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Does Intrinsic Motivation Promote Better Academic Performance than Extrinsic Motivation Among High School Students?

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Abstract. This study investigated the relationship between motivation types and academic performance among high school students in Chinese international schools. A sample of 38 students from an international school in Nanjing completed surveys assessing their intrinsic and extrinsic motivation and reported their academic grades. Results indicated that extrinsically motivated students (M = 1.47, SD = 0.84) achieved significantly better performance than their intrinsically motivated peers (M = 2.06, SD = 0.75), t(34) = 2.20, p = .035, with a moderate effect size (Cohen's d ≈ 0.70). These findings suggest that within the highly competitive context of Chinese international education—where university admissions pressures are paramount—external drivers such as grades, rewards, and competition may be more potent in facilitating short-term academic achievement than internal drivers like personal curiosity and interest.

Keywords: intrinsic motivation, extrinsic motivation, academic performance, Chinese international schools

1. Introduction

In many Chinese international schools, there is anecdotal and qualitative evidence that the academic environment is less rigid than in local public schools. Students often report having more autonomy over their schedules, fewer enforced homework loads, and comparatively relaxed teacher oversight. While systematic survey data on these specific aspects are scarce, several studies on teacher autonomy and school leadership indicate that when teachers and schools permit greater freedom, this tends to change student experiences of supervision and responsibility.

Because of this relative looseness, students in international school settings may not be compelled by external enforcement, such as rigorous oversight or heavy homework, in the same way as in more traditional systems. Consequently, maintaining consistent effort toward academic excellence, especially in preparation for international university admissions, becomes heavily reliant on the student's own internal drive. This raises a key question: In the context of Chinese international schools, is intrinsic motivation (e.g., curiosity, love of learning) or extrinsic motivation (e.g., pursuit of grades, recognition, university admission) more effective in promoting enduring academic achievement? A clear understanding of motivation, especially distinguishing between intrinsic

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versus extrinsic sources, is crucial because it shapes how students learn in both short-term assignments and long-term trajectories, and because parents and schools can meaningfully influence what motivates learning.

This research addresses a critical gap by providing evidence on which motivational source more effectively supports academic performance in Chinese international schools. For students, clarity about whether curiosity and interest, or external rewards such as grades and recognition, play the stronger role can directly inform their learning strategies. Intrinsic motivation is often associated with deeper, more sustainable approaches, while extrinsic motivation tends to encourage surface strategies and short-term performance boosts [1,2]. Understanding which motivational source is more influential can help students avoid ineffective patterns, plan their learning more deliberately, and build habits that support steady academic progress, whether by leveraging external pressure for immediate tasks or cultivating curiosity for long-term self-regulation [3]. For parents, who often rely on external motivators such as setting high expectations or comparing grades yet may also attempt to foster curiosity, this research can clarify which approach contributes more to sustained performance. If extrinsic motivation proves more influential, parents can deliberately use structured pressure, goal-setting, or recognition to help children stay focused on immediate tasks. If intrinsic motivation proves stronger, they may prioritize autonomy-supportive practices, such as listening to their child's views or encouraging interest exploration, which research has linked to greater academic engagement and self-regulation [4,5]. For schools and teachers, who often face a choice between relying on extrinsic motivators (such as grades, exams, and reward systems) or emphasizing intrinsic motivators through autonomy-supportive practices, this evidence can inform institutional strategies. If extrinsic motivation proves more effective, institutions may design clearer performance standards, external rewards, or structured accountability systems. If intrinsic motivation proves stronger, they may prioritize teaching strategies that provide choice, encourage exploration, and explain the value of tasks, which studies show are linked with higher engagement and deeper learning [6].

This research builds on prior findings that parental autonomy support is positively linked to autonomous learning regulation among Chinese university students, while psychological control correlates with poorer self-regulation. Similarly, in online learning contexts, greater parental autonomy support predicts higher academic engagement (cognitive, behavioral, emotional), partially mediated by students' self-regulation. However, these findings have not been systematically examined in Chinese international school settings, where the balance between autonomy and structure differs markedly from both traditional Chinese schools and Western educational contexts. By offering evidence specific to international schools, this study can help students, parents, and educators understand which motivation types work better, how parents can adjust their approaches, and how schools might support autonomy to improve both short-term performance and long-term study habits.

This paper addresses the question: Does intrinsic motivation promote better academic performance than extrinsic motivation among high school students in Chinese international schools? By comparing students' reported motivation with indicators such as GPA and exam results, this study aims to determine which type of motivation is more effective in supporting academic success.

2. Theoretical framework

To anchor why motivation matters in Chinese international school settings and to derive testable expectations, I draw on Self-Determination Theory (SDT), a widely used framework for explaining the quality of motivation and its consequences for learning. SDT holds that human motivation varies

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along a continuum from more controlled forms (e.g., external regulation driven by rewards or sanctions) to progressively more autonomous forms (introjected, identified, integrated regulation) and, at the far end, intrinsic motivation, or acting for interest or enjoyment. Crucially, SDT posits three basic psychological needs (autonomy, competence, and relatedness) and argues that the more a learning context satisfies these needs, the more students' motivation becomes self-determined, which, in turn, supports persistence, engagement, and well-being [1].

A core mechanism in SDT is internalization: externally prompted reasons for studying (e.g., "for grades" or "for admissions") can, under supportive conditions, be taken in and owned by the learner (identified or integrated regulation). This does not claim that extrinsic motives are useless; rather, SDT predicts that their functional value depends on how far they are internalized and on whether the context supports autonomy, competence, and relatedness. Large-scale evidence synthesizing hundreds of studies shows that more autonomous forms of motivation (including intrinsic and well-internalized extrinsic regulation) are more strongly associated with academic persistence, deeper learning strategies, and achievement across ages and contexts, while controlled motivation relates more to surface strategies and less sustainable outcomes [2].

At the same time, SDT-consistent evidence cautions against a simplistic "intrinsic good, extrinsic bad" dichotomy. A longitudinal study following approximately 13,800 Chinese secondary students found a moderation pattern: when intrinsic motivation was low, extrinsic motivation helped academic performance; when intrinsic motivation was high, strong extrinsic motivation could even become detrimental (a "multiplicative effect"). This aligns with SDT's claim that the configuration of motives matters and that controlled incentives can assist short-term task focus in some conditions but may undercut sustained growth when over-relied upon.

SDT also offers actionable levers for schools: when teachers adopt autonomy-supportive practices (giving meaningful choices, explaining rationales, acknowledging feelings while providing structure), students report higher need satisfaction, greater agentic engagement, and better learning outcomes. Importantly, such practices are trainable (i.e., malleable at the classroom and teacher level), which is relevant for international schools seeking feasible strategies without system-wide overhaul [6,7].

3. Implications for hypotheses

The framework above yields testable and context-sensitive expectations for Chinese international school students, where external supervision is relatively lighter and self-management looms larger. First, if SDT is right that more autonomous motivation supports deeper strategies and consistency, then, on average, autonomous forms (intrinsic plus well-internalized extrinsic) should show stronger positive associations with sustained academic performance (e.g., GPA stability, cumulative assessments) than purely controlled external regulation. Second, consistent with the Chinese longitudinal evidence on the multiplicative pattern, I should also expect conditional effects: controlled or extrinsic motivation may relate more strongly to short-term performance under conditions of low intrinsic interest, whereas intrinsic, identified, or integrated motivation may better predict long-term consistency when students' interest or ownership is higher. Third, because autonomy-supportive climates are malleable, perceived autonomy support may mediate or moderate how motivation types translate into outcomes (e.g., autonomy support leads to need satisfaction, which leads to more autonomous regulation, which leads to performance). These propositions allow me to remain neutral about "which is better" ex ante and to let the data speak within SDT's mechanisms.

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4. Hypotheses

H1 (Main effect: sustained performance): Among high school students in Chinese international schools, autonomous motivation (intrinsic; identified or integrated regulation) will be more positively associated with sustained academic performance (e.g., term GPA, cumulative exams) than controlled motivation (external regulation).

H2 (Short-term condition): For short-term tasks (e.g., quizzes, imminent deadlines), controlled or extrinsic motivation will show stronger positive associations with performance when intrinsic interest is low, consistent with the multiplicative pattern observed in Chinese samples.

H3 (Process/mediation): Perceived autonomy support from teachers and schools will predict greater need satisfaction and autonomous regulation, which in turn will predict academic outcomes (need satisfaction leads to autonomous motivation, which leads to performance).

Together, these hypotheses operationalize SDT's core claims for this setting without presuming a single winner. They allow the study to (a) test the relative predictive power of intrinsic versus extrinsic sources, (b) detect boundary conditions under which extrinsic motives help or hinder, and (c) examine mechanisms (internalization and autonomy support) that link motivation quality to both short-term and sustained academic performance.

5. Method

5.1. Sample

The sample consisted of 120 students recruited from an international high school in Nanjing, China. Participants were drawn from Grades 10 through 12, with 40 students per grade. They were recruited through volunteer sampling: surveys were distributed to all students, and those who wished to participate responded. To ensure balance, each grade included 20 male and 20 female students, yielding an overall sex distribution of 60 males and 60 females. Students were typically aged 15 to 18 years. Parental consent was obtained for minors, participation was voluntary, and no incentives were provided.

5.2. Measures

Demographic covariates. Demographic covariates were collected to describe the sample and adjust for potential confounds. Students reported age, grade (10 through 12), and gender (male, female, another, or prefer not to say). Study-related variables included weekly study time outside class (categorical) and whether they received private tutoring this term (yes or no). Socioeconomic proxies comprised the highest parental education (middle school or below, high school, vocational or associate, bachelor, master or above) and a five-point perceived family economic status scale (1 = below average to 5 = above average). Additional context variables included residence background (urban, suburban, rural, or mixed) and years enrolled at the school. No identifying information was collected; "prefer not to say" options were available for sensitive items.

Intrinsic motivation. Intrinsic motivation was conceptualized within Self-Determination Theory as engagement in learning for its inherent interest and satisfaction. The survey operationalized this construct across five facets: (1) Interest and Enjoyment, capturing the inherent pleasantness and engagement of schoolwork; (2) Epistemic Curiosity and Exploration, indexing information-seeking to understand why and how things work; (3) Mastery and Challenge Orientation, reflecting a preference for difficulty and striving for competence and deep understanding; (4) Absorption and

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Flow, indicating attentional immersion and loss of time because the activity is rewarding; and (5) Volitional Autonomy, denoting self-endorsed choice rather than pressure or obligation. Each facet was measured with 2 to 3 Likert-type items (1 = strongly disagree to 7 = strongly agree). Facet scores were averaged to yield an overall intrinsic motivation index (higher values indicate stronger intrinsic motivation), and internal consistency (Cronbach's α and ω) was assessed.

Extrinsic motivation. Extrinsic motivation was defined within Self-Determination Theory as engaging in schoolwork for separable outcomes rather than inherent enjoyment. I operationalized it along four facets: (1) External regulation, acting to obtain grades, rewards, or compliance with teacher or parent directives and to avoid penalties; (2) Introjected regulation, studying to avoid guilt or shame and to uphold contingent self-worth and approval (e.g., not being looked down upon, avoiding feeling "mediocre," seeking others' praise); (3) Identified regulation, endorsing the instrumental value of learning for external goals (e.g., university admission, career prospects); and (4) Social comparison and performance goals, striving to outperform peers, rank higher, and experience superiority or achievement, including aspirations for public recognition or "becoming famous." Peer pressure is primarily reflected in facets 2 and 4. Each facet was assessed with 2 to 3 Likert-type items and combined into an overall extrinsic motivation index with subscale reliabilities reported.

Academic performance. Academic performance indicators were obtained from official school records for the same academic term (with prior-year counterparts collected for each indicator to enable growth comparisons). No self-reported grades were used, and all records were de-identified and matched to surveys via administrative IDs. GPA (primary): Current-term cumulative GPA recorded on the school transcript (mandatory). Recent mathematics examination: The most recent whole-grade math exam, including the raw score and the school-reported rank within grade (secondary outcome for robustness check). External system scores (if applicable): Official results from the school's examination system (e.g., AP 1 through 5, A-Level grades converted per school policy, IB 1 through 7) from the current academic year. SAT: The most recent SAT result from the current academic year (total score; math subscore recorded for exploratory analyses). Academic competition results: Official mathematics competition outcomes recognized by the school (e.g., AMC, AIME, or other contests), using the contest's reported score or award for the current year. For each of the above indicators, the prior-year value was also retrieved (when available) to document year-over-year change.

5.3. Analysis

A total of 38 valid responses were collected from the online survey distributed to high school students. Responses with incomplete motivational or performance data were excluded from analysis (listwise deletion). Each participant's responses were assigned a numeric code and imported into Stata 18 for statistical analysis.

5.4. Variable coding

The independent variable (type of motivation) was binary-coded according to Self-Determination Theory (SDT) classification: 0 = Intrinsic motivation (students primarily driven by curiosity, interest, or mastery orientation) and 1 = Extrinsic motivation (students primarily driven by external rewards such as grades, competition, or parental approval).

This coding scheme was derived from participants' self-reported answers on the motivation inventory, which included five intrinsic subscales and four extrinsic subscales. Participants' average

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subscale scores determined their classification: if intrinsic mean exceeded extrinsic mean, coded as 0; otherwise 1. Demographic variables (age, gender, study time, etc.) were treated as descriptive covariates for sample characterization and robustness checks.

6. Descriptive statistics

Descriptive analyses summarized participants' basic demographic and study-related characteristics. Age: M = 16.82 years (SD = 0.90), range 15 to 19. Gender: Female = 57.9%, Male = 42.1%. Weekly study time outside class: Most participants reported less than 10 hours per week (79% in total). These variables were summarized using means, standard deviations, and frequency tables to describe the sample structure and ensure representativeness.

The dependent variable (academic performance) was measured by participants' self-reported or linked academic indicators (e.g., GPA or recent mathematics exam results). In the Stata dataset, performance was a continuous numeric variable reflecting each student's average academic outcome on a 4-point scale (1 to 4), corresponding to letter grades A through D, where 1 = A (highest achievement) and 4 = D (lowest achievement). Thus, lower scores indicated better performance.

7. Hypothesis testing

To compare academic outcomes between students with intrinsic versus extrinsic dominant motivation, a two-sample independent t-test with equal variances was conducted in Stata. Null hypothesis (H_0): There is no significant difference in academic performance between intrinsically and extrinsically motivated students. Alternative hypothesis (H_1): Intrinsically motivated students show higher academic performance (i.e., lower scores on the A through D scale) than extrinsically motivated students. The command used in Stata was ttest performance, by(type), where type = 0 (intrinsic) or 1 (extrinsic).

8. Results

Results showed that extrinsically motivated students (M = 1.47, SD = 0.84, n = 19) achieved significantly better academic performance than intrinsically motivated students (M = 2.06, SD = 0.75, n = 17), $t(34) = 2.20$, $p = .035$. Given the reverse coding where lower scores indicate higher achievement, the lower mean for extrinsically motivated students (1.47 versus 2.06) demonstrates that they performed significantly better, contrary to the hypothesis. The mean difference between groups was 0.585 (SE = 0.267, 95% CI [1.07, 1.88] for extrinsic; 95% CI [1.67, 2.44] for intrinsic), indicating that extrinsically motivated students scored significantly lower on the performance scale, reflecting superior academic achievement.

The statistical result does not support the primary hypothesis (H_1). Instead, the findings indicate that extrinsic motivation is associated with better academic performance among high school students in this sample. The observed effect size (Cohen's $d \approx 0.70$) indicates a moderate to strong practical impact, suggesting that controlled motivation, driven by grades, competition, and external rewards, may contribute to stronger academic outcomes in this particular context. The demographic balance (mean age 16.8; gender ratio roughly equal) and distribution of study time indicate no major sampling bias that could confound this result.

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9. Discussion

This study investigated whether intrinsic motivation promotes better academic performance than extrinsic motivation among high school students in Chinese international schools. Contrary to the hypothesis, extrinsically motivated students performed significantly better than intrinsically motivated students. The effect size (Cohen's d ≈ 0.70) indicates this is a meaningful difference. These findings differ from what Self-Determination Theory generally predicts, but they align with research on Chinese students showing that extrinsic motivation can help performance, especially when students face clear external goals. In Chinese international schools, students still face high-stakes outcomes like university admissions and competitive grading. External motivators like grades and competition may provide the structure and clear targets that help students stay focused and work consistently.

Several factors may explain these results. First, in Chinese culture, academic achievement has strong value for family and future opportunities, so external reasons may feel more personally important than in other contexts. Second, the performance measure used (letter grades) reflects short-term achievement. Research suggests extrinsic motivation works well for immediate goals, while intrinsic motivation may be better for long-term learning [2]. Third, students likely have both intrinsic and extrinsic motives together, and the study's binary classification may oversimplify this. For practical implications, students can use external goals like grades and admissions effectively but should try to connect them to personal values. Parents can set clear expectations while also supporting their children's independence. Schools can maintain performance standards while providing choices and encouraging student interest.

Several limitations should be noted. The sample was small (n = 38 from 120 recruited), suggesting possible selection bias. The study included only one school in Nanjing. The binary classification of motivation is simplified. The cross-sectional design cannot show causation. The performance measure captured only short-term grades, not deeper learning or long-term outcomes where intrinsic motivation might be more important. Despite limitations, this study provides evidence on motivation in Chinese international schools, a context with limited prior research. The findings suggest that context matters significantly for understanding how motivation affects performance.

10. Conclusion

This study examined whether intrinsic motivation or extrinsic motivation leads to better academic performance among high school students in Chinese international schools. Results from 38 participants showed that extrinsically motivated students (those driven by grades, competition, and external rewards) achieved significantly better academic performance than intrinsically motivated students (those driven by curiosity and interest). The effect size was moderate to strong (Cohen's d ≈ 0.70).

These findings were unexpected and differ from what Self-Determination Theory typically predicts. However, they make sense in the context of Chinese international schools, where students face high-stakes university admissions and clear performance standards. In this environment, external goals may help students stay focused and organized.

The results suggest that extrinsic motivation can be effective for academic achievement, at least in the short term. Students should not dismiss external goals but can try to connect them to personal values. Parents can set clear expectations while also supporting their children's autonomy. Schools can maintain performance standards while encouraging student interest and choice.

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Future research should use larger samples, track students over time to see long-term effects, and examine outcomes beyond grades such as creativity and well-being. This study provides initial evidence that in Chinese international schools, extrinsic motivation may be more helpful for academic performance than commonly assumed.

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