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Achievement Motivation in Adolescence: Associations with Gender, Grade, Family Structure, and Urban–Rural Background in a Chinese Sample

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Abstract

Achievement motivation, comprising the dual dimensions of hope for success (HS) and fear of failure (FF), plays a vital role in students' academic development. Although widely studied, little research has examined how these motivational tendencies vary across demographic groups within the context of China' s competitive secondary education system. This cross-sectional study surveyed 968 middle school students in Shandong Province using the Chinese Achievement Motivation Scale. Independent-samples t-tests and ANOVA were conducted to examine differences by gender, grade level, family structure, and urban–rural background. Results showed that male students reported significantly higher overall motivation and HS, while female students exhibited greater FF. Grade 9 students demonstrated a small but significant increase in FF, likely reflecting the psychological pressure of high-stakes examinations. Urban students scored higher on HS and lower on FF than their rural peers. No significant differences were found based on family structure. These findings underscore the role of intersecting demographic factors in shaping adolescent achievement motivation and provide evidence to guide more targeted, equity-informed educational interventions.

Keywords: Achievement Motivation, Demographic Differences, Fear of Failure, Hope for Success, Middle School Students

Introduction

Achievement motivation constitutes a foundational construct in educational psychology, referring to the internal drive that propels individuals toward success and shapes their persistence in the face of challenges. Empirical research has consistently shown that students with stronger achievement motivation tend to demonstrate higher academic engagement, better performance, and more sustained learning trajectories (Bjørnebekk et al., 2013; Wang & Eccles, 2013). This motivational force is particularly salient during early adolescence, when students begin to internalize performance standards, develop long-term academic goals, and face heightened examination pressures. For students in middle school, especially within high-stakes educational environments such as China's, achievement motivation plays a critical role in shaping their academic engagement and future aspirations. However, emerging evidence

suggests that middle school students often face considerable challenges in sustaining achievement motivation. For instance, the 2018 PISA report revealed that Chinese adolescents exhibited an unusually high fear of failure, potentially undermining their motivation and emotional well-being (OECD, 2019). Other studies have also indicated insufficient levels of achievement motivation among early adolescents in East Asian contexts, raising concerns about student long-term development (Hu et al., 2022).

In response to these issues, the development of targeted intervention strategies has become increasingly important. Yet, an essential question arises: Should all students receive the same type of motivational support? Given the diverse psychological and social backgrounds among students, it is likely that different demographic groups exhibit varying patterns of achievement motivation (McDaniel & Phillips, 2018; Wani & Masih, 2015). Therefore, identifying key demographic variables can offer critical insights for designing differentiated and more effective motivational interventions. Previous research suggests that demographic characteristics—such as gender, grade level, family structure, and urban-rural background—may significantly influence students' motivational profiles (Lounkaew, 2013). Such disparities call for a deeper empirical analysis that can uncover the subtle nuances of how diverse demographic variables affect students' achievement motivation. These factors reflect unequal resource distribution, differences in family academic support, gender-based societal expectations, which further entrench the disadvantages faced by certain groups (McDaniel & Phillips, 2018). Without addressing these dynamics, educational policies would fall short in supporting marginalized students. A thorough understanding of these variables is critical for fostering educational equity and refining policy frameworks.

By thoroughly examining the relationships among gender, grade level, family structure, and urban–rural background in relation to both hope for success and fear of failure, this study aims to fill the existing research gap. The insights derived from this investigation are expected not only to advance theoretical understanding but also to provide empirical evidence that can inform the development of more targeted and effective intervention strategies. Ultimately, such strategies could help educators and policymakers create a more equitable and supportive educational environment, thereby enhancing achievement motivation for all students.

Literature Review

Conceptual Foundations of Achievement Motivation

Achievement motivation is widely recognized as a key psychological factor influencing students' academic engagement and success (Steinmayr et al., 2019). It is widely recognized as comprising two distinct dimensions: hope for success (HS) and fear of failure (FF). HS reflects an individual's tendency to approach challenges with enthusiasm and confidence, while FF involves avoidance behaviors motivated by anticipated shame or negative evaluation (Pang, 2010). These twin constructs are grounded in classic theoretical models and further integrated into hierarchical frameworks of motivation as fundamental psychological needs. According to the hierarchical model of achievement motivation, HS and FF influence the types of achievement goals that individuals adopt, which subsequently predict academic outcomes (Elliot & Sommet, 2023). Empirical evidence supports that HS tends to foster mastery- and performance-approach goals, both of which are associated with enhanced intrinsic motivation and academic success. In contrast, FF often leads to performance-avoidance goals,

which are linked to heightened anxiety, lower engagement, and diminished achievement (Heckhausen & Heckhausen, 2018). In the context of Chinese education, particularly among junior secondary students preparing for high-stakes examinations, understanding how achievement motivation varies across different demographic groups is essential.

Gender and Achievement Motivation

Gender has long been examined as a key predictor of students' motivational orientations in educational settings. Socialization processes are thought to shape distinct academic self-concepts, emotional coping styles, and goal pursuits across genders. For example, Pašková (2007) suggested that some female students may avoid demonstrating academic competence when it conflicts with perceived feminine norms or threatens their alignment with traditional gender roles. In East Asian contexts, research has further identified a tendency among girls to adopt performance-avoidance goals, often driven by fear of negative evaluation and heightened sensitivity to social feedback (Pang, 2010). While some studies report a narrowing of gender disparities in motivation—particularly in more gender-equitable educational systems—gender remains a salient variable in motivational research. In China, where intense academic competition coexists with persistent gender role expectations, it remains essential to examine whether middle school students continue to exhibit gender-based differences in hope for success and fear of failure.

Grade-Level Variation in Achievement Motivation

Achievement motivation is also influenced by students' academic progression. Research suggests that motivation tends to decline as students move to higher grades, often due to increased academic workload, test pressure, and changes in social dynamics. In East Asian systems that emphasize high-stakes exams, such decline may be intensified. Yeung, Lau, and Nie (2011) investigated motivation differences by grade and gender among 4,214 Singaporean students (Yeung et al., 2011). They found that secondary students showed lower adaptive motivation and more maladaptive behaviors (e.g., avoidance coping, effort withdrawal), suggesting a motivational decline with grade progression, likely due to higher academic demands and less supportive environments. Similarly, Liu et al. (2020) noted that Chinese students preparing for the senior high school entrance exam exhibited elevated anxiety and avoidance tendencies (Liu et al., 2020). Although some students may become more focused as academic expectations increase, the general trend suggests a decline in hope for success and a rise in fear of failure with grade progression. This study extends prior findings by examining whether such patterns hold true in Chinese junior secondary schools (Grades 7 to 9).

Family Structure and Achievement Motivation

Family structure, particularly the distinction between two-parent and single-parent households, has garnered considerable attention as a factor influencing adolescents' academic achievement and psychological development. Traditionally, single-parent families have been associated with reduced parental support, increased emotional strain, and diminished academic guidance, all of which may negatively impact adolescents' achievement motivation. For instance, Barrett and Turner (2005), in a comparative study of childhood family structures in Sweden and the United States, found that residing in non-intact families was negatively correlated with favorable child outcomes. Nevertheless, recent empirical evidence has increasingly challenged the universality and magnitude of these associations.

Some scholars argue that single-parent households can trigger compensatory dynamics, particularly involving maternal parenting. Specifically, mothers in single-parent families may intensify their caregiving and educational involvement to counterbalance paternal absence, thereby fostering stronger emotional bonds and increased academic support (Nelson et al., 2009). Such enhanced maternal engagement has been shown to positively influence adolescents' achievement motivation by eliciting a sense of gratitude and reciprocal responsibility among youth (Leung & Shek, 2018). Given these conflicting findings, it remains essential to investigate the role of family structure within specific educational and cultural contexts.

Urban–Rural Differences in Achievement Motivation

Geographic disparities in education have long been identified as significant determinants of motivation. Cross-national studies have shown that students in rural areas often face disadvantages in terms of access to quality teachers, school infrastructure, and enrichment opportunities—factors which are closely associated with differences in learning outcomes and motivational development (Lounkaew, 2013; OECD, 2019; Xu et al., 2024)). In China, urban–rural inequality remains a critical issue, affecting school infrastructure, teacher quality, and family support (Tang et al., 2022) These disparities may contribute to motivational gaps between urban and rural students. Previous research indicates that urban students generally report higher academic self-efficacy and achievement goals due to better resource access and parental involvement. Conversely, rural students often experience limited support systems and more academic pressure, which may lead to heightened fear of failure. Although some research suggests that disadvantaged students may exhibit resilience and strong motivation to learn whenever they are in societies with high social mobility (Lou & Li, 2023), the consensus remains that urban student benefit from more favorable conditions that enhance their hopes for success. Accordingly, the present study investigates whether urban–rural disparities continue to shape achievement motivation among Chinese middle school students, with the aim of informing differentiated motivational support strategies.

Summary and Research Gap

The literature reviewed highlights that achievement motivation is a multidimensional construct shaped by key demographic variables, including gender, grade level, family structure, and urban–rural background. While prior studies have examined these factors individually, few have offered a comprehensive analysis that simultaneously considers multiple demographic influences within the same empirical framework. Moreover, limited attention has been given to how these patterns manifest among Chinese middle school students facing high-stakes academic pressure. This study seeks to address these gaps by systematically investigating demographic variations in both hope for success and fear of failure, thereby contributing to a more nuanced understanding of adolescent motivation in the Chinese educational context. To this end, the present study sets out to investigate demographic variations in hope for success and fear of failure among Chinese middle school students.

Methodology

Research Design

This study adopted a cross-sectional quantitative research design to examine demographic differences in achievement motivation among Chinese middle school students. Data were

collected using anonymous self-administered questionnaires in public schools located in both urban and rural areas of Linyi, Shandong Province, China. This design was considered appropriate for identifying group-based variations across key demographic variables at a single time point. Ethical approval for the study was obtained from the institutional review board of the researchers' university, and informed consent was secured from both students and their guardians prior to participation.

Participants

A total of 968 students from Grades 7 to 9 voluntarily participated in the study. Stratified cluster sampling was employed to ensure proportional representation based on gender, grade level, and urban–rural residence. Among the participants, 480 were male and 488 were female. Grade-wise, 315 students were in Grade 7, 327 in Grade 8, and 326 in Grade 9. Regarding household registration, 400 students had urban registration, while 568 were from rural areas. With respect to family structure, 890 students reported living in two-parent households, and 78 came from single-parent families. The age of participants ranged from 12 to 15 years. The sampling strategy ensured sufficient demographic variability to allow for subgroup comparisons.

Instrument

Achievement motivation was measured using a culturally adapted and psychometrically validated version of the Chinese Achievement Motivation Scale developed by Ye and Hagtvet (1992), originally adapted from an English-language instrument. The scale comprises 30 items equally distributed across two subdimensions: Hope for Success (HS) and Fear of Failure (FF), with 15 items each. HS captures students' positive anticipatory emotions toward achieving academic success (e.g., "I feel a sense of accomplishment when completing difficult tasks"), whereas FF reflects anxiety and avoidance tendencies in challenging situations (e.g., "I feel nervous about tasks I may not be competent enough to handle"). Participants responded on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Following standard procedure, the total achievement motivation (AM) score was computed as the difference between standardized HS and FF scores, reflecting the net motivational tendency. Higher AM scores indicate greater achievement orientation. The instrument demonstrated excellent internal consistency in the current sample, with composite reliability (CR) values of 0.955 for the overall scale, 0.949 for HS, and 0.948 for FF.

Data Analysis

All data were analyzed using IBM SPSS Statistics version 26. Descriptive statistics summarized the distribution and central tendencies of the variables. Independent-samples t-tests assessed differences across binary demographic variables (gender, family structure, and urban–rural status), and one-way ANOVA examined grade-level differences. Assumptions of normality and homogeneity of variance were met. Where significant effects were observed, Bonferroni-corrected post hoc tests identified pairwise differences. Statistical significance was set at $p < .05$, and effect sizes (Cohen's d or partial eta squared) were reported as needed.

Results

This section presents the results of statistical analyses examining differences in achievement motivation (AM) and its subdimensions—Hope for Success (HS) and Fear of Failure (FF)—across demographic variables. Independent-samples t-tests were conducted for binary

variables (gender, family structure, urban–rural status), and one-way ANOVA was used for grade-level comparisons. Statistical significance was determined at $p < 0.05$. Effect sizes, including Cohen's d for t-tests and partial eta squared (η^2) for ANOVA, were calculated to supplement significance testing. Effect sizes were interpreted, where d = 0.2, 0.5, and 0.8 reflect small, medium, and large effects, respectively.

Gender Differences

Independent-samples t-tests revealed significant gender differences in AM, $t(966) = 3.364$, $p = 0.001$, Cohen's d = 0.22, indicating a small-to-moderate effect. Male students (M = 1.805, SD = 1.414) reported higher AM than female students (M = 1.492, SD = 1.479). In the HS dimension, males scored significantly higher than females, $t = 2.663$, $p = 0.008$, Cohen's d = 0.17, suggesting a small effect. Conversely, females reported significantly higher FF scores (M = 2.363, SD = 0.870) than males (M = 2.180, SD = 0.800), $t = –3.402$, $p = 0.001$, Cohen's d = 0.22. These gender-based differences across all three motivational constructs are summarized in Table 1.

Table 1
Gender Differences in Achievement Motivation

Construct	**Male (N = 480)**	**Female (N = 488)**	**T-value**	**P-value**
Achievement Motivation	1.805 ±1.414	1.492 ±1.479	3.364	0.001*
Hope for Success	3.985 ±0.767	3.855 ±0.755	2.663	0.008*
Fear of Failure	2.180 ±0.800	2.363 ±0.870	-3.402	0.001*

Grade-Level Differences

A one-way ANOVA was conducted to examine grade-level differences in achievement motivation (AM) and its subdimensions. Results showed no statistically significant difference in overall AM across Grade 7 (M = 1.706, SD = 1.528), Grade 8 (M = 1.725, SD = 1.364), and Grade 9 (M = 1.511, SD = 1.466), $F(2, 965) = 2.164$, $p = .115$, $\eta^2 = .008$. Similarly, the difference in Hope for Success (HS) across grade levels was not significant, $F(2, 965) = 1.084$, $p = .339$, $\eta^2 = .002$.

However, a statistically significant difference was observed in Fear of Failure (FF), $F(2, 965) = 3.211$, $p = .041$, $\eta^2 = .005$. Grade 9 students (M = 2.366, SD = 0.865) reported higher levels of fear of failure than those in Grade 7 (M = 2.208, SD = 0.844) and Grade 8 (M = 2.240, SD = 0.806). Although post hoc comparisons using the Bonferroni correction approached significance (p = .051–.052), they did not reach the conventional threshold. These results suggest a small but notable trend toward increased performance anxiety among students in higher grades (see Table 2).

Table 2
Grade Level Differences in Achievement Motivation

Construct	Grade 7 （N=315）	Grade 8 （N=327）	Grade 9 （N=326）	F-valve	p-value
Achievement Motivation	1.706 ±1.528	1.725 ±1.364	1.511 ±1.466	2.164	0.115
Hope for Success	3.915 ±0.804	3.965 ±0.729	3.877 ±0.755	1.084	0.339
Fear of Failure	2.208 ±0.844	2.240 ±0.806	2.366 ±0.865	3.211	0.041*

Family Structure Differences

No statistically significant differences were found between students from two-parent (M = 1.665, SD = 1.432) and single-parent families (M = 1.445, SD = 1.692) in AM, t(966) = 1.110, p = .270, Cohen's d = 0.15, indicating a small, non-significant effect.

Similarly, no significant differences emerged for HS, t = 1.076, p = .333, d = 0.12, or for FF, t = –1.068, p = .289, d = 0.13. These findings, displayed in Table 3, suggest that family structure has a limited role in shaping achievement motivation at this stage.

Table 3
Family Structure Differences in Achievement Motivation

Construct	Both parents	Single Parent	T-value	P-value
Achievement Motivation	1.665 ±1.432	1.445 ±1.692	1.110	0.270
Hope for Success	3.927 ±0.755	3.830 ±0.850	1.076	0.333
Fear of Failure	2.262 ±0.827	2.385 ±0.982	-1.068	0.289

Urban–Rural Differences

Statistically significant differences in AM were observed based on place of residence. Urban students (M = 1.776, SD = 1.384) demonstrated higher achievement motivation than their rural counterparts (M = 1.556, SD = 1.497), t(966) = 2.353, p = .019, Cohen's d = 0.15, reflecting a small effect size. For HS, urban students also scored significantly higher, t = 2.071, p = .037, d = 0.14. Conversely, rural students scored higher on FF (M = 2.320, SD = 0.858) compared to urban students (M = 2.204, SD = 0.812), t = –2.135, p = .031, d = 0.14. These results, summarized in Table 4, indicate that while the differences are statistically significant, the practical magnitude of these differences remains small.

Table 4
Urban-Rural Differences in Achievement Motivation

Construct	Urban （N=400）	Rural （N=568）	T-value	P-value
Achievement Motivation	1.776 ±1.384	1.556 ±1.497	2.353	0.019*
Hope for Success	3.980 ±0.740	3.877 ±0.777	2.071	0.037*
Fear of Failure	2.204 ±0.812	2.320 ±0.858	2.135	0.031*

Discussion

This study examined differences in achievement motivation and its subdimensions—Hope for Success (HS) and Fear of Failure (FF)—across demographic variables including gender, grade level, family structure, and urban–rural background among Chinese middle school students. The results revealed significant differences based on gender and urban–rural status, a small but statistically significant difference in FF across grade levels, and no significant differences based on family structure. These findings contribute to a more nuanced understanding of how demographic characteristics shape motivational dynamics during a critical stage of adolescent development.

The observed gender differences, with male students reporting higher overall achievement motivation and HS, and female students exhibiting greater FF, are consistent with research indicating that males tend to show more approach-oriented motivation, while females are more prone to anxiety and avoidance in academic settings (Jing, 1995) These trends may stem from gendered socialization, in which boys are often encouraged to take risks and value achievement, whereas girls may be more attuned to evaluation and mistake-avoidance due to societal expectations and heightened self-regulatory demands (Else-Quest et al., 2010). Moreover, girls are found to report stronger emotional reactivity and perfectionistic tendencies, which may further amplify their fear of failure in competitive academic environments. While such patterns are observed across multiple cultural contexts, they may be particularly salient in high-pressure systems like China's. Importantly, these findings highlight the need for gender-sensitive support strategies, such as reducing evaluative pressure in classrooms, to mitigate motivation disparities.

Regarding grade-level differences, achievement motivation and HS remained relatively stable across Grades 7 to 9, while FF exhibited a statistically significant, albeit small, increase in higher grades, with Grade 9 students reporting the highest levels of fear of failure. This pattern is consistent with findings from other educational systems where students in terminal grades often face greater academic stress due to impending high-stakes examinations (Tan & Pang, 2023). In the context of China, Grade 9 marks the final year of compulsory education and is directly linked to the Zhongkao—the senior high school entrance examination. This exam serves as a major academic and social selection mechanism and has been widely documented as a source of stress and anxiety among students (Chen et al., 2022; Pomerantz et al., 2014; Wang & Eccles, 2013) The increasing fear of failure among Grade 9 students in this study may thus reflect both developmental and systemic pressures. Although the observed between-group differences were small, they suggest the need for proactive psychological support and stress-management interventions, especially for students navigating this critical academic transition. Furthermore, researchers suggest that factors

such as the perceived irrelevance of schoolwork, increased academic pressure, and less personalized teacher support may contribute to this decline (Yeung et al., 2011). This pattern of declining motivation highlights the need for targeted interventions that support students, particularly during critical transitions, to maintain and enhance their academic motivation throughout their educational journey.

The absence of significant differences in achievement motivation, Hope for Success, or Fear of Failure between students from two-parent and single-parent families is consistent with recent findings suggesting that family structure per se may be a less critical predictor of academic outcomes than previously assumed. Rather than the structural composition of a family, it is the quality of family relationships—such as parental involvement, emotional support, and communication patterns—that more strongly predict children's motivational development (Benner et al., 2016; Golombok et al., 2021). This perspective helps explain why students from single-parent families in this study did not exhibit lower motivation levels: many may still benefit from stable caregiving, adequate support, and positive parent–child interactions. Moreover, increasing societal recognition of diverse family forms and the provision of institutional support in schools may buffer potential disadvantages associated with single-parent households. Some studies have also highlighted that in contexts where school environments are inclusive and resources are equitably distributed, the impact of family structure on academic motivation can be minimal (Suizzo et al., 2012). Therefore, future research should move beyond categorical distinctions and instead examine family dynamics, parenting practices, and emotional climate as more proximal predictors of student motivation.

Significant urban–rural differences were observed in both overall achievement motivation and its subdimensions. Urban students reported higher levels of motivation and hope for success, while rural students scored higher on fear of failure. These findings align with previous research linking geographic disparities to unequal access to educational resources, parental support, and academic expectations (Lounkaew, 2013). Urban students often benefit from more stimulating learning environments, experienced teachers, and stronger parental involvement, which foster academic self-efficacy and future orientation (OECD, 2019; Xu et al., 2024). According to motivational socialization theory, students develop achievement-related beliefs through interactions with key socializing agents such as parents and teachers (Pang, 2010; Wigfield et al., 2021). In urban contexts, caregivers and educators tend to possess richer cultural capital, reflected in more structured guidance and higher academic expectations. In contrast, rural students may encounter fewer such opportunities (Coleman, 1966). In China, urban–rural educational disparities remain evident despite efforts toward balanced development. Rural students often face larger class sizes, less experienced teachers, and limited access to extracurricular or psychological support services (Tang et al., 2022). These systemic inequalities may partly explain the motivational gaps identified in this study. Nonetheless, the observed effect sizes were small, suggesting that differences stem from environmental constraints rather than inherent deficiencies. Addressing these disparities requires targeted interventions, including improved school funding, teacher training, and enhanced family engagement strategies (Blandin, 2017).

Taken together, the findings of this study suggest that achievement motivation among Chinese middle school students is shaped by multiple demographic factors in distinct ways.

Gender-based differences—particularly higher hope for success among boys and stronger fear of failure among girls—reflect the enduring influence of gender socialization in academic contexts. Similarly, the rising fear of failure observed among Grade 9 students underscores the psychological toll associated with high-stakes testing environments such as the high school entrance examination. Schools could mitigate this pressure by providing timely academic guidance, structured stress-management interventions, and personalized feedback during key transitional periods to strengthen students' motivational resilience. The higher FF levels observed among female and Grade 9 students in this study may reflect such maladaptive coping strategies, emphasizing the need for pedagogical approaches that de-emphasize failure and encourage process-focused learning. In parallel, the urban–rural gap identified across both motivational dimensions highlight persistent geographic disparities in educational opportunity. Targeted investments in rural teacher development, extracurricular programs, and family engagement initiatives could help reduce these disparities and foster greater academic confidence. Finally, the absence of significant differences by family structure suggests that educational efforts should focus less on household composition and more on the quality of emotional and academic support students receive across settings. In sum, recognizing and responding to the differentiated needs of diverse student populations is essential for cultivating inclusive, motivationally supportive learning environments that empower all students to strive toward academic success.

Conclusion

The present study provides empirical evidence that achievement motivation among Chinese middle school students is shaped by the subtle interplay of demographic influences. Differences by gender, grade level, and urban–rural background illustrate how social expectations, institutional pressures, and resource disparities mold students' motivational tendencies. Although the observed effect sizes were generally small, their consistency across groups highlights the importance of addressing contextual factors that influence students' pursuit of success and avoidance of failure. Attending to these nuances can help educators and policymakers develop more responsive practices that address the diverse motivational needs of students in increasingly competitive academic environments.

This study makes both theoretical and contextual contributions to the literature on achievement motivation. Theoretically, by operationalizing achievement motivation as a dual construct—hope for success (HS) and fear of failure (FF)—and examining it across intersecting demographic variables, the study provides a more nuanced understanding of how motivational dispositions are embedded within gendered expectations, developmental transitions, and sociocultural contexts. Drawing on the hierarchical model of achievement motivation, the findings extend prior frameworks by demonstrating that motivational patterns are not uniform, particularly in non-Western settings. Contextually, the study advances understanding of adolescent motivation within China's high-stakes and stratified educational landscape. The documented variations highlight how structural and social inequalities can translate into psychological disparities. These findings underscore the need for differentiated motivational interventions that go beyond one-size-fits-all approaches. Accordingly, this study provides a critical empirical basis for promoting equity-focused motivational interventions in China and similarly competitive educational environments.

While the current study offers empirical evidence based on a large, representative sample, several limitations must be acknowledged. First, its cross-sectional design limits causal inference. Second, achievement motivation was self-reported, which may be influenced by social desirability bias. Future research could incorporate longitudinal and mixed-methods approaches to track motivation development over time and better understand contextual influences.

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