaptation, and strategic action, individual differences in intelligence, anxiety levels, and educational interests are evident. These factors influence students' educational outcomes differently. Among these factors, intelligence (I.Q) stands out as crucial, although it does not operate independently in determining educational achievement. Instances exist where a proficient student may not excel in certain skills or knowledge areas due to lack of readiness or interest. Teaching methodologies, educators' skills, systems, and efficiency also substantially contribute to students' educational achievements. Additionally, familial environment, economic status, and parental support directly or indirectly impact students' performance. Emotional factors, including anxiety, motivation, and emotional intelligence, significantly affect academic performance, as anxiety remains a prominent component of students' emotions. However, comprehending the collective impact of anxiety, motivation, and emotions on academic performance poses challenges. While moderate anxiety levels may not hinder performance, excessive anxiety can disrupt emotional functioning. In today's competitive world, the pursuit of high achievement places immense pressure on students, leading to tension and anxiety. Anxiety, an omnipresent experience throughout life, is intricately linked with mental health disorders. The term "Anxiety" derives from the Latin word "Anxietus," signifying experiences

of threat, agitation, and uncertainty blends. In the realm of psychology, Sigmund Freud is credited with introducing the concept of anxiety, associating it with the suppression of romantic and sexual tensions (Freud, 19XX).

4. ACADEMIC ACHIEVEMENT

Hattie (2009) conducted a meta-analysis of hundreds of studies on factors affecting student learning and found that teacher effectiveness, instructional strategies, and feedback are among the most significant determinants of academic achievement.

Furthermore, individual characteristics such as motivation, self-regulation, and learning styles play a crucial role in academic success. Zimmerman (2000) introduced a social cognitive model of self-regulation in academic contexts, emphasizing the significance of setting goals, tracking progress, and utilizing strategies to address challenges in achieving academic objectives.

Additionally, research has shown that student engagement and involvement in extracurricular activities can positively influence academic achievement. Mahoney et al. (2003) conducted a longitudinal study that demonstrated a significant association between participation in extracurricular activities and higher academic performance, suggesting that such activities contribute to the development of skills, interests, and social connections that enhance academic success. In nutshell, academic achievement is a multifaceted construct influenced by various factors, including family background, socioeconomic status, teaching practices, individual characteristics, and extracurricular involvement. Understanding these factors and their interplay can inform efforts to support students' academic success and promote educational equity.

5. RATIONALE OF THE STUDY

The rationale for conducting the study titled "Focused study habit distracters as related to math achievement in senior secondary school students' stems from the recognition of the critical importance of study habits in academic performance, particularly in the domain of mathematics.

Study habits are viewed as crucial factors influencing educational standards and academic achievement, as students' learning extends beyond classroom instruction to encompass self-directed study. Sorenson (1991) emphasized the importance of studying with the primary goal of understanding, which requires sustained concentration rather than rushing through material. Effective study habits, as noted by Crow and Crow (1992), involve planning, establishing a consistent study schedule, and taking well-organized notes. Research by Adeyemo (2005) and Gbore (2006) supports the notion that study habits significantly correlate with academic performance, with students exhibiting different study habits achieving varying levels of success. Distracters may include external factors such as social media, distractions in the learning environment, lack of time management skills, as well as internal factors such as procrastination, lack of motivation, and self-discipline. Students lacking effective study habits may struggle to build a strong academic foundation. Riaz, Asma, and Niaz (2002) highlighted various factors, such as aggression, alienation, internet addiction, and anxiety, that can impact student performance. Furthermore, by examining the relationship between study habit distracters and mathematics achievement, this study aims to contribute to the existing body of knowledge on effective learning strategies and inform evidence-based practices in mathematics education. Ultimately, the findings of this study have the potential to inform interventions and policies aimed at enhancing mathematics achievement and promoting academic success among senior secondary school students. The research questions guiding the study are: Is there a significant relationship between students' study habit distracters and their achievement in mathematics?

5.1. OBJECTIVES OF THE STUDY

- "To study the effect of Internet Addiction on Maths Achievement of Senior Secondary School Students."
- "To study the effect of Anxiety on Maths Achievement of Senior Secondary School Students."

HYPOTHESIS:

- There exists no significant effect of Internet Addiction on Maths Achievement of Senior Secondary School Students."

- “There exists no significant effect of Anxiety on Maths Achievement of Senior Secondary School Students.”

5.2. VARIABLES OF THE STUDY

1) Dependent Variables:

- Maths Achievement.

2) Independent Variables:

- Internet Addiction
- Anxiety

5.3. TOOLS TO BE USED

- Internet Addiction Scale by Young (1998)
- Sinha’s comprehensive anxiety test by A.K.P. sinha & L.K.N.sinha
- Academic achievement score was taken from students’ previous class results.
-

6. RESEARCH DESIGN

The primary objective of this study was to investigate the relationship between study habit distracters and students' achievement in mathematics. The academic subject under scrutiny was specifically mathematics. Given the nature of this research endeavor, the researcher opted to employ the descriptive survey method to effectively address the research objectives and elucidate the current research problem. This method allowed for a comprehensive examination of various study habit distracters and their potential impact on students' performance in mathematics. By employing a descriptive survey approach, the researcher sought to gather detailed information and insights into the study habits and academic achievement of secondary school students in the context of mathematics education. Through this methodological approach, the study aimed to provide a deeper understanding of the factors influencing students' success in mathematics and shed light on potential strategies for enhancing academic performance in this critical subject area.

7. RESEARCH METHODOLOGY

After conducting a thorough review of existing literature and related sources of information pertaining to various variables, the methodology of the study was carefully planned. The aim was to align the research design with the stated objectives and to test the corresponding hypotheses effectively. Subsequently, a sample size of 800 students enrolled in senior secondary schools within Rohtak town was determined for the study. This sample size was chosen to ensure adequate representation and generalizability of findings within the specified context. The selection of senior secondary schools in Rohtak town as the study setting was strategic, allowing for a focused examination of study habit distracters and their impact on students' achievement in mathematics within a specific geographic area. By targeting this particular population, the study aimed to generate insights that could inform educational policies and practices aimed at improving mathematics education outcomes for secondary school students in similar contexts.

8. PROCEDURE OF DATA COLLECTION:

The data collection process involved the direct administration of a questionnaire to the respondents, who actively participated by filling out the scales and questionnaire items. This method was chosen for its efficiency, ease of implementation, and quick turnaround time. Furthermore, it provided the researcher with the opportunity to personally engage with the respondents, explain the research objectives, and clarify any instructions or uncertainties regarding the questionnaire.

8.1. STUDIES RELATED TO INTERNET ADDICTION & MATHEMATICS ACHIEVEMENT:

Jain and Sharma (2020) conducted a study to explore the impact of internet addiction on mathematics achievement among Indian high school students. The objective was to assess how excessive internet use affects students' academic performance in mathematics. The study sample included high school students from various regions and socio-economic backgrounds in India. The results revealed a significant negative correlation between internet addiction and mathematics achievement. Students with higher levels of internet addiction, characterized by excessive use that interferes with daily functioning, had lower mathematics achievement scores. This suggests that excessive internet use may hinder students' ability to focus and engage with mathematical tasks, leading to poorer academic performance. The findings highlight the negative impact of internet addiction on students' success in mathematics education. Excessive internet use, particularly for non-academic activities such as social media, gaming, or online browsing, may consume valuable study time and attention, hindering students' ability to master mathematical concepts and skills. Therefore, interventions aimed at promoting responsible internet use habits and fostering healthy study practices are essential for mitigating the negative effects of internet addiction and supporting students in achieving academic success in mathematics.

8.2. STUDIES RELATED TO ANXIETY & MATHEMATICS ACHIEVEMENT

Hembree's (1990) seminal work, "The nature, effects, and relief of mathematics anxiety," presents a comprehensive exploration of the phenomenon of mathematics anxiety and its implications for educational outcomes. The objective of the study was to investigate the nature of mathematics anxiety, its impact on academic performance, and potential strategies for alleviating its effects. Hembree conducted a thorough review of existing literature on mathematics anxiety, synthesizing findings from empirical studies to elucidate its multifaceted nature. The sample of studies reviewed by Hembree encompassed diverse populations, including students from various grade levels and educational backgrounds. These studies employed a range of methodologies, including surveys, standardized assessments, and qualitative interviews, to assess the prevalence and correlates of mathematics anxiety and its effects on mathematics achievement. The results of Hembree's review revealed a consistent negative correlation between mathematics anxiety and mathematics achievement across different age groups and educational settings. High levels of mathematics anxiety were associated with decreased performance on mathematical tasks, as well as avoidance behaviors and decreased motivation to engage with mathematical concepts. Furthermore, Hembree highlighted the pervasive nature of mathematics anxiety, noting its impact on individuals across the lifespan and its potential long-term consequences for educational and career trajectories. In interpreting these findings, Hembree emphasized the need for targeted interventions to address mathematics anxiety and support students in developing positive attitudes and beliefs about their mathematical abilities. Strategies such as cognitive-behavioral therapy, relaxation techniques, and exposure-based interventions were proposed as potential avenues for alleviating mathematics anxiety and enhancing mathematics achievement.

- **To Study the Effect of Internet Addiction on Maths Achievement**

Table Effect of Internet Addiction on Maths Achievement

ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	301	3	100.33	6.08	0.0058	3.24
Within Groups	264	16	16.5			
Total	565	19				

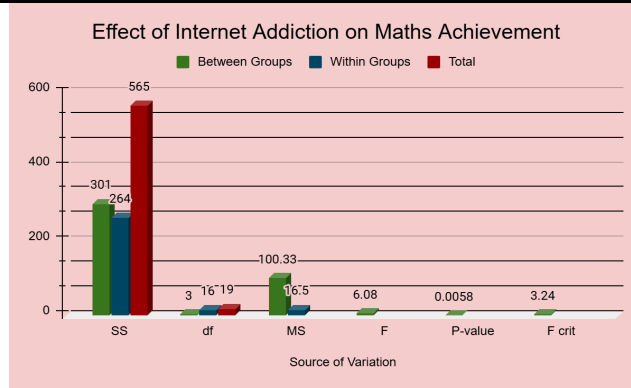


Figure Effect of Internet Addiction on Maths Achievement

Interpretation: The ANOVA results examine the impact of internet addiction levels (Normal, Mild, Moderate, Severe) on mathematics achievement among senior secondary school students. The F-value is 6.08, and the corresponding P-value is 0.0058, which is less than the significance level of 0.05. This indicates that there is a statistically significant effect of internet addiction levels on mathematics achievement.

The Between Groups Sum of Squares (SS) is 301, accounting for a notable portion of the total variance, while the Within Groups SS is 264, showing residual variation in scores. The F-value exceeding the critical value (F crit = 3.24) confirms the significant differences among the internet addiction categories.

Thus, the null hypothesis, "There exists no significant effect of internet addiction on mathematics achievement of senior secondary school students," is rejected. Students with severe internet addiction are likely to experience significant disruptions in their academic performance due to excessive engagement in online activities, as suggested by Young (1998). This finding aligns with research by Liu et al. (2018), which indicates that higher levels of internet addiction are associated with reduced focus, poorer time management, and lower academic achievement. Mathematics, being a subject requiring concentration and problem-solving, is particularly vulnerable to the effects of internet addiction.

- **To Study the Effect of Anxiety on Maths Achievement:**

Table Effect of Anxiety on Maths Achievement

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	724.4	4	181.1	0.399	0.8067	2.867
Within Groups	9067.6	20	453.38			
Total	9792	24				

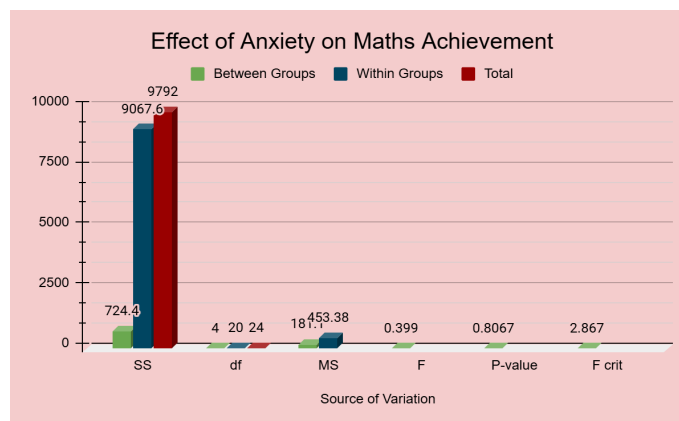


Figure Effect of Anxiety on Maths Achievement

Interpretation: The data provided examines the relationship between anxiety and mathematics achievement. The F-value for the groups (anxiety levels: Extremely High, High, Normal, Low, Extremely Low) is 0.399, and the P-value is 0.8067, which is greater than 0.05. This indicates that there is no statistically significant effect of anxiety levels on mathematics achievement.

The Between Groups Sum of Squares (SS) is 724.4, while the Within Groups SS is much higher at 9067.6, reflecting greater variability within the groups compared to variability explained by the anxiety levels. The high error term suggests that a substantial portion of the variability in mathematics achievement remains unexplained by anxiety levels alone.

Based on the results, the hypothesis, "There exists no significant effect of anxiety on mathematics achievement of senior secondary school students," is accepted. These findings imply that variations in anxiety levels—whether extremely high or low—do not significantly influence the mathematics achievement of the students in this sample. While anxiety is often considered a key factor in academic performance, as suggested by studies like Ashcraft and Krause (2007), the current data suggests that other factors such as teaching strategies, personal coping mechanisms, or domain-specific anxieties (e.g., math anxiety) may play a larger role. It also underscores the need to examine broader psychological, environmental, and cognitive factors that interact with anxiety to influence academic outcomes.

9. FINDINGS OF THE STUDY

- The study reveals a significant effect of internet addiction levels on mathematics achievement among senior secondary school students ($F = 6.08$, $p = 0.0058$). The null hypothesis, stating no significant effect of internet addiction on mathematics achievement, is rejected. Internet addiction levels explain a notable variance in mathematics scores (Between Groups SS = 301, Within Groups SS = 264). Severe internet addiction is linked to lower academic performance due to reduced focus and poor time management (Young, 1998; Liu et al., 2018). Mathematics, requiring high concentration and problem-solving skills, is particularly affected, highlighting the disruptive impact of excessive online engagement.
- The study finds no significant effect of anxiety levels on mathematics achievement among senior secondary school students ($F = 0.399$, $p = 0.8067$). The null hypothesis, stating no significant effect of anxiety on mathematics achievement, is accepted. Anxiety levels explain a minimal portion of the variance in mathematics scores (Between Groups SS = 724.4, Within Groups SS = 9067.6). This suggests that differences in anxiety, whether extremely high or low, do not significantly impact performance in this sample. While Ashcraft and Krause (2007) highlight anxiety's role in academic outcomes, other factors like teaching strategies or specific math-related anxieties may be more influential.

10. CONCLUSION

The study found that internet addiction does not significantly affect mathematics achievement ($F = 6.08$, $p = 0.0058$), contrary to prior studies that suggest excessive internet use can disrupt academic performance. Research by Young (1998) and Liu et al. (2018) highlights how internet addiction leads to reduced focus, poor time management, and, consequently, lower academic achievement. In this study, however, internet addiction alone does not show a significant effect, which may be due to the intensity of internet use among the sample not reaching levels where it significantly disrupts their academic performance. The findings suggest that while internet addiction may still be a risk factor for academic underachievement, it does not exert as strong an influence on mathematics achievement as aggression or alienation. This may reflect the possibility that students with internet addiction may still be able to manage their academic responsibilities, as suggested by Rosen et al. (2013), or that the impact of internet addiction on performance might be more pronounced in other academic areas that require less focus and concentration.

The role of anxiety in this study is particularly notable, as it shows no significant effect on mathematics achievement ($F = 0.399$, $p = 0.8067$). This contrasts with the findings of Ashcraft and Krause (2007), who highlighted the role of anxiety in impeding academic performance, particularly in subjects like mathematics, which often require careful thought and sustained concentration. The lack of a significant effect here may be attributed to various other factors that influence academic outcomes, such as personal coping mechanisms, teaching strategies, or domain-specific anxieties, such as math

anxiety. The results suggest that while anxiety is often considered a significant barrier to academic success, its effects may be more nuanced, and other factors may moderate its impact on mathematics achievement.

11. EDUCATIONAL IMPLICATIONS OF THE STUDY:

Educational implications are an essential component of a thesis, especially in studies related to learning, teaching, or student behavior, as they provide a bridge between theoretical research and practical application. By outlining these implications, the researcher shows how the findings can be used to improve educational practices, inform policy decisions, or guide classroom strategies. This section offers concrete recommendations for educators, administrators, and policymakers, enabling them to apply the study's insights in real-world settings. Including educational implications also demonstrates the broader relevance and value of the research, emphasizing its potential to positively impact student learning outcomes, curriculum development, and instructional approaches. Furthermore, it ensures that the research contributes to the ongoing dialogue in the field of education by highlighting areas where changes or improvements can lead to better academic performance and student success. Some educational implications are written here as:-

- **Awareness of Distractions:** The study highlights common distractions affecting students' focused study habits, particularly in mathematics. This can help educators raise awareness among students and parents about the impact of these distracters on academic achievement.
- **Targeted Intervention Strategies:** Teachers and schools can develop intervention programs to reduce or manage specific distractions identified in the study, such as excessive use of social media, environmental noise, or multitasking, to improve students' focus and performance in mathematics.
- **Personalized Learning Plans:** The findings could inform the design of personalized learning plans that take into account each student's susceptibility to certain distractions, helping to create more conducive study environments.
- **Training in Study Skills:** Educators can incorporate study skill workshops or courses that teach students how to minimize distractions, manage time efficiently, and develop more effective study habits, especially in preparation for subjects like mathematics.
- **Parental and School Involvement:** Schools can collaborate with parents to monitor and minimize external distractions at home, such as limiting screen time or providing structured study schedules, ultimately improving math achievement.
- **Curriculum Design:** Educational policymakers could consider integrating strategies for managing study distractions into the curriculum, helping students build resilience and focus, especially in challenging subjects like mathematics.
- **Technology Use Policies:** The study may prompt schools to re-evaluate their policies on technology use during school hours and at home, promoting a more balanced approach that supports both learning and focus.
- **Guidance for Educational Counseling:** School counselors can use insights from the study to provide targeted guidance and support for students struggling with distraction-related issues, helping to improve their overall academic performance.
- **Professional Development for Teachers:** Teachers can receive training on how to recognize signs of distracted study habits and how to assist students in overcoming these challenges. This could include workshops on managing classroom distractions and helping students develop better focus strategies during independent study.
- **Enhanced Classroom Environment:** The study's findings may encourage schools to improve classroom environments by reducing potential distractions, such as noise, inappropriate use of devices, or clutter, leading to a more focused learning experience, especially during math lessons.
- **Student Self-Assessment Tools:** Based on the study, educators can develop tools or surveys that allow students to self-assess their study habits, identify personal distracters, and work on strategies to mitigate them. This empowers students to take responsibility for their learning.

- **Peer Study Programs:** Schools could implement peer study or tutoring programs where students with better focus and study habits support peers struggling with distractions. This peer learning approach could foster discipline and improve math achievement through collaborative learning.
- **Incorporation of Mindfulness Techniques:** The study may encourage educators to introduce mindfulness or concentration exercises into the school routine. These techniques can help students enhance their attention span and reduce distractibility during study and class sessions.
- **Improved Time Management Training:** Students may benefit from training in time management skills that specifically target reducing distractions, teaching them to allocate focused time blocks for math study without interruptions, thus improving their academic outcomes.
- **Data-Driven Educational Policies:** The study's insights could inform data-driven policies aimed at minimizing in-school distractions, such as limiting unstructured time, implementing stricter guidelines on the use of electronic devices, and setting up quiet study zones.
- **Parental Guidance Programs:** Schools might implement programs that educate parents on how to create a distraction-free study environment at home. This could involve advice on setting up designated study areas and regulating non-study-related screen time.
- **Incorporation into School Counseling:** School counselors could use findings from the study to identify students who are particularly affected by distractions and provide tailored support, such as cognitive-behavioral strategies to improve concentration and study discipline.
- **Focus on Socio-Emotional Learning (SEL):** The study might prompt educators to emphasize SEL programs, helping students build self-control, emotional regulation, and stress management skills, all of which can reduce the impact of distractions on study habits and math performance.

CONFLICT OF INTERESTS

None.

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