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The Impact of Cognitive Test Anxiety and Study Behavior on Japanese Language Proficiency Test Performance

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Abstract: The Impact of Cognitive Test Anxiety and Study Behavior on Students' Japanese Language Proficiency Test Performance. This study investigates how cognitive test anxiety and Japanese language study behaviors contribute to performance on the Japanese Language Proficiency Test (JLPT) among university students in Semarang. Using a quantitative design, data were collected from 50 JLPT takers across N2 to N5 levels through validated questionnaires measuring cognitive test anxiety and study behavior. To account for varying difficulty levels across test tiers, raw JLPT scores were analyzed using proficiency tier as a categorical dummy control variable. Descriptive statistics revealed a moderate level of cognitive test anxiety (mean score 2.36 on a 4-point scale) and moderate-low study behaviors (mean score 3.30 on a 5-point scale). Regression analysis utilizing the JLPT raw scores showed that cognitive test anxiety significantly and negatively predicted JLPT performance (â = -0.427, p = 0.002). Conversely, the occasional and unstructured study behaviors reported by students did not significantly predict test outcomes (â = 0.098, p = 0.460). Together, the model explained 22.3% of the variance in test performance. Results also suggested that intermediate-level test takers experienced higher anxiety and faced greater difficulty passing compared to beginners. The findings suggest the significant role of non-linguistic factors in language proficiency assessments, highlighting that unstructured study routines are psychometrically insufficient to overcome anxiety-induced cognitive blockades. Future research should expand sample diversity, incorporate longitudinal designs, and explore cultural influences to better understand how anxiety and study behaviors interact over time and across contexts to affect JLPT success.

Keywords: japanese, language testing, language proficiency, evaluation, JLPT.

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INTRODUCTION

Language assessment in Japanese language education serves a critical evaluative function by systematically measuring learners' proficiency across multiple linguistic domains while generating pedagogical insights that inform instructional methodologies (Brown & Abeywickrama, 2019). In the context of Japanese language acquisition, assessment instruments provide structured feedback on grammatical competence, lexical knowledge, reading comprehension, and listening skills, components essential for functional language ability (Nishizawa et al., 2022). Empirical research has shown that properly designed Japanese language assessments function as more than just measurement tools; they are also pedagogical interventions that enhance learners' metacognitive awareness of the linguistic structures unique to Japanese, such as its orthographic complexity, syntactic patterns, and sociopragmatic conventions (Chapelle & Voss, 2021; Sawaki, 2024).

The Japanese Language Proficiency Test (JLPT) exemplifies this assessment paradigm as the preeminent framework for evaluating non-native speakers' Japanese language competencies

across five proficiency levels (N5-N1). With global administration in around 80 countries and participation exceeding 1.2 million examinees annually (The Japan Foundation, 2023), the JLPT has transcended its evaluative function to become a gatekeeping mechanism regulating access to educational and professional opportunities. For instance, Liu (2023) emphasizes how external language tests significantly affect language learning outcomes, notably shaping students' academic and social experiences. Studies by Yu et al. (2025) and Wolf et al. (2024) reveal a statistically significant correlation between foreign language performance and subsequent academic achievement, as well as social engagement and well-being among international students. Former research on human resource management also suggests that qualifications like foreign language proficiency qualifications and JLPT can affect hiring preferences and lead to tangible salary progression outcomes (Adeosun & Adegbite, 2023; Garza & Morgeson, 2012; Honda & Vio, 2015; Itsubo et al., 2022; Masvosve et al., 2021; Peltokorpi & Presbitero, 2024; Setiana et al., 2020). This finding contributes to the understanding of the role of language certification in enhancing professional advantages within Japanese firms.

Within this framework, the Japanese Language Proficiency Test (JLPT) serves as a critical measure of Japanese language competency for non-native speakers. The JLPT is a globally recognized standardized test that assesses reading, listening, and linguistic knowledge across five proficiency levels (N1-N5). Higher levels (N2 and N1) often serve as key benchmarks for academic and professional success (Nishizawa et al., 2022; Ratna et al., 2022).

For students, JLPT certification has been shown to increase opportunities for admission to Japanese universities and eligibility for scholarships, as many institutions require evidence of language proficiency. In professional contexts, JLPT credentials are often a prerequisite for employment in Japan or with Japanese corporations worldwide, as they serve to validate a candidate's ability to function effectively in linguistically demanding environments (Denda et al., 2024; Leung et al., 2023). Consequently, the JLPT facilitates academic achievement and significantly improves career prospects in fields where advanced Japanese proficiency is indispensable, such as language translation and interpretation, international business, and diplomacy.

The Japanese-Language Proficiency Test (JLPT) is a widely recognized examination for non-native speakers of Japanese. The test evaluates a candidate's proficiency in reading, listening, and understanding Japanese at various levels, ranging from the N5 level at the lower end to the N1 level at the higher end of the Japanese Language Proficiency Test (JLPT). Given the elevated stakes associated with this examination, understanding the factors that contribute to or influence outcomes is imperative. Linguistic aptitude is not the only factor; psychological, cognitive, and behavioral elements may also contribute to test takers' performance. Research indicates that individual learner characteristics, such as motivation and anxiety levels, play pivotal roles in language acquisition and performance on standardized assessments like the JLPT (Macri & Migali, 2024; Muroya, 2022; Oxford, 2015; Öztürk & Gürbüz, 2013). Investigating these elements can help educators and institutions create more targeted and effective learning environments, ultimately improving student outcomes and better preparing them for the challenges of the JLPT.

Despite extensive research on the impact of prior language exposure and study strategies on JLPT outcomes, the influence of cognitive test anxiety and Japanese language study behavior

remains under-explored. Although evidence indicates a negative correlation between CTAS and final-semester Japanese language course performance, the role of CTAS in high-stakes tests such as the JLPT remains to be fully elucidated (Prasetya et al., 2025). Cognitive test anxiety refers to the psychological stress and negative emotions experienced by test-takers and could significantly affect performance, potentially hindering a candidate's ability to demonstrate their true proficiency (Cassady, 2004, 2023; Cassady & Finch, 2014; DordiNejad et al., 2011; Kültür & Özcan, 2022; Németh & Bernáth, 2023; Thomas et al., 2018). Similarly, language study behaviors, encompassing various strategies, motivations, and behaviors during the learning process, may significantly determine performance in language proficiency tests (Franca & Napil, 2022; Mardiana, 2023; Syafitri, 2019).

However, despite their potential significance, the CTAS and student language-study behavior variables have not yet been systematically investigated in the context of the JLPT. The literature review indicates a research gap regarding these factors, and further research is needed to explore their contribution to, or impact on, JLPT scores. This is particularly important given the significance of the JLPT for Japanese language learners' future academic and career prospects (Adeosun & Adegbite, 2023; Peltokorpi & Presbitero, 2024; Ratna et al., 2022).

Based on the literature review and theoretical framework, this study proposes a hypothetical model illustrating the relationship between the independent variables and the dependent variable. As depicted in Figure 1, Cognitive Test Anxiety is hypothesized to negatively predict JLPT Score Performance. Conversely, Study Behavior is projected to positively predict JLPT outcomes. Furthermore, the model examines the combined contribution of psychological and behavioral factors to variance in test performance.

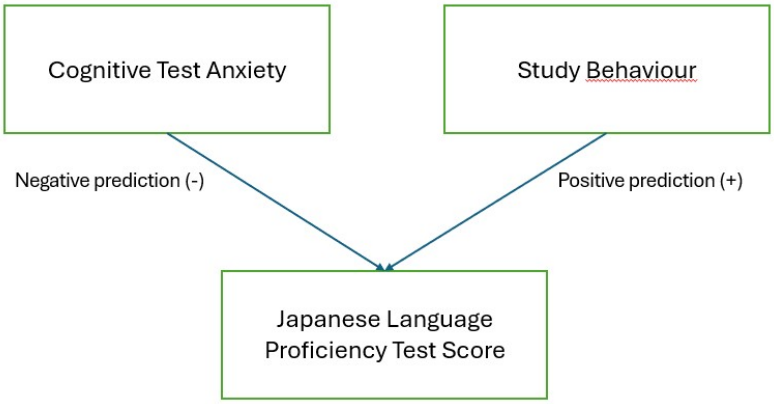


Figure 1. Hypothetical model illustrating the relationship between the CTAS and study behavior on the JLPT score

Accordingly, understanding the variables discussed above could provide valuable insights into enhancing teaching methodologies and improving student preparation. Additionally, exploring factors beyond Japanese linguistic competence or knowledge, such as students' psychological and behavioral aspects, is essential. A regression analysis examining the relationship between students' psychological and behavioral factors and their performance could provide a comprehensive understanding of how these non-linguistic variables contribute to and influence performance on the Japanese Language Proficiency Test (JLPT). In practice, the study

advocates creating a holistic Japanese language program that addresses non-linguistic strategies to help students prepare for the JLPT. This could involve advocating teaching methods that emphasize stress management or effective study routines beyond language drills. In accordance with the preceding discussion, the study sought to answer the following research questions: (1) Do JLPT takers experience cognitive test anxiety during the JLPT examination process? (2) How do the study behaviors of JLPT takers prepare them prior to the JLPT examination? (3) Is there a contribution of cognitive test anxiety levels and study behaviors to JLPT score performance?

METHOD

Research Design and Participants

This study employed a quantitative research design to investigate the relationship between the variables (Dancey & Reidy, 2017; Lau & Kuziemsky, 2017; Musaddat, 2018). The dependent variable is the respondents' JLPT scores. The independent variables are the cognitive test anxiety scale (CTAS) level experienced by the respondents during the JLPT and the respondents' study behavior in learning Japanese. The population of this research is university students who are learning Japanese and participated in the JLPT, which was held in Semarang in December 2024. A convenience sampling technique was employed based on the accessibility and voluntary willingness of the JLPT test-takers to participate in the study, particularly given the practical constraints of collecting data right after a high-stakes examination (Sinaga, 2014; Zrineh, 2026). The sample of this research was 50 participants. It comprised 4 participants at JLPT N2 and 12 participants at JLPT N3, which is an intermediate level of JLPT. Then, 23 participants took JLPT N4, and 11 took JLPT N5, which is at the beginner level of JLPT.

This study employed three research instruments. The first instrument was a self-report questionnaire on Google Forms to collect respondents' JLPT scores after the exam was published. The second instrument used the Cognitive Test Anxiety Scale (CTAS) second version questionnaire to collect respondents' cognitive anxiety test levels. The CTAS determined and measured respondents' cognitive anxiety levels during the test-taking process (Cassady & Finch, 2014; Németh & Bernáth, 2023; Savitri & Wahyudi, 2019; Thomas et al., 2018). A total of 24 CTAS questionnaires were administered, and respondents' answers were categorized using a 1- to 4-point Likert scale. The third instrument is the questionnaire to collect students' study behavior on studying the Japanese language and JLPT preparation and is categorized using a 1-5-point Likert scale criterion (Forey et al., 2016; Luo et al., 2019; Panadero, 2017; Sato, 2020; Sugimoto, 2021; Yamashita, 2023; Zimmerman, 2002).

Data Collection Procedures

Data collection in this study began with respondents taking the Japanese Language Proficiency Test (JLPT). The CTAS questionnaire consisted of 24 items. Before the JLPT examination, respondents completed the pre-examination phase of the CTAS questionnaire, comprising seven questions. After completing the JLPT, respondents completed the in-examination phase of the CTAS questionnaire, comprising 17 questions. After respondents completed the in-examination phase of the CTAS questionnaire, the Japanese language study behavior questionnaire, consisting of 27 questions, was administered. The final data collection was conducted after the JLPT score results were published; respondents were then provided with a self-report Google Form on their JLPT scores, which they completed.

The initial CTAS data on cognitive anxiety in the pre-examination phase was gathered prior to the inaugural JLPT. This was done to ascertain

respondents' cognitive test anxiety status immediately preceding their JLPT examination. The second CTAS data set pertains to anxiety levels during the examination phase, specifically after students had left the test room and completed the JLPT. This was done to reduce potential data bias arising from the two distinct phases of anxiety respondents experience during the JLPT's pre-examination and in-examination processes. A detailed explanation and instructions regarding data collection were given to respondents to ensure they understood the task and to reduce potential bias.

Data Analysis

The collected data from the CTAS and Japanese language study behavior questionnaires were interpreted using established 4-point Likert scale guidelines. Specifically, the CTAS data were evaluated using Cassady's (2023) categorization, where mean scores ranging from 1.0 to 1.79 indicate low anxiety, 1.80 to 2.75 represent moderate anxiety, and 2.76 to 4.00 signify high anxiety. The respondents' Japanese language study behavior was interpreted following Artino et al. (2014) and Pimentel (2019), classifying mean scores into five levels: 1.00-1.79 (almost never), 1.80-2.59 (rarely/once in a while), 2.60-3.39 (sometimes/occasional), 3.40-4.19 (often), and 4.29-5.00 (always). After this descriptive statistical analysis, a regression analysis was performed using Microsoft SPSS to explore the contribution of CTAS and study behavior to JLPT scores. The regression data were then interpreted using the regression coefficient guidelines outlined by Dancey and Reidy (2017).

Table 1. Interpretation of study behavior mean scores

Mean Score Range of CTAS	Interpretation	Mean Score Range of Study Behavior	Interpretation
1.00 – 1.79	low anxiety	1.00 – 1.79	almost never
1.80 – 2.75	moderate anxiety	1.80 – 2.59	rarely/once in a while
2.76 – 4.00	high anxiety	2.60 – 3.39	sometimes/occasional
		3.40 – 4.19	often
		4.20 – 5.00	always

■ RESULT AND DISCUSSION

A preliminary validity and reliability test was conducted to ensure the data's accuracy and the instrument's dependability using statistical analysis in SPSS. The data showed Cronbach's alpha coefficients of 0.947 for the CTAS and 0.860 for the Study Behaviors instrument, both exceeding the accepted threshold of >0.70. Furthermore, the validity tests for the CTAS and Study Behavior instruments showed significant distribution values exceeding the critical r-value of >0.281 (N-1 = 49). Only one item in the Study Behavior instrument (question 17, 'Do you study in a study group or work in a group?') was found to be invalid. Consequently, this question was excluded, resulting in 26 study behavior items being analyzed from the original 27 questionnaire items. Overall, the data were deemed valid and reliable, as they exceeded the critical thresholds.

Q1: Do JLPT Takers Experience Cognitive Test Anxiety During the JLPT Examination Process?

A total of 50 respondents, comprising 16 males and 34 females, participated in this study. As illustrated in Table 2, the descriptive statistics of the students' cognitive anxiety scale are presented. The findings of the study indicate that the mean cognitive anxiety score for female respondents (mean of 59.41, on a scale of 2.47

on a 1- to 4-point Likert scale) is moderately higher than that for male respondents (mean of 52.26, on a scale of 2.17 on a 1- to 4-point Likert scale). The data demonstrate that female respondents exhibit a higher mean cognitive anxiety score than their male counterparts.

The CTAS results were compared by JLPT difficulty level. It was found that test-takers in the N3 and N2 categories, who were considered to be at an intermediate level, exhibited a slightly higher mean score on the cognitive test anxiety scale (mean = 60.50, on a scale of 2.52 on a 4-point Likert scale) in comparison to test takers in the N5 and N4 categories (mean = 55.67, on a scale of 2.31 on a 4-point Likert scale). Despite this difference, the mean value of cognitive anxiety for both genders and both difficulty levels of the JLPT is considered moderate.

Table 2. Respondents' cognitive test anxiety scale by gender and by JLPT level

N		Female	Male	Male & female	N5-N4	N3-N2
	Valid	34	16	50	34	16
	Missing	16	34	0	16	34
Mean		59.41	52.56	57.22	55.67	60.50
Median		61.00	50.00	59.00	59.50	59.50
Mode		61[a]	48[a]	61[a]	61[a]	48[a]
Std. Deviation		13.72	15.15	14.40	15.14	12.51

Table 3 and Figure 1 provide a comprehensive overview of the CTAS variable, which is employed to assess the level of cognitive test anxiety experienced by JLPT test takers. Items 1 to 7, which pertain to the 'before the exam' phase, had a mean score of 2.29, whereas items 8 to 17, which reflect the 'during the exam' phase, had a mean score of 2.42. The mean score for anxiety experienced prior to the examination was found to be lower than the mean score for anxiety experienced during the examination. The data indicate that anxiety levels increased during the examination process. Despite the discrepancy between the two phases, the overall mean cognitive anxiety score for respondents facing the JLPT was 2.36 out of 4.00, equivalent to 57.22. This finding suggests that the respondents' experience of anxiety levels during the cognitive test is moderate.

Table 3. The results of respondents' cognitive test anxiety level on JLPT

No.	Cognitive Test Anxiety Variable	Scale
1	Respondents lose sleep over worrying about examinations.	2.06
2	Respondents worry more about doing well on tests than they should.	2.58
3	Respondents get distracted from studying for tests by thoughts of failing.	2.30
4	Respondents have difficulty remembering what they studied for tests.	2.46
5	While preparing for a test, respondents often think that they are likely to fail.	2.24
6	Respondents are not good at taking tests.	2.04
7	When respondents first get a copy of a test, it takes them a while to calm down enough to begin to think straight.	2.38
8	At the beginning of a test, respondents are so nervous that they often cannot think straight.	2.18
9	When respondents take a difficult test, they feel defeated before they even start.	2.24
10	While taking an important examination, respondents find themselves wondering whether the other students are doing better than they are.	2.68

11	Respondents tend to freeze up on things like intelligence tests and final exams.	2.36
12	During tests, respondents find themselves thinking of the consequences of failing.	2.58
13	When respondents take a test, their nervousness causes them to make careless errors.	2.70
14	Respondents' minds go blank when they are pressured to answer a test question.	2.68
15	During tests, respondents frequently think that they may not be very smart.	2.62
16	During tests, respondents get so nervous that they forget facts they really know.	2.44
17	Respondents do not perform well on tests.	2.10
18	During tests, respondents feel they are not doing well.	2.34
19	Respondents felt their performance did not accurately reflect their level of knowledge.	2.24
20	After taking a test, respondents feel they should have done better than they actually did.	2.68
21	Respondents' test performance makes them believe they are not good students.	2.04
22	Respondents often realize mistakes they made right after turning in a test.	2.66
23	When respondents finish a hard test, they are afraid to see the score.	2.32
24	Respondents do not seem to have much control over their test scores.	2.30
	Preparation (before test) Phase	2.29
	Performance (during test) Phase	2.42
	Overall Students' Cognitive Test Anxiety Level	2.36

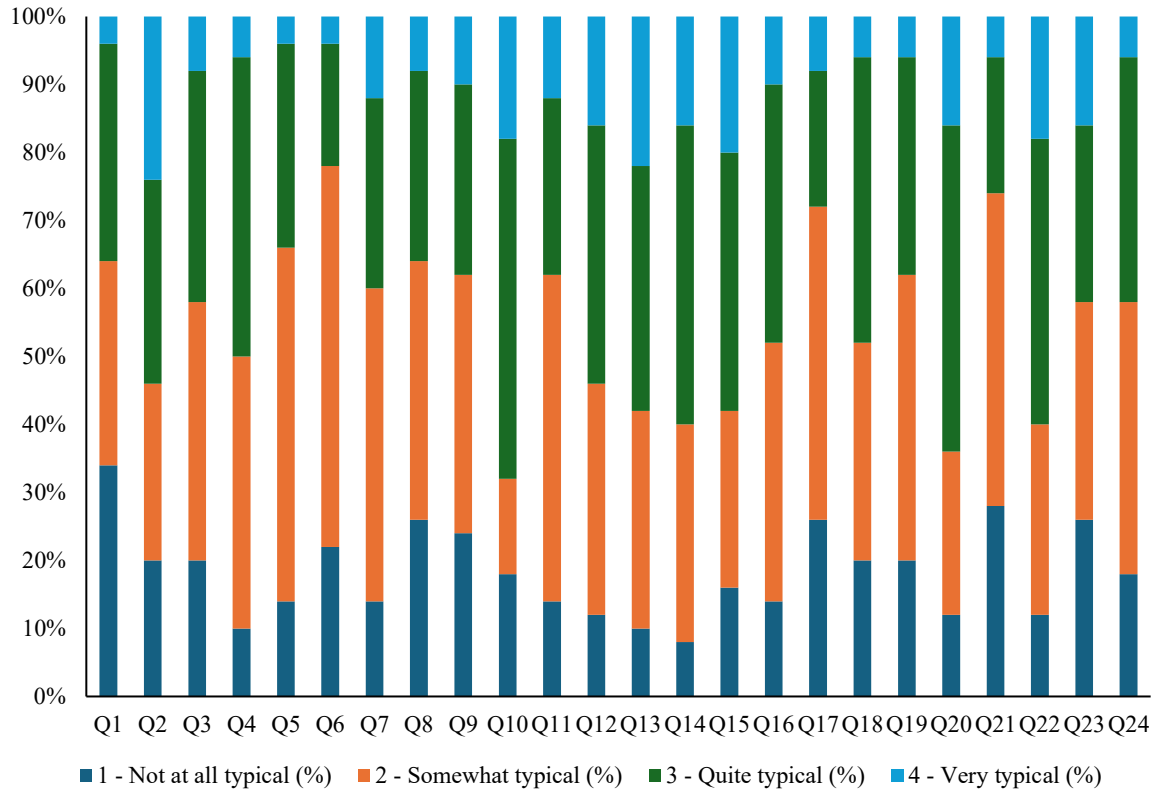


Figure 1. Visualization of the percentage results of respondents' cognitive test anxiety levels on the JLPT

The studies confirmed the hypothesis that respondents did experience cognitive test anxiety at a moderate level when taking the JLPT, with an average score of 57.22, which is converted to a Likert scale of 2,36. Fluctuations in cognitive test anxiety are also present; pre-examination cognitive test anxiety slightly increases during the in-examination phase, whether in the Japanese Language Proficiency Test or other foreign language proficiency test contexts (Akbari et al., 2023; Pekrun, 2022; Prasetya et al., 2025). However, the cognitive anxiety levels experienced by the JLPT test-taker respondents were not excessive, suggesting that while anxiety is present and experienced by respondents, it does not reach a level that could be considered overwhelming. This is consistent with the findings of Prasetya et al. (2025), who reported that anxiety levels were not excessive in either the internal final-semester exam or the external high-stakes JLPT examination setting. A notable finding from the analysis was that respondents at the intermediate N3-N2 level exhibited higher levels of cognitive test anxiety in comparison to those at the beginner N5-N4 level. This study finding also suggests a positive correlation between the JLPT level and cognitive test anxiety.

These findings align with the literature on the impact of test anxiety on academic performance. According to Cassady and Finch (2014), Németh and Bernáth (2023), and Tsiriotakis et al. (2017), cognitive test anxiety is a well-established construct that significantly affects performance in high-stakes exams. In language testing, such as the JLPT, cognitive anxiety can hinder test-takers' ability to demonstrate their full linguistic capabilities (Cassady, 2004; Thomas et al., 2018). The higher levels of anxiety observed among intermediate-level test-takers in this study can be attributed to the greater challenge presented by the N3-N2 levels, which aligns with findings by Liu (2023), who notes that more advanced learners tend to face greater pressure due to the increasing complexity of the language tasks. In contrast, the findings in this study slightly deviate from the assertions in Jin et al. (2015), which indicate that cognitive anxiety levels in testing typically decrease with language proficiency or as students learn Japanese. However, the results presented here support the hypothesis that, while test cognitive anxiety may not be solely dependent on proficiency level, the nature and perceived difficulty of the test play significant roles in shaping anxiety levels.

Q2: What Were the JLPT Takers' Study Behaviors Prior to the JLPT Examination?

As presented in Table 4 and Figure 2, respondents' study behaviors prior to the JLPT are outlined in detail using a Likert scale and percentage visualization. The mean score was 3.30 on a 5-point Likert scale, with a mean of 85.92. The mean score indicated that respondents exhibited a moderate level of study behaviors prior to the Japanese Language Proficiency Test (JLPT). These behaviors were interpreted as "sometimes or occasional".

Table 4. The results of respondents' Japanese language study behaviors

No.	Study Behaviors Variable	Scale
1	Respondents have time to study at home.	3.70
2	Respondents do their schoolwork on time.	4.00
3	Respondents repeat the lessons learned at school at home.	3.20
4	Respondents read the book that they will study tomorrow at night.	3.40
5	Respondents study at home every day at night.	3.20
6	Respondents make a summary of what they have learned.	3.30
7	Even though respondents have a vacation, they still study at home.	2.80

8	Respondents read every day at home.	3.20
9	Respondents concentrate when following the lesson.	3.70
10	Respondents do not watch TV or play on their cell phones while studying.	4.00
11	The learning atmosphere at home supports respondents to study.	3.00
12	Respondents divide their playing time with their study time.	3.50
13	Respondents ask the teacher about the difficulties they have in some subjects.	2.90
14	Family members help respondents when they study.	1.80
15	Respondents study outside of school by taking extra lessons.	1.40
16	Respondents repeat learning when they get bad grades.	3.60
17	Respondents do assignments individually.	4.30
18	Even when respondents get high grades, they repeat their learning at home.	3.20
19	Respondents start preparing for the JLPT exam well in advance (at least 3 months before the exam).	3.60
20	Respondents use textbooks specifically designed for JLPT preparation.	3.20
21	Respondents regularly practice with past JLPT test papers.	3.60
22	Respondents use online resources (apps, websites) to supplement their JLPT preparation.	4.20
23	Respondents focus on the grammar and vocabulary sections equally when preparing for the JLPT.	3.90
24	Respondents take practice tests under timed conditions to simulate the real exam environment.	3.20
25	Respondents review their mistakes after practice tests to improve their weaknesses.	3.90
26	Respondents make a study schedule and stick to it during their JLPT preparation.	3.00
	TOTAL	3.30

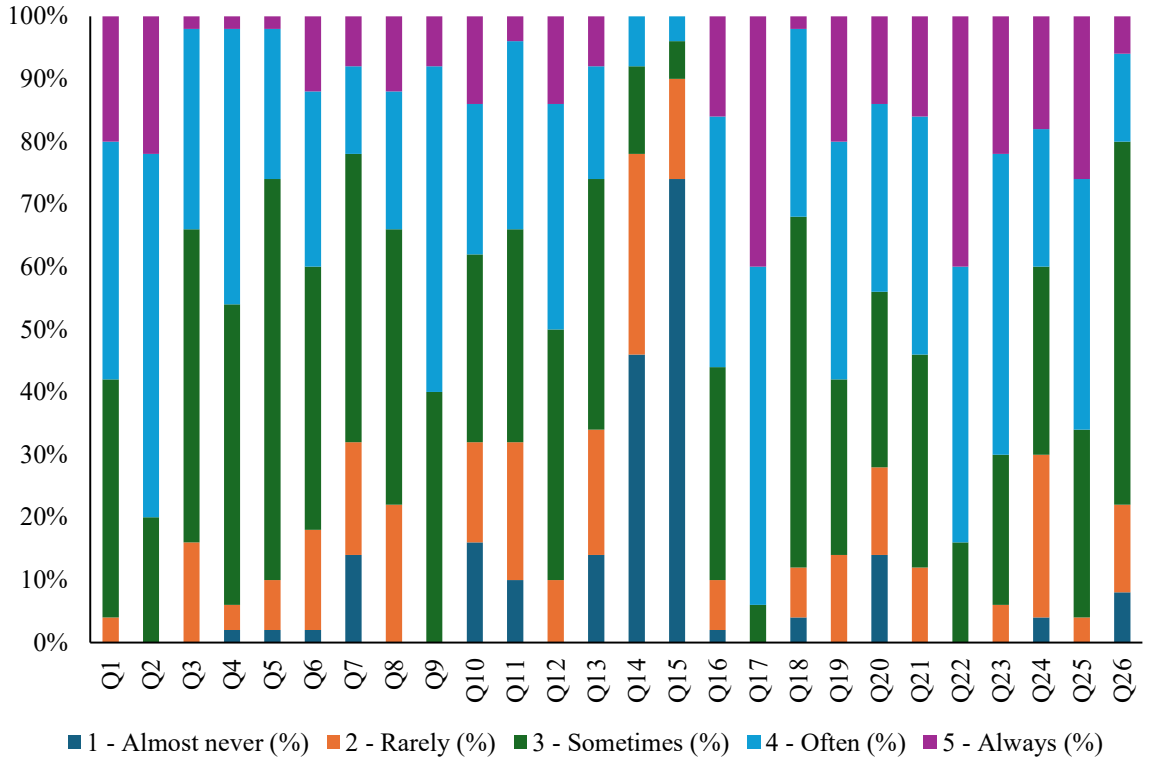


Figure 2. Visualization of the percentage results of respondents' Japanese language study behaviors

The results indicated that respondents exhibited moderate-to-low study behaviors (mean = 2.30 on a 4-point scale). The study behaviors exhibited by the participants were generally considered "occasional behaviors". Respondents engaged in a variety of activities as part of their study routine, including reviewing textbooks and study materials, using online resources, and practicing past JLPT test materials. However, respondents frequently failed to establish a consistent, structured study routine. The study behaviors observed in this research were consistent with the results found in the works of Forey et al. (2016) and Yamashita (2023), who observed that many learners have irregular and sometimes ineffective study practices.

The moderate-low study behaviors identified in this study suggest a discrepancy between the ideal study behaviors described in the self-regulated learning theory and the actual practices of JLPT takers. Furthermore, while students reported using supplementary resources such as online platforms and JLPT preparation books, the relatively low level of consistent study engagement observed suggests that test preparation may not be sufficiently optimized, potentially undermining their ability to succeed on the JLPT. The moderate-to-low study behaviors exhibited by the sample can be attributed to cultural and contextual factors inherent to the region, including the learners' learning environment, which may not fully align with conditions conducive to academic enthusiasm (Hinduja et al., 2024).

As shown in Table 4, respondents reported occasional direct communication with lecturers when encountering academic difficulties (mean = 2.90) and substantially lower family support when studying at home (mean = 1.80). Notably, despite reporting that they have sufficient time to study at home (mean = 3.70) and a supportive home atmosphere (mean = 4.00), students still engaged in only occasional and unstructured JLPT preparation, such as failing to adhere to a consistent study schedule (mean = 3.00) or rarely taking timed practice tests (mean = 3.20). Furthermore, although respondents reported having sufficient free time to study at home regularly, their actual engagement in JLPT preparation remained occasional and unstructured. This discrepancy indicates that having available study time does not guarantee effective learning habits. Consequently, the absence of structured study routines can be attributed to internal and external barriers, including poor time management, fluctuating personal motivation, and limited academic or familial support(Suleiman et al., 2024).

A broader sample size and cross-cultural comparison could address this limitation and provide further insights into the role of study behaviors across different cultural contexts. However, this finding is consistent with the literature on language learning behavior, which emphasizes the pivotal role of consistent, structured, and intentional study practices in enhancing Japanese language proficiency and second language acquisition (Alizadeh, 2024; Chang, 2026; Panadero, 2017; Taele et al., 2020). The moderate study behaviors observed in this study indicate a need for targeted interventions to improve students' study behaviors and foster more consistent preparation for the JLPT. Understanding the condition and promoting student motivation are also essential to boost students' self-efficacy. Self-efficacy indicates that learners with high self-efficacy are more likely to set challenging goals, persist in the face of difficulties, and employ effective learning strategies, all of which contribute to improved study behaviors and, consequently, better learning outcomes (Ushioda, 2016).

Q3: Is There a Contribution Between Cognitive Test Anxiety Levels and Study Behaviors on the JLPT Score Performance?

To address the third research question, a multiple linear regression analysis was conducted.

To maintain the integrity of the measurement scale, raw JLPT scores (0-180) were utilized as the dependent variable. To account for variance in test difficulty across levels, a categorical dummy variable for JLPT proficiency level was added to the model as a control variable.

Before interpretation, classical assumption tests were conducted, confirming that the data met the assumptions of normality, homoscedasticity, and no multicollinearity, with Variance Inflation Factor (VIF) values ranging from 1.020 to 1.045, well below the threshold

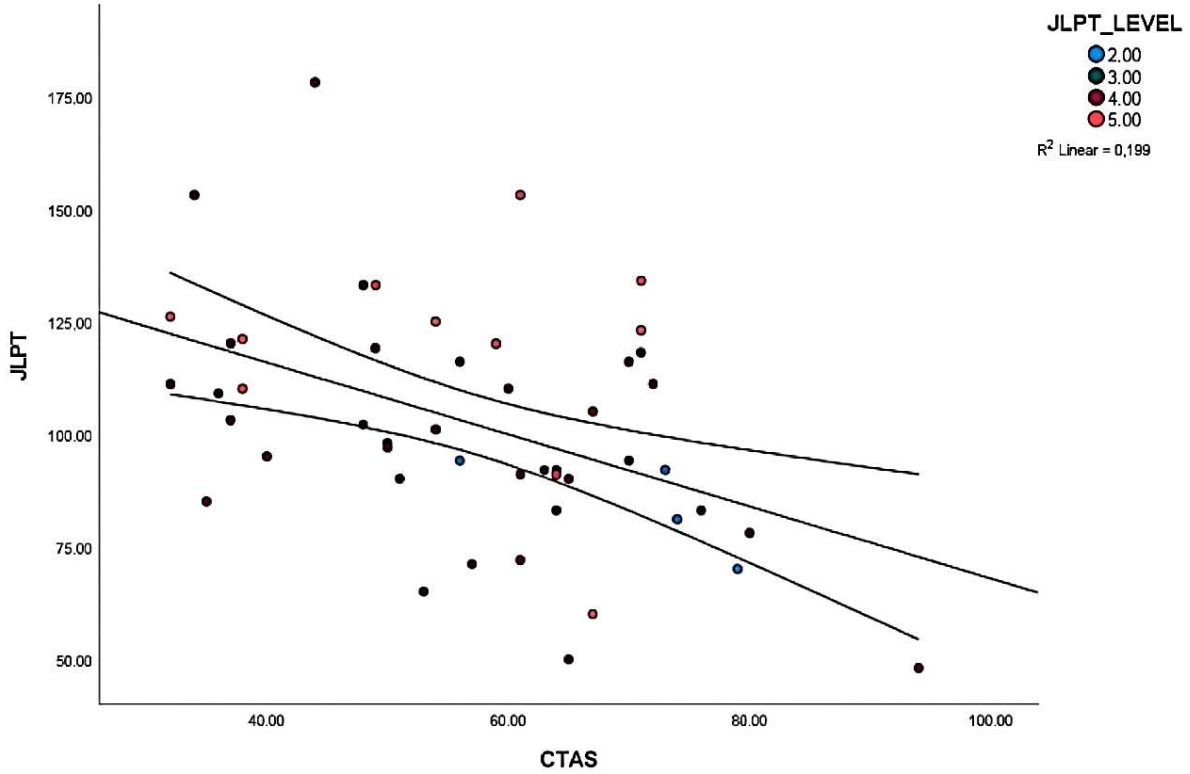


Figure 3. Grouped scatterplot illustrating the negative linear relationship between cognitive test anxiety (CTAS) and raw JLPT scores, color-coded by proficiency tier, with a 95% confidence interval

of 10. As presented in Table 5, the multiple regression model significantly predicted JLPT raw scores, $F(3, 46) = 4.403$, $p = 0.008$. The model summary indicates an R^2 of 0.223, demonstrating that the combined variables account for 22.3% of the variance in JLPT performance. Regarding the individual predictors, Cognitive Test Anxiety (CTAS) maintained a significant negative contribution to the JLPT scores ($\beta = -0.427$, $p = 0.002$). This indicates that higher anxiety levels consistently predict lower test scores, confirming its impact regardless of the test tier. Conversely, Study Behavior did not exhibit a statistically significant contribution to the scores ($\beta = 0.098$, $p = 0.460$).

Visual inspection of the data further corroborates this finding. As depicted in Figure 3, the grouped scatterplot illustrates a negative linear trajectory between cognitive test anxiety and JLPT performance. The downward linear regression trendline, accompanied by a 95% confidence interval, visually shows that as CTAS scores increase, raw JLPT scores consistently decline. Furthermore, the color-coded distribution of participants, from N5 to N2 JLPT levels, within the scatterplot shows that cognitive

anxiety-induced score degradation occurs across all proficiency levels, reinforcing the statistical non-significance of the proficiency-tier dummy control variable.

Notably, the JLPT Level Dummy control variable was not statistically significant (B = 7.439, p = 0.312). This statistical non-significance indicates that, when holding anxiety and study behavior constant, there was no significant difference in the raw scores obtained by beginner and intermediate test-takers. Ultimately, cognitive test anxiety emerged as the sole dominant and significant predictor of exam performance fluctuations among the respondents. This statistical non-significance implies that merely engaging in the "occasional" and unstructured study routines identified in Question 2 lacks the robust efficacy required to demonstrably elevate a student's score above their peer average. Consequently, among the participating students, cognitive test anxiety was the dominant predictor of fluctuations in exam performance.

Table 5. Table summary

Variables	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig. (p)
(Constant)	114.156	33.766		3.381	.001
CTAS	-.764	.236	-.427	-3.242	.002
Study Behavior	.223	.299	.098	.745	.460
JLPT Level (Dummy)*	7.439	7.273	.136	1.023	.312

A multiple linear regression analysis using raw JLPT scores and controlling for test proficiency levels via a dummy variable showed that the model significantly predicted test performance, accounting for 22.3% of the total variance. However, the variables contributed to the model to different degrees. Specifically, higher levels of cognitive test anxiety (CTAS) emerged as a significant negative predictor of JLPT scores (B = -0.764, â = -0.427, p = 0.002). This indicates that, holding other factors constant, every 1-point increase in the raw CTAS score reduces a student's raw JLPT score by 0.764 points. In standardized terms, this equates to a 0.427 standard deviation decrease in JLPT performance for every 1 standard deviation increase in anxiety.

The present findings are consistent with extant literature suggesting a negative correlation between CTAS and academic performance (Németh & Bernáth, 2023; Prasetya et al., 2025; Stefan et al., 2020; Steinmayr et al., 2016). Interestingly, the categorical dummy variable for JLPT proficiency level was not statistically significant in the regression model (B = 7.439, p = 0.312). The regression analysis demonstrates that raw score fluctuations across the sample are driven primarily by psychological anxiety rather than the test tier itself. In the context of foreign language assessment, this supports the notion that cognitive test anxiety can impair students' ability to retrieve linguistic knowledge and perform optimally in high-stakes environments, such as the JLPT. Conversely, in this standardized model, study behaviors did not present a statistically significant contribution to the JLPT scores (â = 0.0981, p = 0.460). This lack of statistical significance perfectly contextualizes the descriptive findings of Research Question 2. As previously noted, respondents generally exhibited "occasional" study behaviors, with a mean of 3.30 on a 5-point scale. These findings suggest that

inconsistent, passive, or unstructured study routines are psychometrically insufficient to overcome the cognitive blockade induced by test anxiety. For study behaviors to translate into significant standardized score gains, they cannot be merely occasional; they must align with highly disciplined self-regulated learning (Lourenço & Paiva, 2024; Zimmerman, 2002).

Second language learning, particularly Japanese, does not depend solely on grammar and language skills. It is also shaped by behavioral practices and includes affective dimensions, particularly in testing contexts (Bao & Liu, 2021; Li & Umemoto, 2010, 2013; Qiao, 2024; Wang, 2023). This study highlights the significance of non-linguistic factors, including anxiety, study behaviors, and cultural factors, in influencing JLPT outcomes. Nonlinguistic factors, along with linguistic factors such as grammar and vocabulary knowledge, highlight the multifaceted nature of language assessment and performance.

Implication and Limitation

Theoretically, the study findings emphasize the need to consider psychological and behavioral factors when assessing language proficiency, particularly in high-stakes testing like the JLPT. Language educators and researchers must acknowledge how non-linguistic factors affect language proficiency. This helps develop better explanations of how people learn languages, including psychological and cognitive factors. From a practical standpoint, the study proposes several approaches to enhance language education and prepare for the Japanese Language Proficiency Test. The findings suggest that interventions aimed at mitigating cognitive test anxiety and enhancing students' study behaviors are effective.

Integrating stress management strategies, such as mindfulness practices, into language learning may help students manage anxiety more effectively. Furthermore, cultivating self-regulated learning strategies, including goal-setting, time management, and consistent practice, has been shown to lead to more disciplined and productive study routines among students (Smith et al., 2023). Integrating these interventions into existing curricula and supplementary support has the potential to substantially enhance students' performance on the JLPT and their overall language proficiency.

However, it is essential to acknowledge the limitations of this study. Firstly, the relatively small sample size of 50 respondents may restrict the generalizability of the findings. While the present study's sample size was adequate, future research should use larger and more diverse samples to enhance the external validity of the results. Moreover, the study's cross-sectional nature limits the ability to establish causal relationships between test anxiety, study habits, and JLPT performance. Longitudinal studies are necessary to explore how fluctuations in anxiety and study behaviors over time influence language proficiency outcomes. Furthermore, the present research concentrated exclusively on university students in Semarang, Indonesia, which may not fully represent the broader population of JLPT test-takers. Conducting similar studies across different cultural contexts and educational systems would offer valuable comparative insights into how these factors influence JLPT performance in various settings.

■ CONCLUSION

This study investigates the impact of cognitive test anxiety (CTAS) and study behaviors on Japanese Language Proficiency Test (JLPT) performance among university students. To accurately account for the varying difficulty levels across N5 to N2 without distorting the measurement scale, raw JLPT scores were analyzed using proficiency tier as a categorical dummy control variable. The regression analysis showed that cognitive test anxiety had a significant

negative effect on JLPT performance, with a beta coefficient of -0.427 (p = 0.002). This finding shows that for every standard deviation increase in anxiety, a student's JLPT performance decreases by 0.427 standard deviations relative to their peers. In contrast, the occasional and unstructured study routines reported by the students exhibited no significant impact on the standardized test results (p = 0.460). Collectively, the model accounted for 22.3% of the variance in JLPT performance, underscoring the substantial impact of non-linguistic elements on test outcomes. The findings emphasize the need to address test anxiety and cultivate structured study behaviors in language education. The study suggests that interventions targeting anxiety reduction, such as stress management techniques, and promoting self-regulated learning strategies, could improve JLPT preparation and performance.

While these findings are drawn from a relatively small sample size and should not be interpreted as definitive proof, they offer empirical pedagogical findings for Japanese language education. The data suggest that when students rely on unstructured study habits, cognitive anxiety emerges as a primary non-linguistic barrier to their test performance. Therefore, language educators should integrate practical, scalable interventions into JLPT preparation that are also feasible in large classroom settings. Pedagogically, rather than relying on individualized consultations, educators can implement mass systematic desensitization, such as rigorously timed, simulated JLPT mock exams to help students gradually build psychological endurance. Furthermore, to address unstructured study habits, educators can provide standardized, guided study schedules and foster peer-assisted study groups, allowing students to build disciplined routines collaboratively. Future research with larger, more diverse cohorts is needed to further validate these exploratory pedagogical strategies.

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■ DECLARATION OF GENERATIVE AI USAGE IN THE WRITING PROCESS

In writing this manuscript, the authors used Grammarly Pro Version exclusively for language editing purposes, such as improving clarity, grammar, style, and readability. All academic content remains the responsibility of the authors, who take full accountability for the accuracy and integrity of the work.

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