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Examining the Association Between Private Tutoring and University Admission Among Indonesian Grade 12 Students

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Abstract

Private tutoring is widely viewed as a way to strengthen students' prospects in competitive university admission, yet evidence of its relationship with actual admission outcomes remains mixed. This study examined whether tutoring participation was statistically associated with public university (PTN) admission among Grade 12 students and assessed the magnitude of that association. Using a quantitative descriptive-correlational design, the study analyzed data from 80 Grade 12 students attending two Indonesian senior high schools. Tutoring participation and PTN admission status were examined through cross-tabulation, Pearson's chi-square test of independence, and Cramer's V using JASP. The analysis revealed a statistically significant association between tutoring participation and PTN admission, $\chi^2(1, N = 80) = 5.665$, $p = .017$, with Cramer's $V = .266$, indicating a modest association. The admission rate was, descriptively, higher among students who did not participate in tutoring (62.5%) than among those who did (35.4%). This pattern does not show that tutoring lowers students' admission prospects, because participation was not randomly assigned and the analysis did not account for prior achievement, school context, socioeconomic background, or features of the tutoring received. By focusing on actual PTN admission rather than academic scores alone, the study adds context-specific evidence and underscores the importance of interpreting tutoring participation in relation to the wider student, school, and educational context.

Keywords: Private tutoring; Shadow education; University admission; Academic achievement; Educational transitions.
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1. Introduction

Private tutoring, often referred to as supplementary or "shadow" education, has become a familiar part of educational participation in many societies. It takes place outside regular school instruction and is generally purchased or arranged by families to provide additional academic support. Its expansion is especially visible in education systems marked by intense academic competition and high-stakes examinations. Comparative evidence across 63 societies shows that participation in shadow education is closely related to socioeconomic conditions and institutional characteristics, suggesting that access to supplementary learning is unevenly distributed among students (Entrich, 2020). Evidence from Japan, Korea, Shanghai, and the United States similarly indicates that private supplementary education has expanded beyond its traditional East Asian concentration as families respond to educational competition and aspirations for social mobility (Park & Lim,

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2020). Policy responses do not necessarily reduce this demand. In China, for instance, an education policy designed to lessen students' academic burden was followed by increased participation in private supplementary tutoring, illustrating the complicated relationship between formal education policy and families' demand for additional instruction (Lu et al., 2022). Private tutoring has consequently become more than an individual learning strategy; it is also part of the broader landscape of educational competition.

The perceived value of tutoring becomes particularly salient during educational transitions, when students face examinations or selection procedures that may shape their subsequent educational opportunities. Evidence from Ireland shows that shadow education is embedded in the experience of secondary students in high-stakes settings, with participation shaped by prior attainment, school context, and family resources (McCoy & Byrne, 2024). A comparative study of upper-secondary students in Ireland and Germany likewise found that the purposes and outcomes associated with shadow education differed across national contexts, suggesting that tutoring does not operate in the same way everywhere (Benz et al., 2025). Tutoring can give students additional opportunities to review subject matter, prepare for examinations, and work on academic performance. Even so, the empirical literature does not point to a uniformly positive relationship between tutoring participation and educational outcomes. Guo et al. (2020), for example, reported positive effects of private tutoring on learning outcomes in China, whereas Guill et al. (2020) found no general effect of private tutoring on students' grades in mathematics or German. The common assumption that additional instruction necessarily produces better outcomes therefore warrants empirical scrutiny rather than acceptance.

This mixed evidence points to a central issue in the literature: the relationship between tutoring and educational outcomes appears to depend on how tutoring is organized, who participates, and what students actually receive. Using longitudinal data from Chinese middle-school students, Zhang et al. (2021) found no substantial positive effect of regular private tutoring overall, but identified differences related to tutoring quality, quantity, applicability, and students' achievement levels. Guill et al. (2022) likewise found no positive main effect of private tutoring among German secondary students and found no significant benefits associated with tutoring duration, intensity, content, or motivation to attend. Other studies point to differences across groups rather than a single common effect. Zhang et al. (2024) found that benefits were concentrated among lower-performing students at particular cognitive levels, while some higher-performing students experienced reductions in higher-level achievement. Han and Suh (2023), meanwhile, reported a short-term positive association with mathematics achievement alongside a negative long-term influence on creative thinking. Taken together, these findings shift the question from whether tutoring simply "works" to the conditions under which participation is associated

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with particular educational outcomes.

Another difficulty lies in understanding who chooses, or is placed in, tutoring in the first place. Participation is not randomly assigned, and students who receive tutoring may differ systematically from those who do not. Prior academic performance, socioeconomic status, parental education, school characteristics, and students' learning orientations can shape both tutoring participation and later educational outcomes (Park & Lim, 2020; Du, 2024; Zwier et al., 2020). The relationship between tutoring and achievement may also change once relevant background characteristics are considered. Yoo (2024), for example, examined self-directed learning ability alongside parental expenditure on shadow education and academic achievement among Korean students, drawing attention to the role of students' own learning capacities when tutoring-related outcomes are interpreted. Research on socioeconomic inequality further shows that access to shadow education is socially patterned, particularly in systems where educational testing has substantial consequences for students' trajectories (Zwier et al., 2020). An observed relationship between tutoring and educational success may therefore reflect both participation itself and the characteristics of the students, families, and schools associated with that participation.

These concerns have encouraged researchers to use more rigorous designs and analytical strategies. Longitudinal studies have helped distinguish sustained tutoring participation from short-term exposure and examine changes in outcomes over time (Zhang et al., 2021; Guill et al., 2022). Propensity score matching has been used to reduce observable differences between tutored and non-tutored students, including in research on mathematics outcomes and non-cognitive characteristics (Zhang et al., 2024). Difference-in-differences approaches have also been used to estimate changes associated with tutoring participation (Guo et al., 2020), while instrumental-variable approaches have addressed potential selection problems (Ku et al., 2024). At the synthesis level, systematic reviews and meta-analyses have reinforced the same point. Based on 76 international empirical studies, Zhang and Liu (2026) concluded that the relationship between private tutoring and mathematics learning outcomes remains heterogeneous, while Zhang and Liu (2022) showed that estimated tutoring effects vary with research design and intervention conditions. Together, this body of work highlights the need to distinguish statistical associations from causal effects and to account for heterogeneity when interpreting evidence on tutoring.

Evidence on the transition to higher education is especially relevant here, although it is less developed than research on conventional measures of academic achievement. Earlier studies examined private tutoring in relation to transitions to university in Japan and Ireland (Stevenson & Baker, 1992; Smyth, 2009). Research on university entrance examinations in Turkey also considered the relationship between private tutoring and examination

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performance (Tansel & Bircan, 2005), while work in the United States connected test preparation and shadow education with college enrollment (Buchmann et al., 2010). More recent evidence remains mixed. Alam and Forhad (2025) found a positive relationship between private tutoring for university admission and subsequent academic achievement in Bangladesh using a two-stage least-squares approach. By contrast, Zumbuehl et al. (2025) found that students who received private tutoring before entering selective post-compulsory education were more likely to experience difficulties after the transition than comparable non-tutored students, while emphasizing that the relationship could not be interpreted causally because tutoring uptake was non-random. These studies indicate that tutoring may be linked to educational transitions in different ways, depending on institutional context, student characteristics, and selection processes. Within the literature identified in the present Scopus search, however, direct evidence linking a simple measure of tutoring participation with the actual admission outcome of Grade 12 students in the Indonesian PTN context remains limited. This gap matters because tutoring studies more often examine test scores, grades, motivation, or broader achievement indicators than admission itself.

Against this background, the present study investigates whether tutoring participation is statistically associated with PTN admission among Grade 12 students. Rather than treating tutoring participation as an automatic indicator of educational advantage, the study examines the joint distribution of tutoring participation and actual PTN admission status. Data from 80 Grade 12 students in two Indonesian senior high schools were analyzed using cross-tabulation to describe the observed pattern, the Pearson chi-square test to assess statistical association, and Cramer's V to describe its magnitude. Because the study is observational, the analysis addresses association rather than a causal effect of tutoring. The study therefore asks: Is there a statistically significant association between tutoring participation and PTN admission among Grade 12 students? In doing so, it offers context-specific evidence that can be read alongside the heterogeneous international literature on private tutoring and educational outcomes.

2. Methodology

Research Design

This study used a quantitative, descriptive-correlational design to examine the association between tutoring participation and admission status in public universities (Perguruan Tinggi Negeri [PTN]) among Grade 12 students. A correlational design was appropriate because the study considered the relationship between two categorical variables using students' existing academic and admission records, without manipulating either variable. The study was therefore observational and was designed to determine whether tutoring participation and PTN admission status were statistically associated, not

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to establish a causal effect of tutoring on admission outcomes.

The analysis involved two dichotomous variables. Tutoring participation was recorded as Yes for students who participated in tutoring and No for those who did not. PTN admission status was recorded as Admitted or Not admitted. Together, these variables formed a 2 × 2 contingency table, which was used to examine how students were distributed across the two categorical dimensions and to conduct the corresponding inferential analysis.

Participants and Sampling

The participants were 80 Grade 12 students from two Indonesian senior high schools: SMA Istiqamah Muhammadiyah Samarinda and SMA Negeri 6 Bone, Kabupaten Bone, South Sulawesi. The sample included 48 students from SMA Istiqamah Muhammadiyah Samarinda and 32 from SMA Negeri 6 Bone. The schools were included because the student-level information required for the study variables was available through educators at the respective schools.

The two school settings required different sampling procedures. At SMA Istiqamah Muhammadiyah Samarinda, all 48 Grade 12 students were included through total sampling because the full population was accessible to the researchers. At SMA Negeri 6 Bone, 32 Grade 12 students were selected purposively because the required data were accessible through teachers at the school. The different procedures reflected the conditions under which the two school populations could be accessed (Sugiyono, 2019). The final sample therefore comprised 80 students.

Variables and Data Sources

Two nominal-scale categorical variables were examined. Tutoring participation served as the explanatory variable and was recorded as Yes or No. PTN admission status served as the outcome variable and was recorded as Admitted or Not admitted. Since both variables were dichotomous, their joint distribution could be represented in a 2 × 2 contingency table.

The data came from academic records and students' PTN admission status and were provided directly by educators at the two participating schools. The manuscript identifies these records as primary data collected in 2026. The analysis therefore relied on recorded information rather than an experimental intervention or a researcher-assigned tutoring condition.

For analysis, tutoring participation was classified according to whether a student was recorded as participating in tutoring, while admission status was classified according to whether the student was recorded as having passed the PTN admission selection. The available dataset did not distinguish tutoring by provider, duration, frequency, format, or specific preparation program; these characteristics were consequently not included as

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analytical variables.

Data Analysis

The data were analyzed in JASP using Frequencies → Classical → Contingency Tables. The analysis had three stages. First, cross-tabulation (Crosstab) was used to describe the frequency and percentage distribution of students by tutoring participation and PTN admission status. This descriptive step established the observed pattern across the four cells of the 2 × 2 contingency table.

Second, a Pearson chi-square test of independence (χ^2) was used to assess whether tutoring participation was statistically associated with PTN admission status. The significance level was set at $\alpha = .05$. The chi-square test assesses whether the observed frequencies in a contingency table differ from those expected if the two categorical variables are independent (McHugh, 2013). The null hypothesis stated that no statistically significant association existed between tutoring participation and PTN admission status, whereas the alternative hypothesis stated that such an association existed.

Third, Cramer's V was calculated to describe the magnitude of the association between the two categorical variables. Cramer's V ranges from 0 to 1 and provides an effect-size measure that complements the significance test by indicating the strength of the observed association (McHugh, 2013). Thus, χ^2 addressed statistical significance, whereas Cramer's V described the magnitude of the association.

Before the inferential analysis, the dataset was checked against the stated requirements for the chi-square test. The variables were nominal and categorical, the expected frequency in each cell was at least 5, and the observations were treated as independent. These conditions were considered satisfied before the test was conducted.

The statistical decision was based on the p-value relative to $\alpha = .05$. A p-value below .05 was taken as evidence of a statistically significant association between tutoring participation and PTN admission status. Because the study used an observational correlational design and did not manipulate tutoring participation, however, a statistically significant association was interpreted as evidence of a relationship between the variables, not as evidence that tutoring caused or prevented PTN admission.

3. Results and Discussion

Distribution of Tutoring Participation and PTN Admission Status

The study included 80 Grade 12 students from two schools. Forty-eight students (60.0%) participated in tutoring, whereas 32 (40.0%) did not. Overall, 37 students (46.3%) were admitted to PTN and 43 (53.8%) were not. The joint distribution of tutoring participation and admission status is presented in Table 1.

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Table 1. Distribution of Tutoring Participation by PTN Admission Status

Tutoring participation	Admitted, n (%)	Not admitted, n (%)	Total, n (%)
No	20 (62.5)	12 (37.5)	32 (40.0)
Yes	17 (35.4)	31 (64.6)	48 (60.0)
Total	37 (46.3)	43 (53.8)	80 (100.0)

Among students who did not participate in tutoring, 20 of 32 (62.5%) were admitted to PTN, whereas 12 (37.5%) were not. Among those who participated in tutoring, 17 of 48 (35.4%) were admitted and 31 (64.6%) were not. Thus, the proportion of students admitted to PTN was higher in the non-tutoring group than in the tutoring group.

Association Between Tutoring Participation and PTN Admission

A Pearson chi-square test of independence was used to assess the association between tutoring participation and PTN admission status. The results are presented in Table 2.

Table 2. Chi-Square Test of the Association Between Tutoring Participation and PTN Admission

Test	χ^2	df	*p*	Cramer's V
Chi-square test of independence	5.665	1	.017	.266

The analysis indicated a statistically significant association between tutoring participation and PTN admission status, $\chi^2(1, N = 80) = 5.665$, $p = .017$. Cramer's V was .266. Thus, the null hypothesis of no association was rejected at the .05 significance level.

Discussion

This study examined whether participation in private tutoring was statistically associated with admission to public universities (PTN) among Grade 12 students. The analysis found a statistically significant association between the two categorical variables, $\chi^2(1, N = 80) = 5.665$, $p = .017$, with Cramer's V = .266. The descriptive pattern is notable: 62.5% of students who did not participate in tutoring were admitted, compared with 35.4% of those who did. This difference should not be read as evidence that tutoring lowers students' chances of entering PTN. Instead, it shows that tutoring participation and PTN admission were not independent in this sample and that the observed relationship needs to be considered in the social, academic, and institutional circumstances surrounding tutoring decisions. Cramer's V also points to a modest association, meaning that tutoring participation alone offers limited information about differences in PTN admission status. A statistically detectable relationship, in other words, does not establish that tutoring produced the observed difference.

The result fits with a broader literature in which the educational consequences of private tutoring vary across settings and student groups rather than following a single

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positive pattern. Guo et al. (2020), for example, reported statistically significant positive effects of subject-specific tutoring on Chinese and mathematics achievement among Grade 8 students, although the estimated effects were modest and differed across student groups. Guill et al. (2020), in contrast, found no general effect of private tutoring on grades in mathematics or German, and Guill et al. (2022) likewise found no positive main effect associated with tutoring intensity, duration, content, or students' motivation to attend. Longitudinal evidence from China suggests that outcomes may depend on tutoring quality, quantity, applicability, and students' prior achievement (Zhang et al., 2021). At the synthesis level, Zhang and Liu (2022) showed that estimated tutoring effects vary across studies and intervention conditions, and Zhang et al. (2026) likewise concluded that the relationship between private tutoring and mathematics learning outcomes is heterogeneous. The present result is therefore better understood as part of this broader variation than as evidence of a universal advantage or disadvantage associated with tutoring participation.

The higher PTN admission proportion among students who did not participate in tutoring is especially relevant because participation cannot be separated from students' pre-existing characteristics. Research on private supplementary education indicates that tutoring participation is socially and academically selective. Park and Lim (2020) found that the relationship between prior academic performance and participation in supplementary education varied across Japan, Korea, Shanghai, and the United States. McCoy and Byrne (2024) likewise showed that shadow education participation in Ireland was socially stratified and related to prior attainment and school context. Liu and Bray (2020) found that parents' decisions about tutoring can shift with children's academic performance, stage of schooling, available resources, and education-system reforms. Students therefore do not enter tutoring as equivalent members of a population. Some may seek additional academic support, while others may participate because their families are pursuing an additional competitive advantage. The lower admission proportion observed among tutored students in this study consequently cannot be separated analytically from the characteristics that may have shaped the decision to participate.

Prior academic achievement is particularly important when interpreting this pattern. Comparative longitudinal evidence from Ireland and Germany indicates that the relationship between shadow education and academic performance differs by students' initial achievement, with benefits concentrated among students who began with lower levels of prior achievement (Benz et al., 2025). Zhang et al. (2024) similarly reported different effects of private tutoring across students with different achievement profiles. These findings offer a useful framework for interpreting the present results without concluding that tutoring was ineffective. If students with different levels of prior preparation entered tutoring at different rates, a simple comparison between tutored and non-tutored students could reflect both

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tutoring participation and pre-existing differences between the groups. The present dataset does not include prior achievement measures that would allow this possibility to be tested directly. The observed difference should therefore be read as a group-level association, not as evidence that non-tutored students were academically stronger or that tutoring participants were academically weaker.

The characteristics of the participating schools provide another contextual consideration. The sample came from SMA Istiqamah Muhammadiyah Samarinda and SMA Negeri 6 Bone, with 48 students obtained through total sampling in the first school and 32 through purposive sampling in the second. The schools differ in geographical setting and institutional context, and the analysis did not use school as a stratification or control variable. Research on educational achievement indicates that school context and educational resources can shape students' academic opportunities. Park and Lim (2020) found that school-level characteristics altered the relationship among socioeconomic status, prior achievement, and supplementary education participation. Jiang et al. (2025) similarly indicatess that the apparent influence of socioeconomic status on academic performance can be moderated when school quality and teacher effectiveness are considered. School context is therefore relevant to interpreting the present association. Because tutoring participation and PTN admission were observed in two different school environments, part of the association identified by the chi-square test could reflect differences between the school populations rather than tutoring participation itself. The present design cannot separate these possibilities.

The form and quality of tutoring also warrant attention. In this study, tutoring was represented by a dichotomous indicator of participation, with no distinction by provider, duration, frequency, delivery format, subject, instructional quality, or relevance to PTN preparation. This is an important limitation because the term "tutoring" covers educational experiences that can differ substantially in purpose and quality. Zhang et al. (2021) found that the effectiveness of private supplementary tutoring varied with characteristics such as quality, quantity, and applicability. Guill et al. (2022) likewise examined duration and content rather than treating tutoring as a single homogeneous experience. Guo et al. (2020) further suggests that subject-specific tutoring may operate through mechanisms such as test-taking skills and subject knowledge. The binary measure used here captures whether students had tutoring exposure, but not the educational process that might be related to examination outcomes. A student enrolled in a targeted PTN preparation program and one receiving occasional general subject assistance are therefore treated in the same way in the analysis, even though their experiences may have different relationships with admission outcomes.

The finding also belongs within the broader literature on transition to higher

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education. Earlier studies show that private tutoring can become intertwined with competitive educational transitions. Stevenson and Baker (1992) linked shadow education with the transition to university in Japan, while Smyth (2009) examined private tuition in relation to the transition to higher education in Ireland. Tansel and Bircan (2005) investigated private tutoring and university entrance examination performance in Turkey, and Buchmann et al. (2010) examined test preparation and college enrollment in the United States. More recent evidence remains mixed. Using a two-stage least-squares approach in Bangladesh, Alam and Forhad (2025) reported that private tutoring for university admission was associated with subsequent academic achievement. In Switzerland, Zumbuehl et al. (2025) found that students who had received private tutoring before entering selective post-compulsory education were more likely to experience difficulties in selective schools than comparable non-tutored students, while emphasizing the non-random nature of tutoring participation. Taken together, these studies indicate that the relationship between tutoring and educational transitions depends on institutional arrangements, student characteristics, and selection processes. The present study adds to this literature by examining actual PTN admission status as a categorical outcome among Grade 12 students in an Indonesian school context rather than focusing only on grades or test scores.

The contribution of this study lies in its focused examination of tutoring participation in relation to an immediately consequential educational transition. The findings show that a statistically significant relationship can coexist with a modest association magnitude and an unexpected descriptive pattern. This matters because participation in tutoring should not automatically be treated as an indicator of preparedness for competitive university selection. The contribution should nevertheless be interpreted within the limits of the design. The study does not establish the effectiveness or ineffectiveness of tutoring, identify the mechanisms underlying the association, or determine whether tutoring would have changed the admission outcomes of participating students. Its contribution is more specific: within this sample, tutoring participation was associated with PTN admission status, and that relationship cannot be adequately understood by assuming that additional instruction necessarily corresponds to greater admission success.

The findings also have implications for research and practice, although these implications should be stated cautiously. For researchers, the results point to the value of including prior academic achievement, socioeconomic background, parental education, school characteristics, motivation, self-directed learning, and more detailed measures of tutoring exposure. Yoo (2024) provides relevant evidence that self-directed learning ability may have a stronger relationship with achievement than parental expenditure on shadow education under certain conditions, while Jiang et al. (2025) highlight the importance of considering school quality and achieved factors alongside socioeconomic characteristics.

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Future studies could use larger multi-school samples and multivariable or longitudinal designs to examine whether the observed association remains after relevant background factors are taken into account. For schools and families, the present evidence does not support a categorical recommendation either for or against tutoring. Decisions about supplementary instruction are better considered in relation to students' existing academic needs, the quality and relevance of the tutoring, and the broader learning environment. This interpretation is consistent with evidence that tutoring is one part of a more complex educational process rather than an independent guarantee of success.

Overall, the study provides an empirical counterpoint to the assumption that tutoring participation automatically translates into greater success in competitive university admission. In this sample, the statistically significant association was modest and accompanied by an inverse descriptive pattern, while the observational design leaves several plausible explanations open, including student selection, prior achievement, school context, socioeconomic conditions, and differences in tutoring provision. These limitations define the appropriate scope of the finding rather than eliminating its relevance. The study's principal contribution is to show why the relationship between tutoring and PTN admission should be examined empirically and in context. More broadly, the findings are consistent with international research indicating that the educational meaning of private tutoring depends not only on participation itself, but also on who participates, why they participate, what form the tutoring takes, and the institutional setting in which it occurs.

4. Conclusion

This study examined whether tutoring participation was statistically associated with PTN admission among Grade 12 students. Among the 80 students from two senior high schools, the analysis identified a statistically significant association between tutoring participation and PTN admission status, $\chi^2(1, N = 80) = 5.665$, $p = .017$, with Cramer's $V = .266$. Descriptively, the proportion admitted to PTN was higher among students who did not participate in tutoring (62.5%) than among those who did (35.4%). This pattern should not be interpreted as evidence that tutoring reduces the likelihood of PTN admission because the study was observational and did not manipulate or randomly assign tutoring participation. The modest magnitude of the association also indicates that tutoring participation alone offers limited information about admission outcomes. The findings therefore point to a relationship that is more complex than the assumption that additional instruction automatically leads to greater admission success.

These findings should be interpreted in light of several limitations. The sample was limited to 80 students from two schools, involved different sampling procedures across the schools, and did not control for school-level differences. Tutoring was also measured only as

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participation or non-participation, with no information on provider, duration, frequency, format, subject, instructional quality, or relevance to PTN preparation. In addition, the dataset did not include potentially important background characteristics such as prior academic achievement, socioeconomic background, parental education, motivation, or self-directed learning. Future research should therefore use larger and more diverse multi-school samples and incorporate these variables through multivariable, longitudinal, or other designs that can better address selection and contextual differences. More detailed measures of tutoring exposure would also help distinguish among different forms and intensities of supplementary instruction. Despite these limitations, the study contributes evidence on tutoring participation and an actual higher-education transition outcome PTN admission rather than relying only on grades or test scores. Its central contribution is to show that tutoring participation should be examined empirically and contextually rather than treated as a straightforward indicator of admission advantage.

5. References

Alam, G. M., & Forhad, M. A. R. (2025). Impact of private tutoring for university admission and subsequently on students' academic results. *Journal of Applied Research in Higher Education*, 17(1), 75–91. https://doi.org/10.1108/JARHE-08-2023-0380

Benz, R., Darmody, M., & Smyth, E. (2025). Participation in shadow education and academic performance: A comparison of upper secondary school students in Ireland and Germany. *International Journal of Comparative Sociology*, 66(2), 262–285. https://doi.org/10.1177/00207152241266791

Buchmann, C., Condron, D. J., & Roscigno, V. J. (2010). Shadow education, American style: Test preparation, the SAT and college enrollment. *Social Forces*, 89(2), 435–461.

Du, S. (2024). Shadow education in shadow: Parental education and children's shadow education participation before and during COVID-19. *British Journal of Sociology of Education*, 45(3), 420–439. https://doi.org/10.1080/01425692.2024.2328133

Entrich, S. R. (2020). Worldwide shadow education and social inequality: Explaining differences in the socioeconomic gap in access to shadow education across 63 societies. *International Journal of Comparative Sociology*, 61(6), 441–475. https://doi.org/10.1177/0020715220987861

Guill, K., Lüdtke, O., & Köller, O. (2020). Assessing the instructional quality of private tutoring and its effects on student outcomes: Analyses from the German National Educational Panel Study. *British Journal of Educational Psychology*, 90(2), 282–300. https://doi.org/10.1111/bjep.12281

Guill, K., Ömeroğulları, M., & Köller, O. (2022). Intensity and content of private tutoring lessons during German secondary schooling: Effects on students' grades and test achievement. *European Journal of Psychology of Education*, 37(4), 1093–1114. https://doi.org/10.1007/s10212-021-00581-x

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Guo, Y., Chen, Q., Zhai, S., & Pei, C. (2020). Does private tutoring improve student learning in China? Evidence from the China Education Panel Survey. *Asia & the Pacific Policy Studies*, 7(3), 322–343. https://doi.org/10.1002/app5.310

Han, S., & Suh, H. (2023). The effects of shadow education on high school students' creative thinking and academic achievement in mathematics: The case of the Republic of Korea. *Educational Studies*, 49(2), 314–333. https://doi.org/10.1080/03055698.2020.1850427

Jiang, Y., Joshi, D. R., & Khanal, J. (2025). Ascribed and achieved factors associated with the academic performance: A longitudinal study of university students in China. *SAGE Open*, 15(3). https://doi.org/10.1177/21582440251356755

Ku, I., Lee, H., & Kim, J.-E. (2024). Does shadow education contribute to inequality? *Asia Pacific Journal of Education*, 44(4), 773–791. https://doi.org/10.1080/02188791.2022.2114424

Liu, J., & Bray, M. (2020). Evolving micro-level processes of demand for private supplementary tutoring: Patterns and implications at primary and lower secondary levels in China. *Educational Studies*, 46(2), 170–187. https://doi.org/10.1080/03055698.2018.1555452

Lu, W., Zhou, S., & Wei, Y. (2022). Government policies and unintended consequences: Rising demand for private supplementary tutoring in China. *International Journal of Educational Development*, 94, 102653. https://doi.org/10.1016/j.ijedudev.2022.102653

McCoy, S., & Byrne, D. (2024). Shadow education uptake in Ireland: Inequalities and wellbeing in a high-stakes context. *British Journal of Educational Studies*, 72(6), 693–719. https://doi.org/10.1080/00071005.2024.2331476

McHugh, M. L. (2013). The Chi-square test of independence. *Biochemia Medica*, 23(2), 143–149. https://doi.org/10.11613/BM.2013.018

Park, H., & Lim, Y. (2020). Student participation in private supplementary education: A comparative analysis of Japan, Korea, Shanghai, and the USA. *Chinese Journal of Sociology*, 6(2), 239–256. https://doi.org/10.1177/2057150X20916011

Smyth, E. (2009). Buying your way into college? Private tuition and the transition to higher education in Ireland. *Oxford Review of Education*, 35(1), 1–22.

Stevenson, D. L., & Baker, D. P. (1992). Shadow education and allocation in formal schooling: Transition to university in Japan. *American Journal of Sociology*, 97(6), 1639–1657.

Sugiyono. (2019). Metode penelitian kuantitatif, kualitatif, dan R&D. Alfabeta.

Tansel, A., & Bircan, F. (2005). Effect of private tutoring on university entrance examination performance in Turkey (IZA Discussion Paper No. 1609). IZA.

Yoo, J. (2024). Self-directed learning ability and shadow education expenditures: A comparison of impact on student achievement in Korea during COVID-19. *SAGE Open*, 14(2). https://doi.org/10.1177/21582440241245206

Zhang, E., & Liu, Y. (2022). Effects of private tutoring intervention on students' academic achievement: A systematic review based on a three-level meta-analysis model and

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robust variance estimation method. *International Journal of Educational Research,* 112, 101949. https://doi.org/10.1016/j.ijer.2022.101949

Zhang, Y., Dang, Y., He, Y., Ma, X., & Wang, L. (2021). Is private supplementary tutoring effective? A longitudinally detailed analysis of private tutoring quality in China. *Asia Pacific Education Review,* 22(2), 239–259. https://doi.org/10.1007/s12564-021-09671-3

Zhang, Y., Liu, J., & Wang, L. (2026). The association between private tutoring and mathematics learning outcomes in primary and secondary schools: A three-level meta-analysis. *Learning and Individual Differences*, 127, 102877. https://doi.org/10.1016/j.lindif.2026.102877

Zhang, Y., Wu, X., Chen, S., Cui, C., He, Y., & Wang, L. (2024). Differential effects of private tutoring on groups of students' mathematics achievements: A longitudinal study. *Educational Studies in Mathematics*, 115(2), 197–222. https://doi.org/10.1007/s10649-023-10282-5

Zumbuehl, M., Hof, S., & Wolter, S. C. (2025). Private tutoring and academic achievement in a selective education system. *Education Economics*, 33(4), 613–630. https://doi.org/10.1080/09645292.2024.2382990

Zwier, D., Geven, S., & van de Werfhorst, H. G. (2020). Social inequality in shadow education: The role of high-stakes testing. *International Journal of Comparative Sociology*, 61(6), 412–440. https://doi.org/10.1177/0020715220984500

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