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Original Research Article

Structured Versus Traditional Viva in Physiology: A Within-Cohort Comparative Study among First-Year MBBS Students

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Abstract

Oral viva examinations remain integral to medical education, though concerns about inconsistency and examiner bias persist. The traditional viva (TV) permits deeper inquiry but often compromises fairness and standardization. The structured viva (SV), with predetermined questions and marking schemes, aims to enhance objectivity and syllabus coverage. This study compared these two formats in undergraduate physiology, assessing student performance, perceptions, and examiner feedback. This observational study was conducted among 100 first-year MBBS students, each undergoing both TV and SV. The SV comprised four stations - case scenario, instrument, graph, and laboratory report - each three minutes and five marks, assessed by four examiners. Viva scores were compared, and correlations with theory, practical, and combined marks were analyzed. Questionnaires captured perceptions regarding stress, fairness, and coverage from both students and examiners. There was no significant difference in mean scores between TV and SV. However, SV scores correlated more strongly with theory and combined theory–practical marks, while correlations with practical marks were similar across both formats. The majority of students preferred SV, citing greater fairness, transparency, and reduced anxiety, though some valued the flexibility of TV. Examiners highlighted SV's strengths in standardization and coverage but noted increased preparation demands and reduced opportunity for probing. In summary, while TV and SV produced comparable scores, SV demonstrated stronger validity by aligning more closely with overall performance. Incorporating SV, with measures to enhance its flexibility, may help optimize viva examinations by balancing reliability with educational value.

Keywords: Structured viva, Traditional viva, Assessment validity, Student perception, Examiner feedback, Medical education.

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Introduction

Assessment is a cornerstone of medical education, serving not only to ensure the competence of medical graduates but also to safeguard the health of society. Among assessment tools, the viva voce - essentially an oral examination - remains common in both undergraduate and postgraduate medical curricula. Traditionally, the viva involves direct, spontaneous questioning by the examiner to assess knowledge, critical thinking, and even professional attitude [1–3].

Despite its widespread use, this Traditional Viva (TV) has several limitations. It is often criticised for its subjectivity, limited validity, and poor reliability arising from inconsistency in scoring and lack of standardisation.

Students frequently report experiencing heightened stress during the process, and the time allotted per candidate is rarely uniform. Additional factors such as the sequence of candidates, student appearance, confidence, and examiner bias, including leniency or severity in awarding marks, further compromise its fairness [4–6]. Moreover, the unstructured nature of the TV makes comprehensive syllabus coverage uncertain.

To address these limitations, the Structured Viva (SV) has emerged as a promising alternative [6,7]. Although informally practised as early as 1993 [8], it was formally described as a distinct assessment tool in 2005 [9]. In SV, questions and marking schemes are predetermined, ensuring uniform coverage of the syllabus, transparency, and consistency across examiners. While its implementation is time-intensive and requires planning, once established, SV offers greater reliability and objectivity compared to TV [10,11].

Previous studies have examined the use of SV in disciplines such as pathology, pharmacology, and anatomy [5,7,12,13]. However, its role in

physiology, particularly within first-year undergraduate curricula, remains relatively underexplored. Although SV has been shown to improve objectivity and reduce examiner bias, systematic comparisons with TV in physiology are scarce. Furthermore, little attention has been paid to how viva performance relates to outcomes in other assessments, such as theory and practical examinations.

In this context, the present study was designed to compare SV and TV in undergraduate physiology and to evaluate their correlation with theory and practical examination scores. By integrating these dimensions, the study aims to provide evidence on the validity, fairness, and educational value of SV as an assessment tool in physiology education.

Materials and Methods

Study Design and Setting: This was a cross-sectional observational study conducted in the Department of Physiology in a private medical college of Tamil Nadu, among first-year MBBS students during the academic year 2024-2025. The study compared the outcomes of TV and SV conducted at two different examinations within the same cohort (Figure 1).

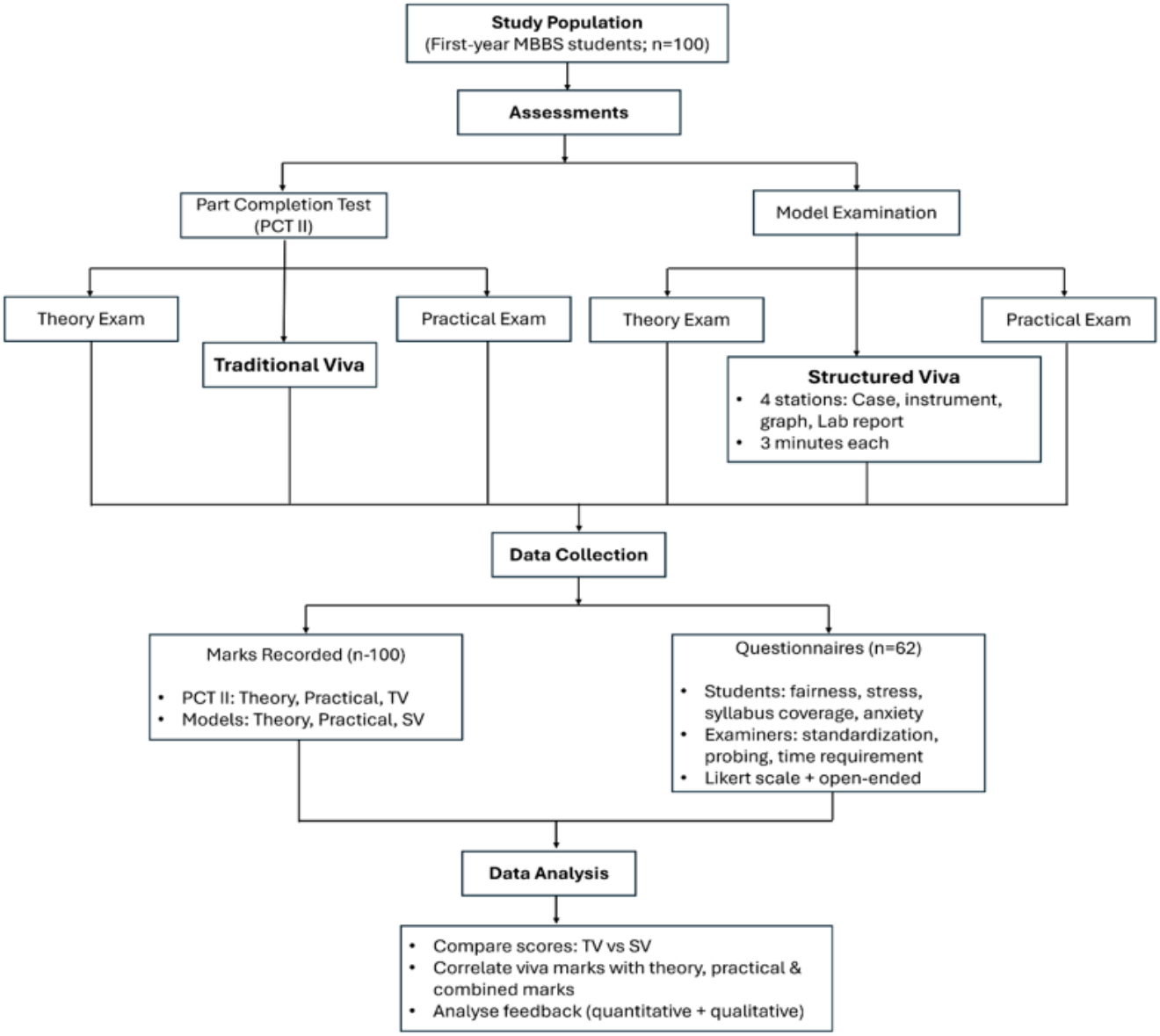

Figure 1: Study Algorithm

Participants: All 100 first-year MBBS students who appeared for both the Part Completion Test II and the Model Examination were included.

Examinations and Assessments

Part Completion Test II: The written examination covered topics spanning the gastrointestinal, respiratory, and renal systems.

Practical assessments involved established haematology and standard clinical physiology procedures. As for the viva, it was carried out in a fairly traditional, unstructured manner - examiners posed questions spontaneously, and the duration as well as scoring were largely at their discretion.

Model Examination: The theory examination was a comprehensive assessment covering the entire Physiology syllabus, while the practical examination comprised standard haematology and clinical physiology experiments similar to the university examination format.

SV was organised into four distinct stations, each handled by a separate examiner. The stations covered instruments, case scenarios, graphs, and laboratory reports, drawn from the physiology curriculum. Case scenarios had a printed stem and pre-written questions; instruments/graphs/lab reports were displayed as prompts, with pre-approved probe questions asked by the examiner. The blueprint ensured balanced coverage across Paper I and Paper II and across content formats.

Prior to SV, examiners (n=4) were briefed together on timing, acceptable prompts, and standardized marking criteria. Students were oriented to the process to minimize anxiety and delays. Examiner 1 managed case scenarios and instruments for Paper I, while Examiner 2 was responsible for laboratory reports and graphs for Paper I. Examiner 3 addressed case scenarios and instruments for Paper II, and Examiner 4 handled laboratory reports and graphs for Paper II.

Each student spent three minutes at a station before rotating to the next examiner, thereby completing all four stations in a total of twelve minutes. Each station carried 5 marks, with a total of 20 overall. Students were examined in batches of four; all four entered the room simultaneously and occupied the four stations. After each three-minute interval, they rotated to the next station until the cycle was complete. Once a batch had finished all four stations, they exited, and the next batch of four students was admitted.

Perception Questionnaire: Questionnaires previously validated and adapted from established studies on TV and SV were employed in this research. A structured questionnaire was administered to students following the model examination to assess their perceptions of fairness, comprehensiveness, stress, and their preferences between TV and SV formats. A separate questionnaire was provided to examiners to capture their views on the feasibility, objectivity, and overall effectiveness of the two methods. Both sets of questionnaires incorporated Likert-scale items as well as open-ended questions to allow for qualitative insights.

Data Collection: Marks obtained in theory, practical, and viva examinations (both TV and SV) were recorded. For each type of viva (TV and SV), correlations were calculated with theory, practical, and combined (theory + practical) scores. Feedback was obtained through questionnaires, in which name and roll number were requested but kept optional to ensure anonymity.

Statistical Analysis: Descriptive statistics, including mean and standard deviation, were calculated for theory, practical, and viva scores. Pearson's correlation coefficient (r) was used to assess the relationship of TV and SV scores with theory, practical, and combined (theory + practical) scores. Further analysis, employing Fisher's Z transformation, was conducted to evaluate the statistical significance of differences between correlation coefficients for TV and SV. A p-value < 0.05 was considered statistically significant. Data analysis was carried out using Microsoft Excel.

Ethical Considerations: The study was conducted in accordance with ethical principles. Student identity and academic performance records were kept confidential, and no interventions beyond routine teaching and assessment were undertaken.

Results

Comparison of viva marks: Comparison of student marks between TV (6.69±1.45) and SV (6.63±1.5) revealed no significant difference (p value = 0.65) in scores obtained between the two formats (Figure 2).

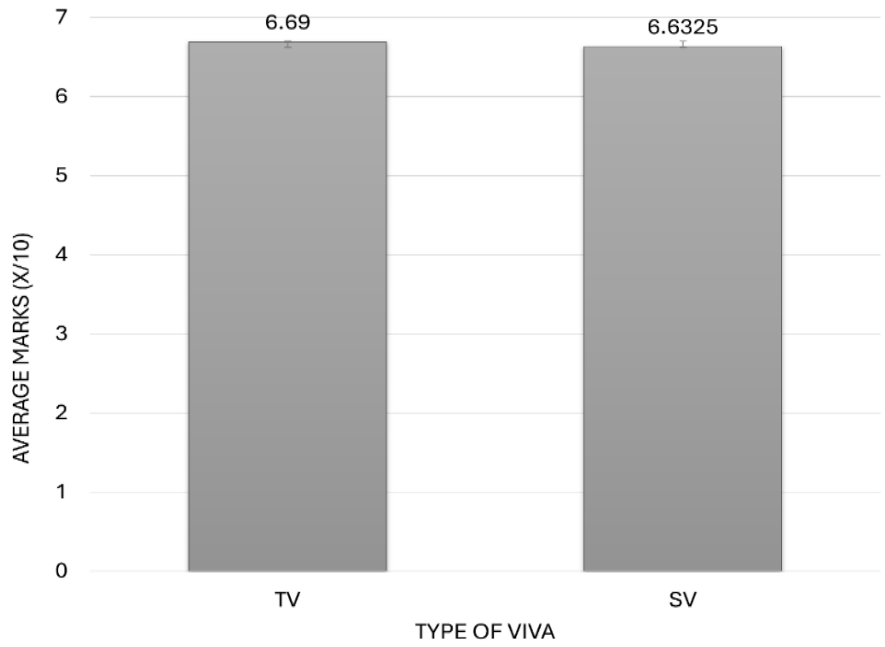

Figure 2: Comparison of marks obtained by students in the two types of Viva. Data displayed as Mean + Standard Deviation. SV – Structured Viva, TV – Traditional Viva

Correlation between academic performance and viva marks: The relationship between Viva scores and academic performance was then assessed using Pearson's correlation coefficients, followed by Fisher's Z-test to compare correlations between TV and SV.

For theory marks, both TV (r = 0.56) and SV (r = 0.75) showed positive correlations. The correlation with SV was significantly stronger than that with TV (Z = –2.33, p = 0.0199). For practical marks, strong correlations were observed with both TV (r = 0.81) and SV (r = 0.85). The difference between the two correlations was not statistically significant (Z = –0.88, p = 0.379). When combined theory and practical marks are compared with the viva marks, TV (r = 0.73) and SV (r = 0.84) both showed strong correlations. However, the correlation with SV was significantly stronger than with TV (Z = –2.13, p = 0.0329) (Figure 3).

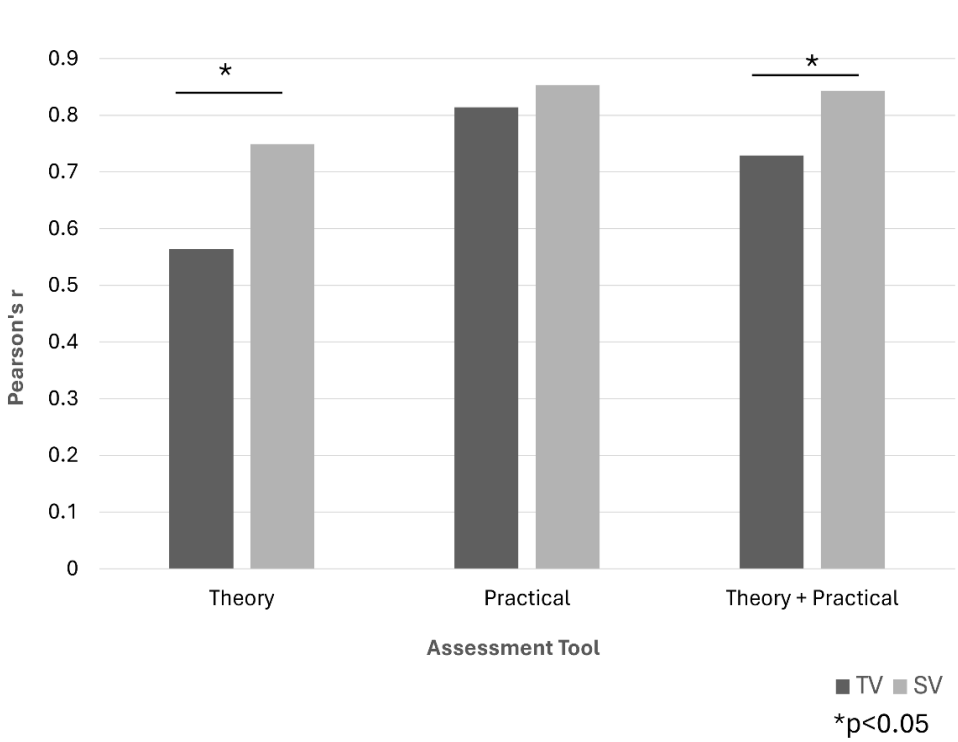

Figure 3: Pearson's correlation between various assessment tools (theory, practical, and combined scores) and marks obtained in the TV and SV. SV – Structured Viva, TV – Traditional Viva.

Students' Feedback: A total of 62 students participated in the feedback survey.

Quantitative feedback: On Likert scale items, students gave consistently higher ratings to the SV (Figure 4) compared to the TV (Figure 5). More than 80% of students agreed (score 4–5) that SV questions were fair, unbiased, and adequately covered the syllabus. 75–90% of students agreed that the SV was less stressful, tested understanding rather than memory, and better reflected their true level of preparation. Time allocation and number of questions were also rated as more adequate in SV.

When asked which viva helped them learn better, 96.8% of students preferred SV, while only 3.2% preferred TV (Figure 6).

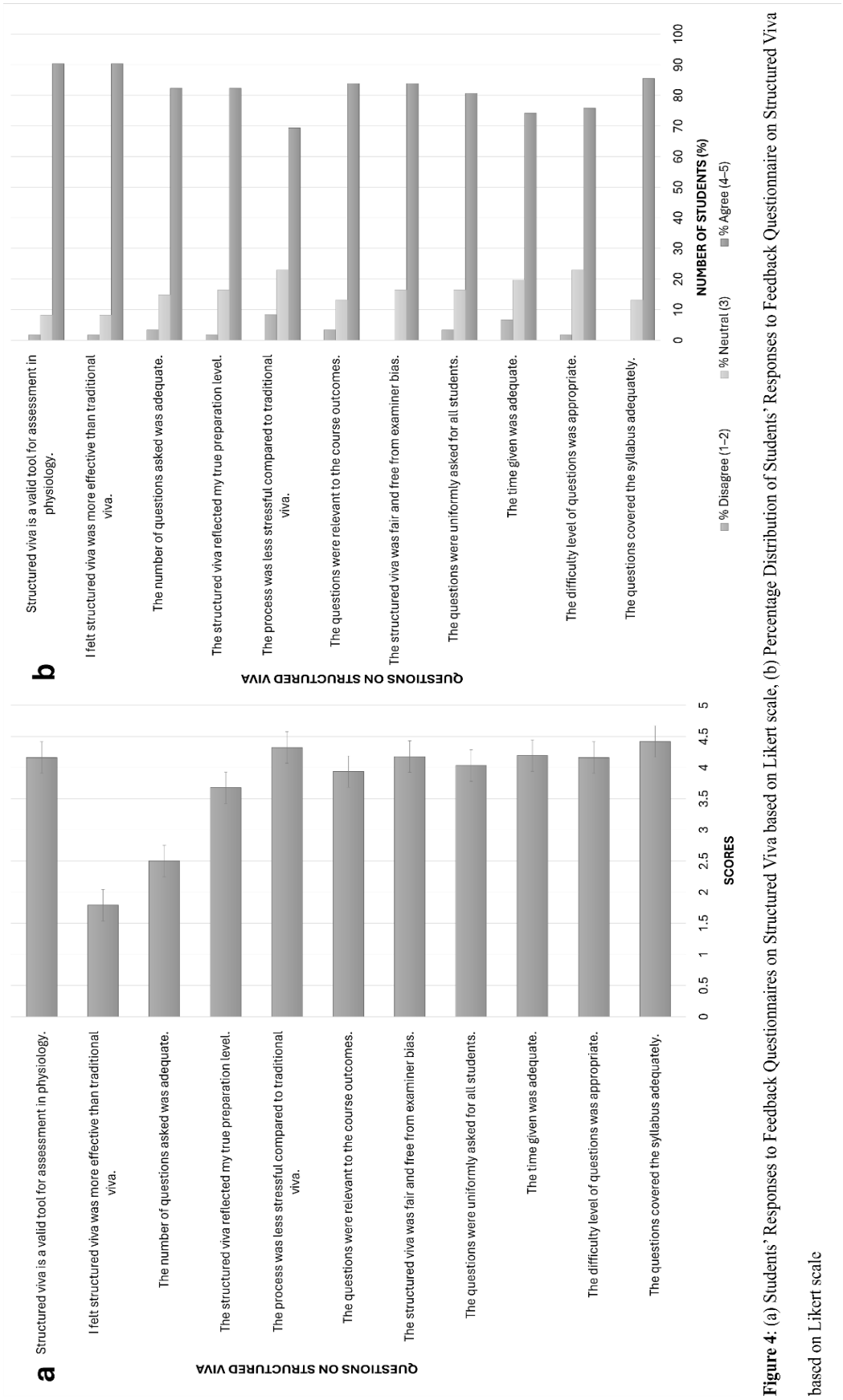

Figure 4: (a) Students' Responses to Feedback Questionnaires on Structured Viva based on Likert scale, (b) Percentage Distribution of Students' Responses to Feedback Questionnaire on Structured Viva based on Likert scale

Figure 4(a):

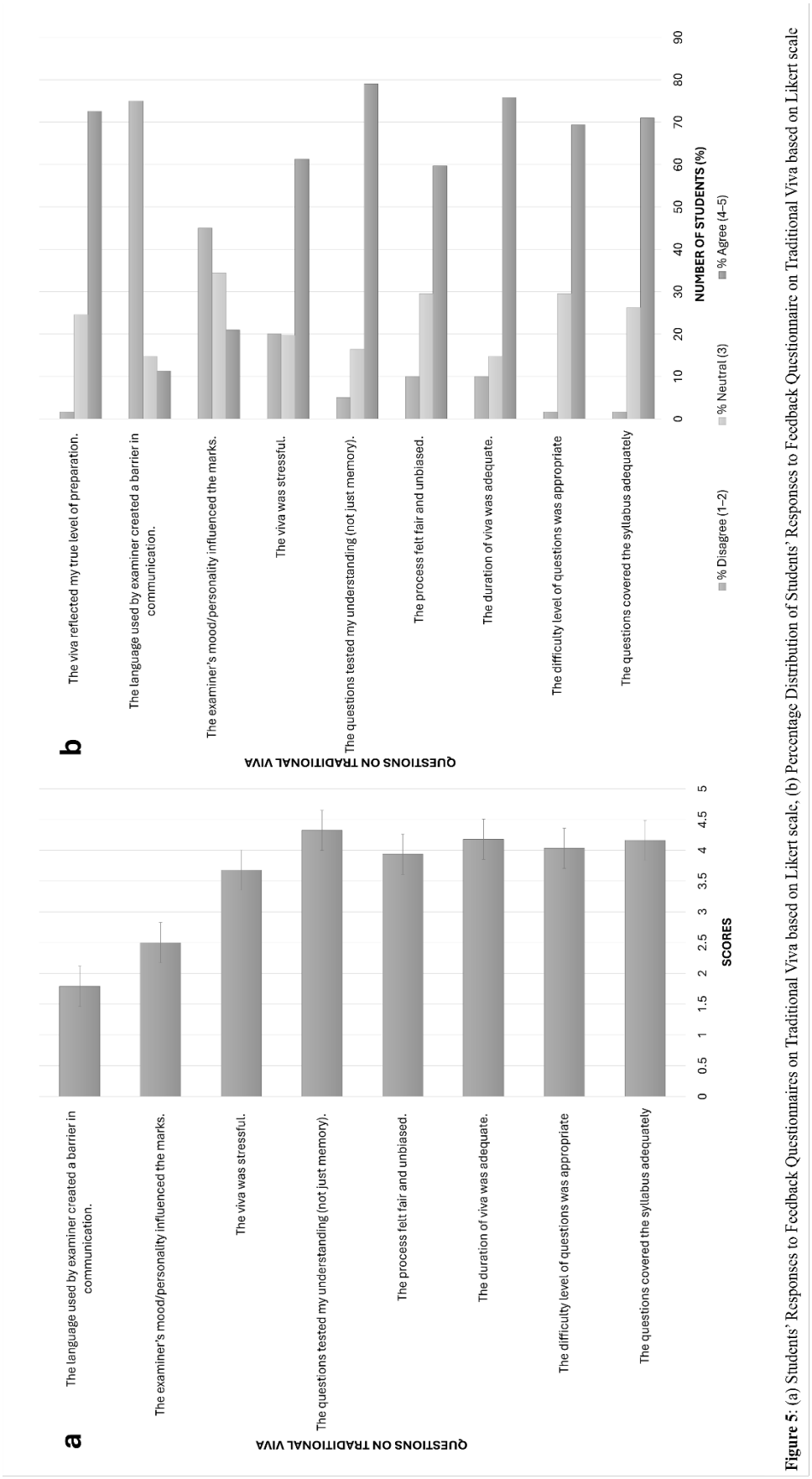

Figure 5: (a) Students' Responses to Feedback Questionnairs on Traditional Viva based on Likert scale, (b) Percentage Distribution of Students' Responses to Feedback Questionnairc on Traditional Viva based on Likert scale

Figure 5 (a & b):

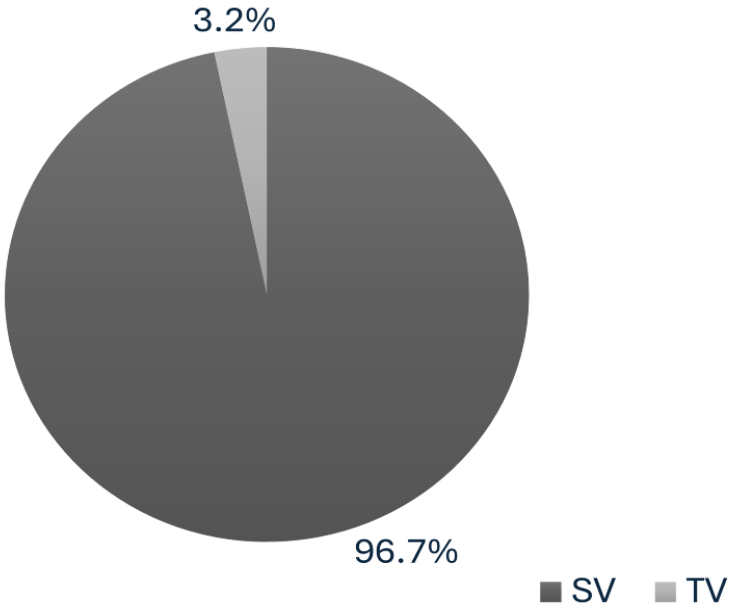

Figure 6: Students' preference percentages for different viva methods. SV – Structured Viva, TV – Traditional Viva.

Qualitative feedback: Analysis of open-ended responses ("Which viva do you prefer and why?") revealed strong support for SV. Students highlighted that SV reduced stress and improved confidence, ensured uniformity and minimized examiner bias, encouraged systematic preparation and better time management, and reflected their knowledge more accurately.

However, a minority of students expressed appreciation for TV, citing its flexibility and ability to probe deeper into topics. Still, these views were limited compared to the overwhelmingly positive remarks for SV.

Examiners' Feedback: Examiner's feedback was obtained from the examiners who were a part of both TV and SV.

Quantitative feedback: Analysis of examiner responses indicated that the majority favoured the SV (Figure 7) format over the TV (Figure 8). Sixty per cent of the examiners agreed that SV is more effective when compared to TC. Most examiners also reported that SV was less biased (80%), and provided a fairer assessment (60%) of students. A higher proportion (80-100%) also agreed that SV allowed for better standardization and comparability across students.

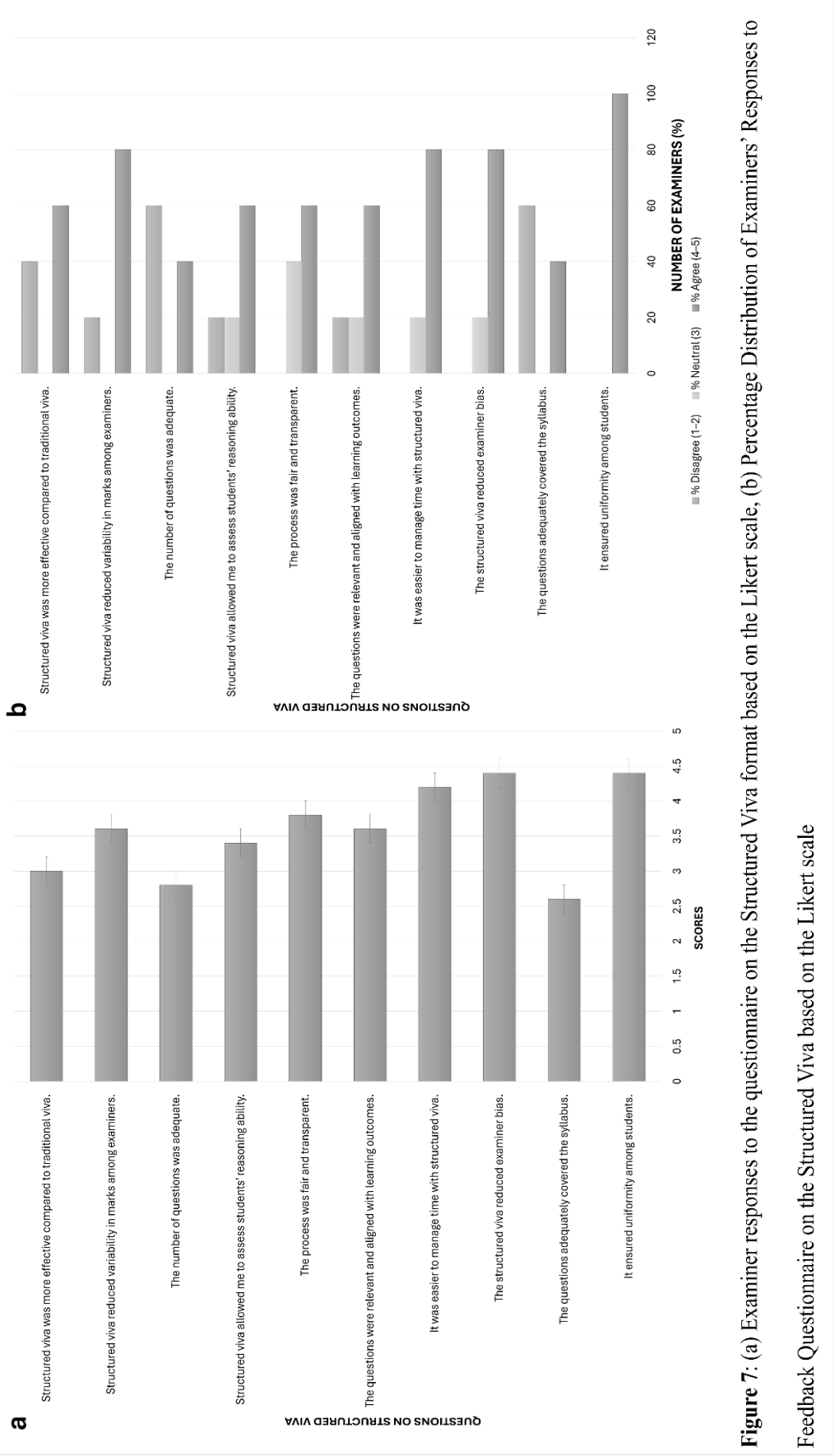

Figure 7: (a) Examiner responses to the questionnaire on the Structured Viva format based on the Likert scale, (b) Percentage Distribution of Examiners' Responses to Feedback Questionnaire on the Structured Viva based on the Likert scale

Figure 7 (a & b):

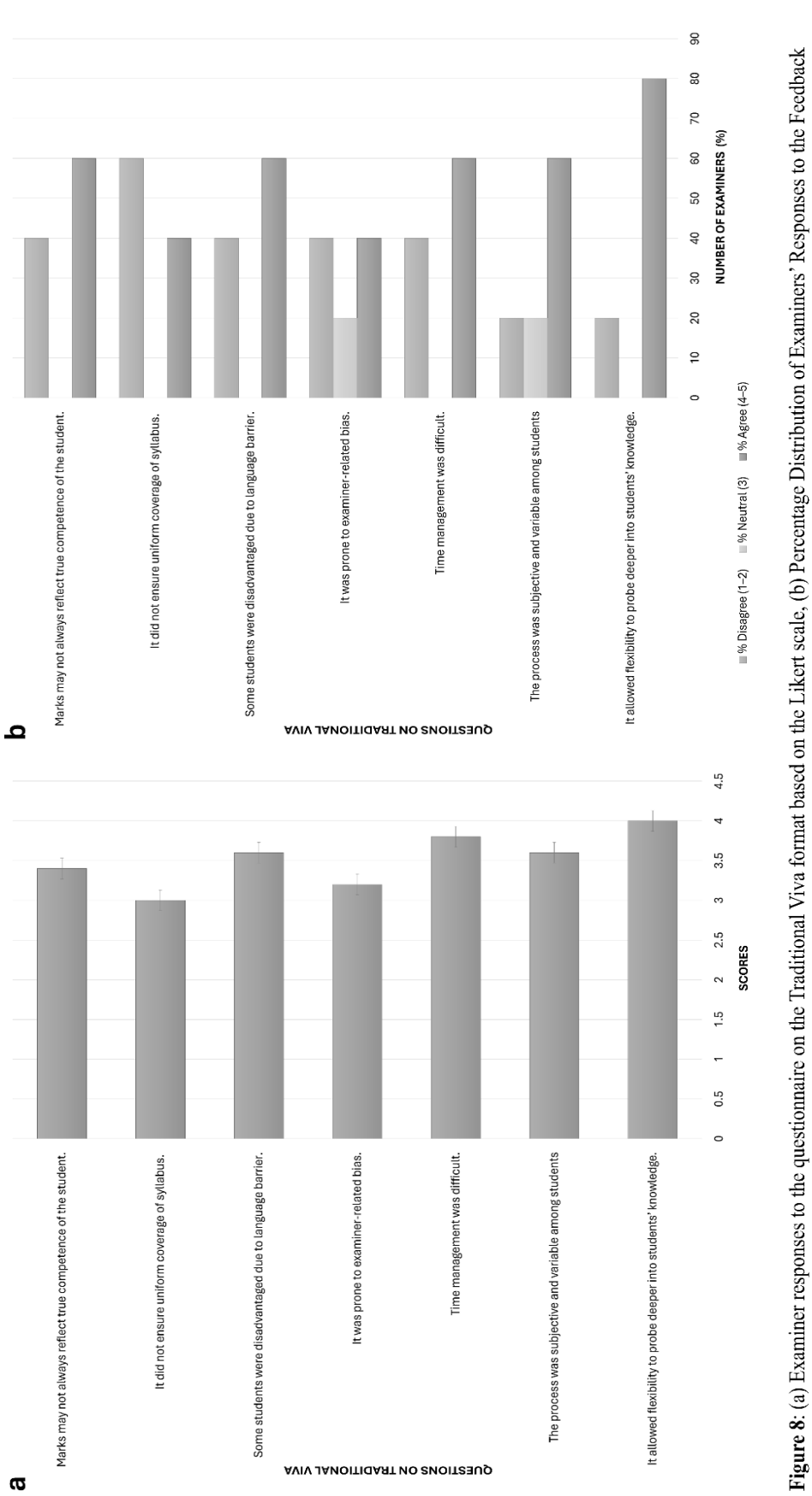

Figure 8: (a) Examiner responses to the questionnaire on the Traditional Viva format based on the Likert scale, (b) Percentage Distribution of Examiners' Responses to the Feedback Questionnaire on the Traditional Viva based on the Likert scale

Figure 8 (a & b):

Qualitative feedback

Examiners highlighted that the SV offered greater fairness, comprehensive syllabus coverage, better standardization across students, and a clearer assessment of conceptual understanding, while also reducing examiner subjectivity. At the same time, some felt it was more time-consuming to prepare and somewhat rigid, leaving less room for probing beyond the set questions. In contrast, the TV was appreciated for its flexibility, spontaneity, and scope for deeper exploration of knowledge, but it was also noted to carry a high risk of bias, unequal distribution of questions, and increased stress for students.

Overall, examiner feedback converged with student feedback, with the majority expressing that SV was a fairer, more objective, and effective method of assessment, despite some limitations in preparation time and flexibility.

Discussion

In this within-cohort study, student scores were similar whether assessed through SV or TV, indicating both formats are essentially equivalent in measuring immediate student performance. However, stronger correlations with theory scores ($r = 0.75$ vs 0.56; $p = 0.0199$) and with combined theory plus practical scores ($r = 0.84$ vs 0.73; $p = 0.0329$) were observed in SV. For purely practical marks, the difference between SV and TV was not significant ($p = 0.379$). These findings suggest that while both methods produce comparable outcomes in terms of marks, SV more closely reflects students' theoretical knowledge and overall competence across domains.

Our results are consistent with broader evidence indicating that SV improves the objectivity, reliability, and validity of oral assessments. Notably, a recent systematic review with meta-analysis in health professions education reported SV to be more reliable and valid than traditional formats, with an estimated acceptability rate close to 80% [3]. In our study, the stronger association between SV and theory scores further supports its effectiveness in evaluating conceptual knowledge. Similar findings have been reported in specific disciplines, such as pharmacology, where SV similarly aligned with theory mark performance [14]. The lack of significant difference in correlations with practical performance, however, suggests that viva structure plays a lesser role when hands-on skills dominate assessment.

Student and examiner perspectives further reinforced these quantitative findings. Most students favored SV, citing its fairness, transparency, and reduced anxiety, while a minority preferred TV for its flexibility and opportunities for open discussion. Examiners also favored SV, noting it ensured complete syllabus coverage and allowed for more transparent evaluation of conceptual knowledge. However, they pointed out that SV required more preparation time and lacked some flexibility for in-depth questioning of marginal students. While TV was seen as more adaptable, it also posed risks of bias, uneven question distribution, and examiner subjectivity.

Overall, SV seems advantageous in promoting fairness, transparency, and alignment with academic achievement, without disadvantaging student outcomes. However, introducing some flexibility within a structured framework could potentially combine the strengths of both methods, improving reliability and the overall student experience.

The present study has certain limitations. Its single-center design and restricted cohort may limit generalizability. While SV's stronger association with academic performance is notable, further research—especially with larger, diverse cohorts and longitudinal analysis—is needed to clarify its longer-term impact on student learning.

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