Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Assessment of Ethical Competence as an Entrustable Professional Activity (EPA) among MBBS Interns: A Cross-Sectional Mixed-Methods Study

Nani Gopal Das

ngdas153@gmail.com

Tripura Medical College & Dr. B.R. Ambedkar Memorial Teaching Hospital

Antara Roy

Tripura Medical College & Dr. B.R. Ambedkar Memorial Teaching Hospital

Amitava Baidya

Agartala Government Medical College

Nirmalendu Das

Tripura Medical College & Dr. B.R. Ambedkar Memorial Teaching Hospital

Research Article

Keywords: Ethical competence, Entrustable professional activities, Competency-based medical education, AETCOM, Medical internship

Posted Date: April 9th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-9073348/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License

Additional Declarations: No competing interests reported.

Abstract

Background

Ethical competence is a core component of professional practice in medical training and is central to the Attitude, Ethics, and Communication (AETCOM) framework under Competency-Based Medical Education (CBME) in India. Entrustable Professional Activities (EPAs) offer a structured approach to assessing clinical and ethical readiness during internship. However, evidence on the alignment between ethical competence and EPA-based entrustment among MBBS interns remains limited.

Methods

A cross-sectional mixed-methods study was conducted among 100 MBBS interns at a tertiary care teaching hospital. Interns completed a validated self-assessment questionnaire on ethical competence, while faculty independently rated interns' entrustment levels using EPA-based tools. Quantitative data were analyzed using descriptive statistics and multivariable logistic regression. Qualitative data from open-ended responses were analyzed using thematic analysis following the Braun and Clarke framework. Integration of findings was achieved through joint display analysis.

Results

Seventy percent of interns demonstrated satisfactory entrustment (EPA ≥ 3). Interns with higher self-assessed scores, prior ethics training, and longer internship duration were significantly more likely to achieve EPA ≥ 3 ($p < 0.05$). Self-assessment scores were consistently higher than faculty ratings ($p < 0.001$). Qualitative analysis identified system-related constraints, hierarchical barriers, role ambiguity, and the need for structured ethics training as key themes influencing ethical practice. Integration of findings revealed that contextual and organizational factors were strongly associated with lower entrustment levels.

Conclusion

Ethical competence among interns is influenced by individual preparedness and systemic factors. EPA-based assessment provides a meaningful framework for evaluating ethical readiness. Strengthening structured ethics training may enhance ethical entrustment and professionalism.

INTRODUCTION

Ethical competence is a fundamental component of professional medical practice and is essential for maintaining patient trust, ensuring quality care, and promoting responsible clinical decision-making. Medical graduates are expected to demonstrate respect for patient autonomy, confidentiality, integrity, and accountability in all professional interactions. In India, these values are formally embedded within the National Medical Commission's Competency-Based Medical Education (CBME) curriculum and the

Attitude, Ethics, and Communication (AETCOM) framework, which aim to produce ethically grounded and socially responsive physicians.[1–3]

Despite structured curricular provisions, the translation of ethical knowledge into consistent professional behaviour remains challenging in real-world clinical settings. During internship, trainees encounter complex ethical dilemmas related to informed consent, communication, documentation, hierarchical pressures, and resource constraints.[4,5] These challenges are often compounded by high workload, limited supervision, and unclear professional boundaries, which may compromise ethical decision-making and professional confidence.[6–8] Consequently, ethical competence during internship is shaped not only by individual knowledge and attitudes but also by institutional culture and supervisory practices.

Entrustable Professional Activities (EPAs) have emerged as a practical framework for operationalizing CBME by linking competencies to observable workplace tasks and graded levels of supervision.[9,10] EPA-based assessment enables holistic evaluation of professional performance in authentic clinical contexts. While EPAs have been widely applied to procedural and clinical competencies, their use in assessing ethical competence and professionalism remains limited, particularly in undergraduate medical education.[11–13]

Self-assessment is widely encouraged to promote reflective practice and lifelong learning. However, evidence suggests that trainees often demonstrate limited accuracy in self-evaluating professional competence, highlighting the importance of faculty-based workplace assessment.[14–16] Understanding the relationship between self-perception, observed performance, and contextual influences is therefore critical for strengthening ethics education.

Qualitative approaches provide valuable insights into organizational and interpersonal factors influencing ethical practice, while mixed-methods designs enable comprehensive interpretation through data triangulation.[17–19] However; empirical evidence from the Indian context integrating EPA-based assessment with qualitative exploration remains scarce.

Therefore, this study aimed to assess the ethical competence of MBBS interns using an EPA-based mixed-methods approach, to examine the agreement between intern self-assessment and faculty entrustment ratings, and to explore contextual factors influencing ethical practice and training needs during internship.

METHODS

Study Design

This study employed a cross-sectional convergent mixed-methods design, integrating quantitative assessment of ethical competence with qualitative exploration of ethical challenges and training needs. Quantitative and qualitative data were collected concurrently and integrated during interpretation to

provide a comprehensive understanding of ethical entrustability among MBBS interns. The study is reported in accordance with the STROBE guidelines for cross-sectional studies.

Clinical trial number

not applicable

Study Setting

The study was conducted at a tertiary care teaching hospital attached to **** Medical College & *** Hospital, ***, ***, where MBBS internship training is delivered in accordance with the competency-based medical education (CBME) curriculum prescribed by the National Medical Commission (NMC).

Study Participants

The study population comprised MBBS interns undergoing compulsory rotatory internship during the study period.

Inclusion Criteria

- MBBS interns currently in internship postings
- Completion of at least three (3) months of internship to ensure adequate workplace exposure
- Willingness to participate and provide informed consent

Exclusion Criteria

- Interns on prolonged leave during the data collection period
- Incomplete self-assessment or unmatched faculty assessment data

Sample Size and Sampling Technique

A total of 100 MBBS interns were included in the study. Universal sampling was adopted, as the internship batch size during the study period was finite and feasible for complete enumeration. This approach ensured adequate representation and maximized statistical precision for estimating the proportion of interns achieving satisfactory ethical entrustability.

Operational Definition of Ethical Competence as an EPA

Ethical competence was operationalized as an Entrustable Professional Activity (EPA) defined as:

Demonstration of ethical and professional conduct in routine patient care, including informed consent, confidentiality, respectful communication, honesty, integrity, and ethical decision-making in common clinical situations.

Assessment Tools

1. Intern Self-Assessment Tool

Interns completed a structured self-assessment questionnaire designed to evaluate perceived ethical competence across key domains aligned with AETCOM competencies. Responses were recorded on a 5-point Likert scale, with higher scores indicating greater perceived competence.

2. Faculty EPA Entrustment Assessment Tool

Faculty members who had directly supervised the interns completed an EPA-based entrustment rating form for each participating intern. Ethical competence was rated using a 5-level entrustment scale:

Faculty supervisors assessed interns using a five-level EPA entrustment scale, adapted for ethical professional activities:

- EPA Level 1: Observation only; not permitted to perform ethical professional activities
- EPA Level 2: Performs ethical activities under direct supervision
- EPA Level 3: Performs ethical activities with indirect supervision
- EPA Level 4: Performs ethical activities independently
- EPA Level 5: Able to supervise and mentor others in ethical practice

For the purpose of analysis, EPA level ≥ 3 was predefined as satisfactory ethical entrustment, indicating readiness to perform ethical professional activities with indirect supervision or independently.

Justification for Use of EPA Framework

Entrustable Professional Activities (EPAs) were employed in alignment with the NMC Competency-Based Medical Education (CBME) and AETCOM framework, which emphasize workplace-based assessment, graded supervision, and professional responsibility. EPA-based entrustment enables holistic assessment of ethical competence as observable performance, reflecting readiness for independent practice under defined levels of supervision.[1–4]

3. Qualitative Data Collection Tool

Qualitative data were collected using open-ended questions embedded within the intern and faculty questionnaires. These explored:

- Common ethical challenges encountered during internship

- Perceived barriers to ethical practice
- Perceived need for structured ethics training and assessment

Data Collection Procedure

Following approval from the Institutional Ethics Committee, eligible MBBS interns were approached during the study period and provided with detailed information regarding the study objectives, procedures, voluntary nature of participation, and measures undertaken to ensure confidentiality. Written informed consent was obtained from all participants prior to enrolment.

Each participating intern was assigned a unique anonymized identification code, which was used across all study instruments to enable matching of datasets while preserving participant anonymity. Interns completed the structured self-assessment questionnaire independently, without faculty presence, to minimize social desirability bias. Questionnaires were completed in a non-evaluative setting, and participants were informed that responses would have no impact on internship assessment or progression.

Faculty members who had directly supervised the interns during routine clinical postings were requested to complete EPA-based entrustment rating forms for the corresponding interns using the same anonymized identification codes. Faculty assessors completed these ratings independently and were blinded to intern self-assessment scores to prevent assessment bias. No joint discussions were permitted between interns and faculty during the rating process.

Qualitative data were collected concurrently through open-ended questions embedded within both intern and faculty assessment tools, allowing participants to describe ethical challenges encountered, perceived barriers to ethical practice, and views on ethics training and assessment. Responses were provided in written form to facilitate anonymity and candid reflection.

Completed questionnaires were reviewed for completeness at the time of collection. All data were subsequently de-identified, securely stored, and accessible only to the research team. Data were used solely for research purposes and were analyzed in aggregate to ensure confidentiality.

Data Analysis

Quantitative Data Analysis

Quantitative data were analyzed using jamovi Desktop for Windows, version 2.6.44 (Solid; The jamovi Project, Sydney, Australia).[29] Descriptive statistics were used to summarize participant characteristics and assessment scores, presented as mean ± standard deviation, median with interquartile range, or frequencies and percentages, as appropriate.

The primary outcome was satisfactory ethical entrustability (EPA ≥ 3). Paired comparisons between intern self-assessment scores and faculty EPA ratings were performed using the Wilcoxon signed-rank

test.

Comparisons between interns with EPA < 3 and EPA ≥ 3 were conducted using independent samples *t*-tests for continuous variables and chi-square tests for categorical variables. Factors associated with EPA ≥ 3 were examined using multivariable logistic regression, with results expressed as adjusted odds ratios and 95% confidence intervals.

All tests were two-tailed, and a p-value < 0.05 was considered statistically significant.

Qualitative Analysis

The qualitative component of this study is reported in accordance with the COREQ checklist. Data were derived from open-ended responses provided by MBBS interns and faculty members, focusing on ethical challenges, barriers to ethical practice, and perceptions of ethics training and assessment. Qualitative findings were intended to complement quantitative results by providing contextual explanations for patterns of ethical entrustability.

All responses were transcribed verbatim and anonymized prior to analysis. An inductive thematic analysis was conducted following the six-phase framework described by Braun and Clarke.[30] Two investigators independently familiarized themselves with the data through repeated reading. Initial codes were generated line-by-line to capture meaningful units related to ethical decision-making, supervision practices, clinical context, and training experiences.

Codes were subsequently reviewed and collated into broader categories and iteratively refined into themes reflecting recurrent patterns across participant responses. Themes were assessed for internal coherence and distinctiveness and mapped against the study objectives and the Entrustable Professional Activity (EPA) framework to ensure conceptual alignment with ethical competence and entrustment.

Methodological rigor was enhanced through investigator triangulation, with coding discrepancies resolved through discussion and consensus. An audit trail documenting coding decisions and theme development was maintained. Data saturation was considered achieved when no new themes emerged from successive responses.

Representative quotations were selected to illustrate each theme and are presented in the Results section, ensuring participant anonymity. Qualitative findings were integrated with quantitative results during interpretation to enable triangulation and to provide explanatory depth to differences observed between intern self-assessment and faculty entrustment ratings.

Trustworthiness was ensured through attention to credibility, dependability, and confirmability. Credibility was enhanced through independent coding and triangulation. Dependability was supported by maintaining a transparent audit trail. Confirmability was strengthened through reflexive team discussions and grounding interpretations in verbatim participant quotations.

Integration of Quantitative and Qualitative Data

Findings from both components were integrated during interpretation to triangulate results and provide contextual explanations for observed patterns in ethical entrustability.

RESULTS

Participant characteristics and EPA entrustment

A total of 100 MBBS interns participated in the study. Based on faculty-rated Entrustable Professional Activity (EPA) assessments, 70 interns (70.0%) demonstrated satisfactory entrustment (EPA ≥ 3), while 30 (30.0%) required closer supervision (EPA < 3). Baseline characteristics stratified by EPA level are presented in Table 1.

Table 1
Characteristics and predictors of satisfactory EPA entrustment among MBBS interns (n = 100)

BASELINE CHARACTERISTICS BY EPA LEVEL			
Variable	**EPA < 3 (n = 30)**	**EPA ≥ 3 (n = 70)**	**p-value**
Age (years), mean ± SD	23.4 ± 1.2	23.7 ± 1.1	0.28
Female, n (%)	18 (60.0)	38 (54.3)	0.59
Prior ethics/AETCOM training, n (%)	7 (23.3)	32 (45.7)	**0.031***
Internship duration (months), median (IQR)	6 (4–8)	9 (7–11)	**0.002***
Weekly work hours, mean ± SD	69.2 ± 10.8	61.4 ± 10.5	**0.004***
Self-assessed ethics score, mean ± SD	3.42 ± 0.36	3.92 ± 0.31	**< 0.001***
MULTIVARIABLE LOGISTIC REGRESSION (EPA ≥ 3)			
Predictor	**Adjusted OR**	**95% CI**	**p-value**
Self-ethics score	3.41	1.64–7.09	**0.001***
Prior ethics training	1.86	1.02–3.43	**0.043***
Internship duration	1.18	1.06–1.32	**0.003***
Weekly work hours	0.97	0.95–0.99	**0.021***
Gender	1.09	0.56–2.11	0.801

Legend: Values are presented as mean ± standard deviation, median with interquartile range (IQR), or number (percentage). Group comparisons were performed using independent samples *t*-test, chi-square

test, or Mann–Whitney U test, as appropriate. Multivariable logistic regression reports adjusted odds ratios (OR) with 95% confidence intervals (CI). EPA ≥3 denotes satisfactory entrustment. A p-value < 0.05 was considered statistically significant and is indicated in bold. A p-value < 0.05 was considered statistically significant and is indicated by an asterisk (*).

Interns with EPA ≥ 3 had significantly higher self-assessed ethical competence scores ($p < 0.001$), longer internship duration ($p = 0.002$), and were more likely to have received prior ethics/AETCOM training ($p = 0.031$) compared with those with EPA < 3. They also reported fewer weekly working hours ($p = 0.004$). No significant difference was observed with respect to age or gender.

The overall distribution of faculty-rated EPA levels is illustrated in Fig. 2, showing clustering at EPA levels 3 and 4, indicating that most interns were considered capable of performing ethical professional activities with indirect supervision or independently.

Self-assessed ethical competence

Median self-assessment scores across ethical competence domains are summarized in Table 2 and depicted in Fig. 1. The highest scores were observed for respect and communication and confidentiality. Comparatively lower scores were reported for ethical reasoning and documentation integrity, indicating potential areas for improvement.

Table 2
Integrated quantitative and qualitative findings on ethical competence and EPA entrustment

Theme	Frequency	EPA < 3 (%)	EPA ≥ 3 (%)	p-value	Example quotation
System constraints	38	52.0	31.4	**0.041***	“Often ethics take a backseat due to workload.”
Hierarchical barriers	32	48.0	26.0	**0.028***	“We hesitate to speak up.”
Role ambiguity	27	44.0	19.0	**0.012***	“Not clear what decisions we can make.”
Need for training	45	62.0	38.6	**0.019***	“Ethics should be taught practically.”

Legend: Domain scores are Likert-scale medians (IQR). Themes derived inductively; not mutually exclusive. Associations tested using chi-square/Fisher’s exact test. A p-value < 0.05 was considered statistically significant and is indicated by an asterisk (*).

Comparison of intern self-assessment and faculty ratings

Interns’ self-assessed ethical competence scores were consistently higher than corresponding faculty-rated EPA levels. This discrepancy is illustrated in Fig. 3, which compares self-assessment scores with faculty ratings using box plots. Statistical analysis confirmed a significant difference between perceived

and observed competence ($p < 0.001$), suggesting limited agreement between intern self-perception and supervisor evaluation.

Predictors of satisfactory EPA entrustment

Multivariable logistic regression analysis identified several independent predictors of satisfactory entrustment (EPA ≥ 3) (Table 1). Higher self-assessed ethical competence scores were strongly associated with EPA ≥ 3 ($p = 0.001$). Prior ethics/AETCOM training ($p = 0.043$) and longer internship duration ($p = 0.003$) were also significant predictors.

In contrast, higher weekly working hours were negatively associated with satisfactory entrustment ($p = 0.021$). Gender was not significantly associated with EPA level.

Qualitative findings on ethical challenges and training needs

Inductive thematic analysis of open-ended responses identified four major themes: system-related constraints, hierarchical barriers, role ambiguity of interns, and the need for structured ethics training. The frequency distribution of these themes is presented in Table 2 and Fig. 4.

System-related constraints, including high workload and time pressure, and the need for structured ethics training were the most frequently reported themes. Hierarchical barriers and uncertainty regarding professional roles were also commonly cited. These findings highlight the influence of organizational and supervisory contexts on ethical practice during internship.

Integration of qualitative and quantitative findings

Integration of qualitative and quantitative data is presented in Table 2 and visually summarized in Fig. 4. Interns with EPA < 3 reported significantly higher frequencies of system constraints, hierarchical barriers, and role ambiguity compared with those with EPA ≥ 3 ($p < 0.05$). Conversely, interns with higher entrustment levels were more likely to emphasize the importance of structured ethics training and supportive supervision.

The conceptual joint display demonstrates that lower EPA levels were predominantly associated with contextual and organizational challenges, whereas progression toward satisfactory entrustment was linked to enhanced training, role clarity, and experiential learning. These integrated findings indicate that ethical competence and entrustability are shaped by both individual preparedness and institutional environment.

DISCUSSION

Ethical competence and EPA-based entrustment

This mixed-methods study examined ethical competence among MBBS interns using an Entrustable Professional Activity (EPA)-based framework aligned with the National Medical Commission's Competency-Based Medical Education (CBME) and AETCOM guidelines.[1–3] The majority of interns demonstrated satisfactory entrustment (EPA ≥ 3), indicating readiness to perform ethical professional activities with indirect supervision or independently. Similar findings have been reported in studies highlighting the utility of EPAs in assessing professionalism and ethical practice in authentic clinical environments.[4,5]

Interns with higher self-assessed ethical competence, prior ethics training, and longer internship duration were significantly more likely to achieve higher entrustment levels. These findings support existing evidence that experiential learning and longitudinal exposure to ethical dilemmas enhance professional development and moral reasoning.[6–8]

Discrepancy between self-assessment and faculty ratings

A consistent discrepancy was observed between interns' self-assessed competence and faculty-rated EPA levels, with interns tending to overestimate their ethical performance. This finding is consistent with previous literature demonstrating limited accuracy of self-assessment in medical trainees.[9–11] Overestimation may reflect inadequate feedback mechanisms, limited reflective practice, or social desirability bias.

Regular formative assessments, structured feedback, and guided reflective exercises have been shown to improve self-awareness and professional calibration among trainees.[12,13] Integrating such strategies within EPA-based assessment systems may enhance the validity of self-perceived competence.

Organizational and contextual influences on ethical practice

Qualitative findings highlighted system-related constraints, hierarchical barriers, and role ambiguity as major impediments to ethical practice. These challenges were more prominent among interns requiring closer supervision. Similar organizational barriers have been documented in resource-constrained healthcare settings, where workload pressures and rigid hierarchies limit ethical autonomy.[14–16]

Hierarchical cultures may discourage junior trainees from questioning ethically problematic practices, thereby affecting moral agency and professional confidence.[17,18] Role ambiguity further complicates ethical decision-making, particularly in consent, documentation, and patient communication.[19] Addressing these structural issues is therefore essential for fostering ethical competence.

Role of structured ethics training and supervision

Interns with higher EPA levels emphasized the importance of structured ethics training and supportive supervision. This aligns with previous studies demonstrating that workplace-based ethics education,

mentorship, and role modeling are critical for professional identity formation.[20–22]

The CBME and AETCOM framework advocate the integration of ethics into routine clinical activities rather than isolated classroom teaching.[2–3] Our findings support this approach and suggest that EPA-linked ethics training may strengthen the translation of theoretical knowledge into clinical practice.

Faculty development is equally important, as variability in entrustment decisions may undermine the credibility of EPA-based assessment.[23,24] Training faculty in workplace-based assessment and feedback is therefore essential for consistent evaluation.

Integration of quantitative and qualitative findings

The joint display analysis demonstrated that lower EPA levels clustered with organizational and supervisory challenges, whereas progression toward higher entrustment was associated with structured training, feedback, and role clarity. These findings reinforce contemporary models of professional competence, which emphasize the interaction between individual capability and learning environment.[25–27]

Ethical entrustability, therefore, cannot be conceptualized solely as an individual attribute but must be understood within its institutional and cultural context. System-level interventions are necessary to complement learner-focused strategies.

Implications for CBME and AETCOM implementation

From a curricular perspective, the results support embedding EPA-linked ethics competencies within internship training, as envisaged under CBME and AETCOM.[1–3] Routine observation, feedback, and reflection on ethical encounters may promote progressive entrustment.

Institutions should also prioritize protected time for supervision, reduce excessive workload, and encourage open communication to facilitate ethical learning. Establishing formal mentorship structures may further strengthen professional development.[28,29]

Strengths and limitations

This study benefits from its mixed-methods design, integration of EPA-based assessment, and alignment with national educational frameworks. Triangulation of quantitative and qualitative data enhances interpretive depth and methodological rigor.

However, several limitations should be acknowledged. The cross-sectional design limits causal inference. The single-institution setting may restrict generalizability. Self-reported measures are susceptible to response bias. In-depth interviews might have yielded richer qualitative insights. Future multi-centre longitudinal studies are warranted to validate these findings.[30]

CONCLUSION

Ethical competence among MBBS interns is shaped by the interaction of individual preparedness, experiential learning, and institutional environment. EPA-based assessment provides a meaningful framework for evaluating ethical readiness in clinical practice. Strengthening structured ethics training, supportive supervision, and organizational culture may enhance ethical entrustment and contribute to the development of competent, reflective, and socially responsible physicians.

Abbreviations

AETCOM – Attitude, Ethics and Communication
CBME – Competency-Based Medical Education
EPA – Entrustable Professional Activity
IQR – Interquartile Range
IEC – Institutional Ethics Committee
MBBS – Bachelor of Medicine, Bachelor of Surgery
OR – Odds Ratio
CI – Confidence Interval

Declarations

Ethics approval and consent to participate

Ethical approval was obtained prior to study commencement from the Institutional Ethics Committee, Tripura Medical College & Dr. BRAM Teaching Hospital (IEC Registration No. EC/NEW/INST/2020/853; IEC Reference No. IEC/SFTMC/2025/3/008**)**. The study protocol was reviewed and approved following the IEC meeting held on 23–24 June 2025, with approval issued on 17 July 2025.

Human participation was voluntary, and written informed consent was obtained from all participants. Confidentiality was ensured through anonymized coding of data, and no personally identifiable information was collected. Participation or non-participation had no impact on internship assessment, evaluation, or progression. The study was conducted in accordance with the principles of the Declaration of Helsinki.

This study did not involve animals, animal tissues, or animal-derived data. Therefore, ethical approval for animal experimentation was not required, and no procedures involving animals were performed as part of this research.

Consent for publication

Not applicable.

Presentation at a meeting

Not presented anywhere.

Competing interest

The authors declare that they have no competing interests.

Funding

Not applicable.

Author Contribution

1. **Dr. Nani Gopal Das:** Conceptualization, study design, methodology, data curation, formal analysis, interpretation of results, manuscript drafting, critical revision of the manuscript, and overall supervision of the study.1. **Dr. Antara Roy:** Data collection, participant interviews, data entry, preliminary analysis, and contribution to manuscript drafting.1. **Dr. Amitava Baidya** : Methodological guidance, statistical analysis oversight, interpretation of results, and critical review of the manuscript for intellectual content.1. **Dr. Nirmalendu Das:** Data collection, questionnaire administration, data validation, and assistance in manuscript preparation.

Acknowledgement

The authors sincerely thank the MBBS interns and faculty members of * Medical College for their enthusiastic participation and valuable contributions to this study. We are grateful to the Institutional Ethics Committee for their guidance and approval. The authors appreciate the cooperation of all staff members who assisted in coordinating the study procedures.

Data Availability

The datasets generated and analyzed during the current study are not publicly available due to confidentiality considerations but are available from the corresponding author on reasonable request.

References

1. Pellegrino ED. Professionalism, profession and the virtues of the good physician. Mt Sinai J Med. 2002;69(6):378–84. PMID: 12429956.

2. Cruess RL, Cruess SR, Steinert Y, editors. Teaching medical professionalism: supporting the development of a professional identity. 2nd ed. Cambridge (UK): Cambridge University Press; 2016.
3. National Medical Commission. Postgraduate Medical Education Regulations, 2023 [Internet]. New Delhi: National Medical Commission; 2023 [cited 2025 Mar 10]. Available from: https://www.nmc.org.in/MCIRest/open/getDocument?path=/Documents/Public/Portal/LatestNews/PGMER%202023.pdf
4. Medical Council of India. Attitude, ethics and communication (AETCOM) competencies for the Indian medical graduate [Internet]. New Delhi: Medical Council of India; 2018 [cited 2025 Mar 10]. Available from: https://www.nmc.org.in/wp-content/uploads/2020/01/AETCOM_book.pdf
5. Hodges BD, Ginsburg S, Cruess R, Cruess S, Delport R, Hafferty F et al. Assessment of professionalism: recommendations from the Ottawa 2010 Conference. Med Teach. 2011; 33(5):354 – 63. doi: 10.3109/0142159X.2011.577300. PMID: 21517683.
6. Birden H, Glass N, Wilson I, Harrison M, Usherwood T, Nass D. Teaching professionalism in medical education: a Best Evidence Medical Education (BEME) systematic review. BEME Guide No. 25. Med Teach. 2013; 35(7):e1252-66. 10.3109/0142159X.2013.789132. PMID: 23829342.
7. Wilkinson TJ, Wade WB, Knock LD. A blueprint to assess professionalism: results of a systematic review. Acad Med. 2009; 84(5):551-8. 10.1097/ACM.0b013e31819fbaa2. PMID: 19704185.
8. ten Cate O. Entrustability of professional activities and competency-based training. Med Educ. 2005; 39(12):1176-7. 10.1111/j.1365-2929.2005.02341.x. PMID: 16313574.
9. ten Cate O, Scheele F. Competency-based postgraduate training: can we bridge the gap between theory and clinical practice? Acad Med. 2007;82(6):542–7. 10.1097/ACM.0b013e31805559c7. PMID: 17525536.
10. Chen HC, van den Broek WE, ten Cate O. The case for use of entrustable professional activities in undergraduate medical education. Acad Med. 2015;90(4):431-6. 10.1097/ACM.0000000000000586. PMID: 25470310.
11. Davis DA, Mazmanian PE, Fordis M, Van Harrison R, Thorpe KE, Perrier L. Accuracy of physician self-assessment compared with observed measures of competence: a systematic review. JAMA. 2006; 296(9):1094 – 102. 10.1001/jama.296.9.1094. PMID: 16954489.
12. Eva KW, Regehr G. Self-assessment in the health professions: a reformulation and research agenda. Acad Med. 2005; 80(10 Suppl):S46-54. 10.1097/00001888-200510001-00015. PMID: 16199457.
13. Ginsburg S, McIlroy J, Oulanova O, Eva K, Regehr G. Toward authentic clinical evaluation: pitfalls in the pursuit of competency. Acad Med. 2010; 85(5):780-6. 10.1097/ACM.0b013e3181d73fb6. PMID: 20520025.
14. Stroud L, Green E, Cronje J. A revision process that bridges qualitative and quantitative assessment. Psychol (Irvine). 2020;11:436–44. 10.4236/psych.2020.113029.
15. Frank JR, Snell LS, Cate OT, Holmboe ES, Carraccio C, Swing SR et al. Competency-based medical education: theory to practice. Med Teach. 2010; 32(8):638 – 45. doi: 10.3109/0142159X.2010.501190. PMID: 20662574.

16. Gruppen LD, Mangrulkar RS, Kolars JC. The promise of competency-based education in the health professions for improving global health. Hum Resour Health. 2012;10:43. 10.1186/1478-4491-10-43. PMID: 23157696; PMCID: PMC3543172.
17. ten Cate O. Nuts and bolts of entrustable professional activities. J Grad Med Educ. 2013;5(1):157–8. 10.4300/JGME-D-12-00380.1. PMID: 24404246; PMCID: PMC3613304.
18. Kruger J, Dunning D. Unskilled and unaware of it: how difficulties in recognizing one's own incompetence lead to inflated self-assessments. J Pers Soc Psychol. 1999;77(6):1121-34. 10.1037//0022-3514.77.6.1121. PMID: 10626367.
19. Hafferty FW. Beyond curriculum reform: confronting medicine's hidden curriculum. Acad Med. 1998;73(4):403-7. 10.1097/00001888-199804000-00013. PMID: 9580717.
20. Lempp H, Seale C. The hidden curriculum in undergraduate medical education: qualitative study of medical students' perceptions of teaching. BMJ. 2004;329(7469):770–3. 10.1136/bmj.329.7469.770. PMID: 15459051; PMCID: PMC520997.
21. Ten Cate O, Taylor DR. The recommended description of an entrustable professional activity: AMEE Guide 140. Med Teach. 2021;43(10):1106–14. Epub 2020 Nov 9. PMID: 33167763.
22. Wilkinson TJ, Wade WB. Problems with using a supervisor's report as a form of summative assessment. Postgrad Med J. 2007;83(981):504–6. 10.1136/pgmj.2007.058982. PMID: 17621624; PMCID: PMC2600087.
23. Govaerts M, van der Vleuten CP. Validity in work-based assessment: expanding our horizons. Med Educ. 2013; 47(12):1164-74. 10.1111/medu.12289. PMID: 24206150.
24. Shumway JM, Harden RM, Association for Medical Education in Europe. AMEE Guide No. 25: The assessment of learning outcomes for the competent and reflective physician. Med Teach. 2003; 25(6):569 – 84. doi: 10.1080/0142159032000151907. PMID: 15369904.
25. Norcini J, Burch V. Workplace-based assessment as an educational tool: AMEE Guide No. 31. Med Teach. 2007;29(9):855 – 71. doi: 10.1080/01421590701775453. PMID: 18158655.
26. ten Cate O, Pool IA. The viability of interprofessional entrustable professional activities. Adv Health Sci Educ Theory Pract. 2020;25(5):1255–62. 10.1007/s10459-019-09950-0. Epub 2019 Dec 23. PMID: 31872327.
27. Cruess SR, Cruess RL, Steinert Y. Linking the teaching of professionalism to the social contract: a call for cultural humility. Med Teach. 2010; 32(5):357-9. 10.3109/01421591003692722. PMID: 20423251.
28. Eva KW, Regehr G. Exploring the divergence between self-assessment and self-monitoring. Adv Health Sci Educ Theory Pract. 2011;16(3):311–29. 10.1007/s10459-010-9263-2. Epub 2010 Nov 30. PMID: 21113820; PMCID: PMC3139875.
29. The jamovi Project. jamovi (Version 2.6.44) [Computer software]. Sydney (Australia): The jamovi Project. 2024. Available from: https://www.jamovi.org
30. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol. 2006;3(2):77–101. 10.1191/1478088706qp063oa.

Figures

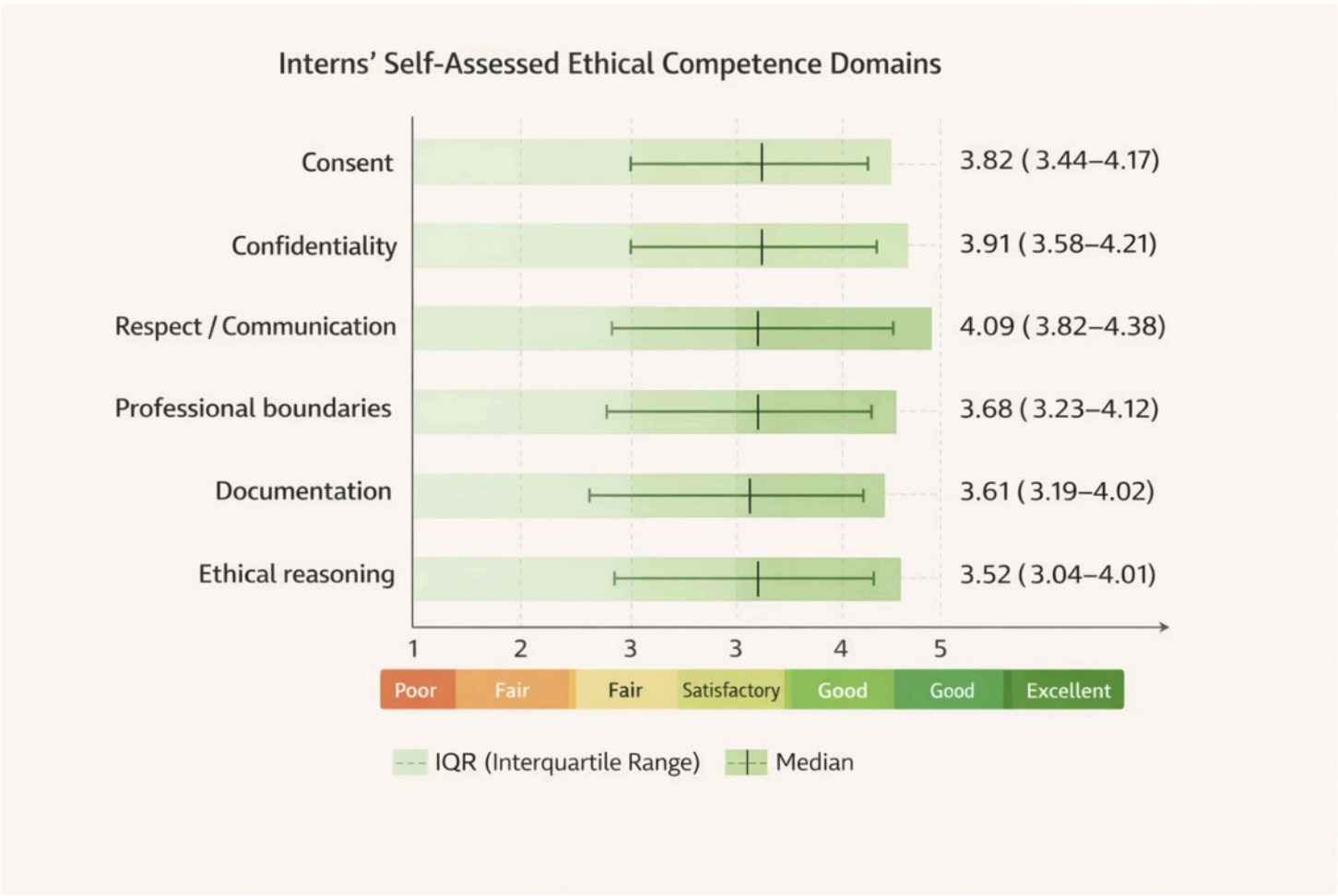


Figure 1

Interns' Self-Assessed Ethical Competence Domains: This figure presents median scores and interquartile ranges across domains of ethical competence, including consent, confidentiality, respect and communication, professional boundaries, documentation integrity, and ethical reasoning, as reported by MBBS interns.

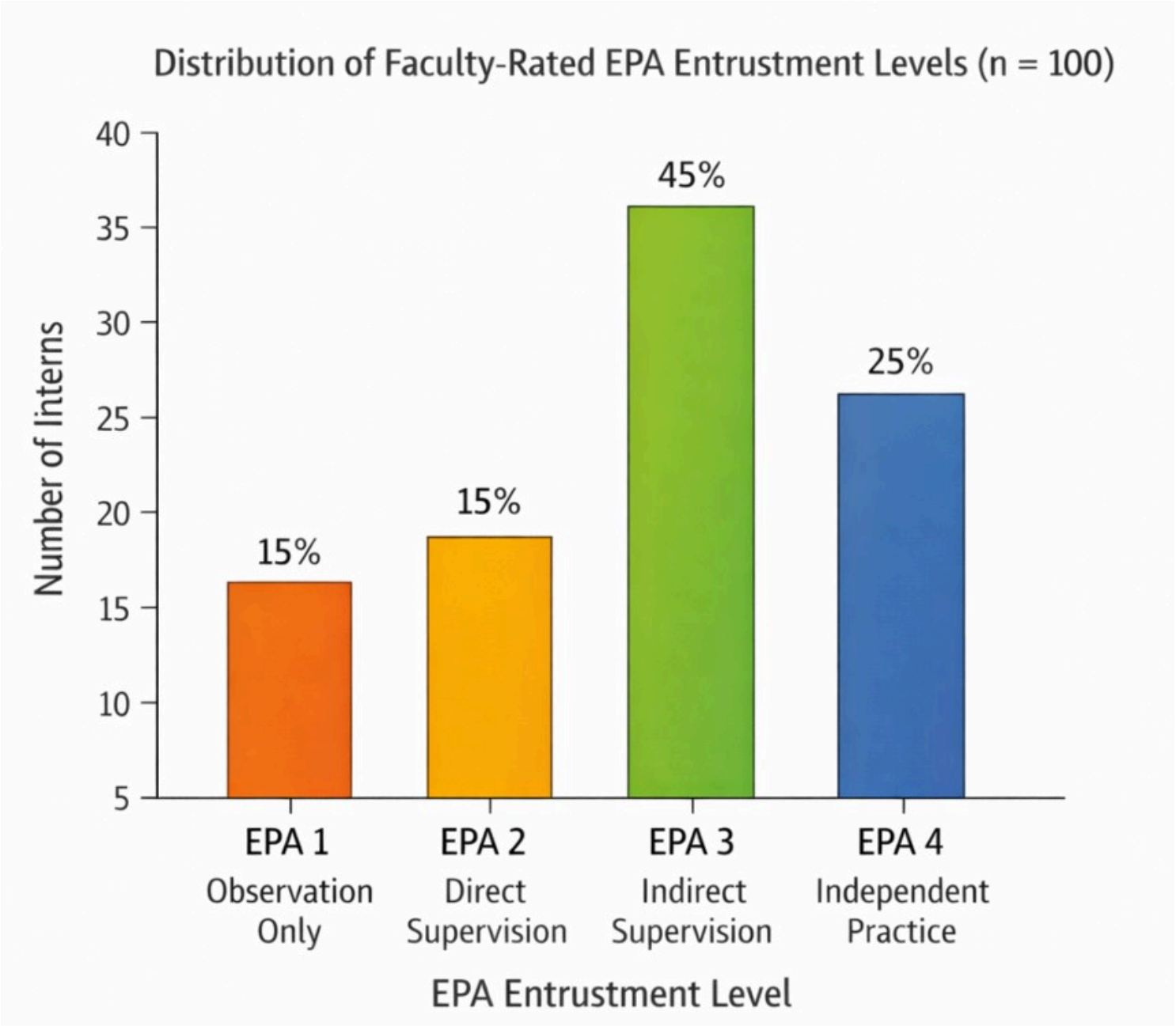


Figure 2

Distribution of Faculty -Rated Entrustment Levels (N=100): This figure depicts the distribution of MBBS interns across faculty-rated Entrustable Professional Activity (EPA) levels for ethical competence, illustrating the predominance of satisfactory entrustment (EPA ≥3).

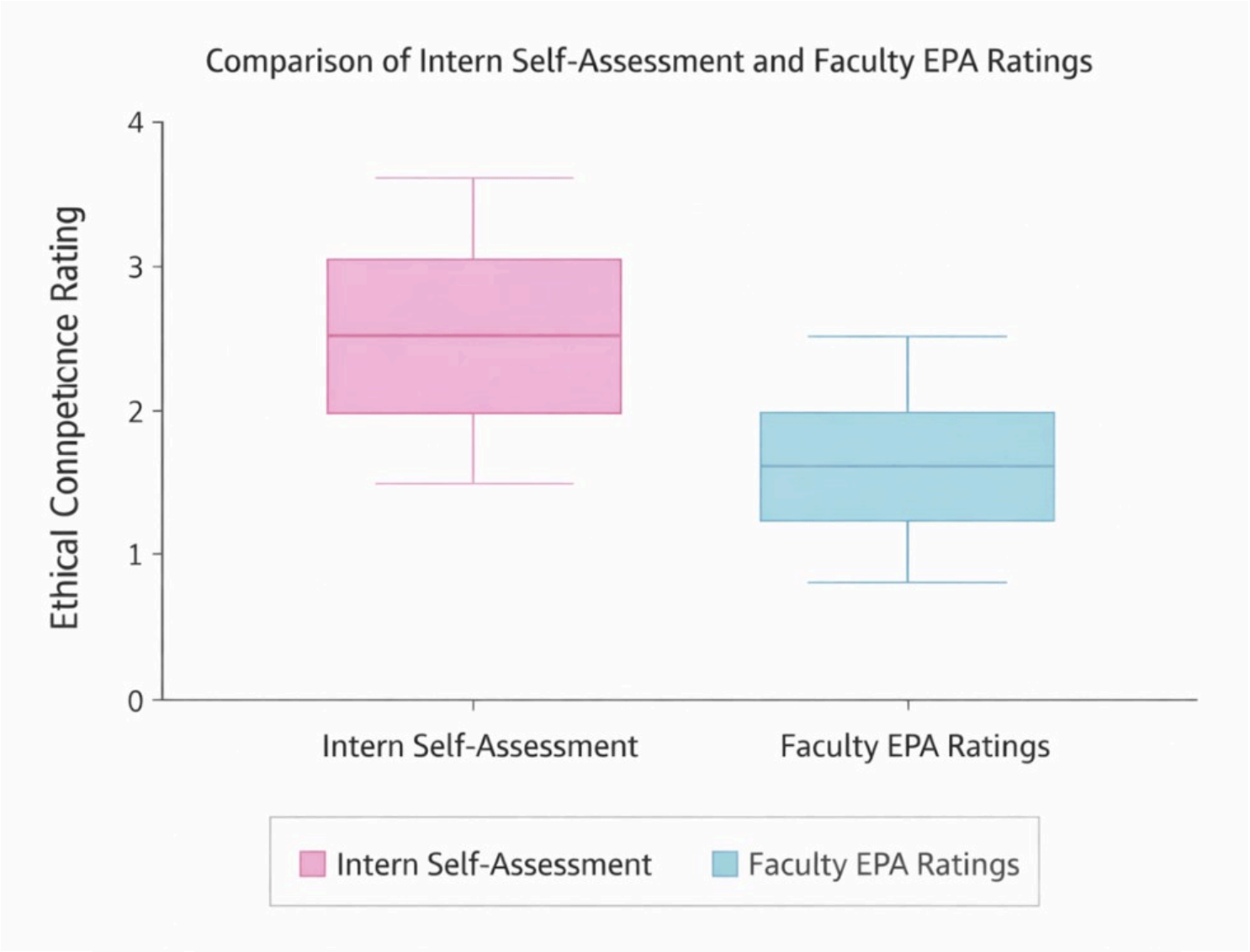


Figure 3

Comparison of Intern Self-Assessment and Faculty EPA Ratings: This box plot compares interns' self-assessed ethical competence scores with corresponding faculty-rated EPA entrustment levels. Self-assessment scores were consistently higher than faculty ratings, demonstrating a discrepancy between perceived and observed ethical competence and supporting statistical evidence of limited agreement.

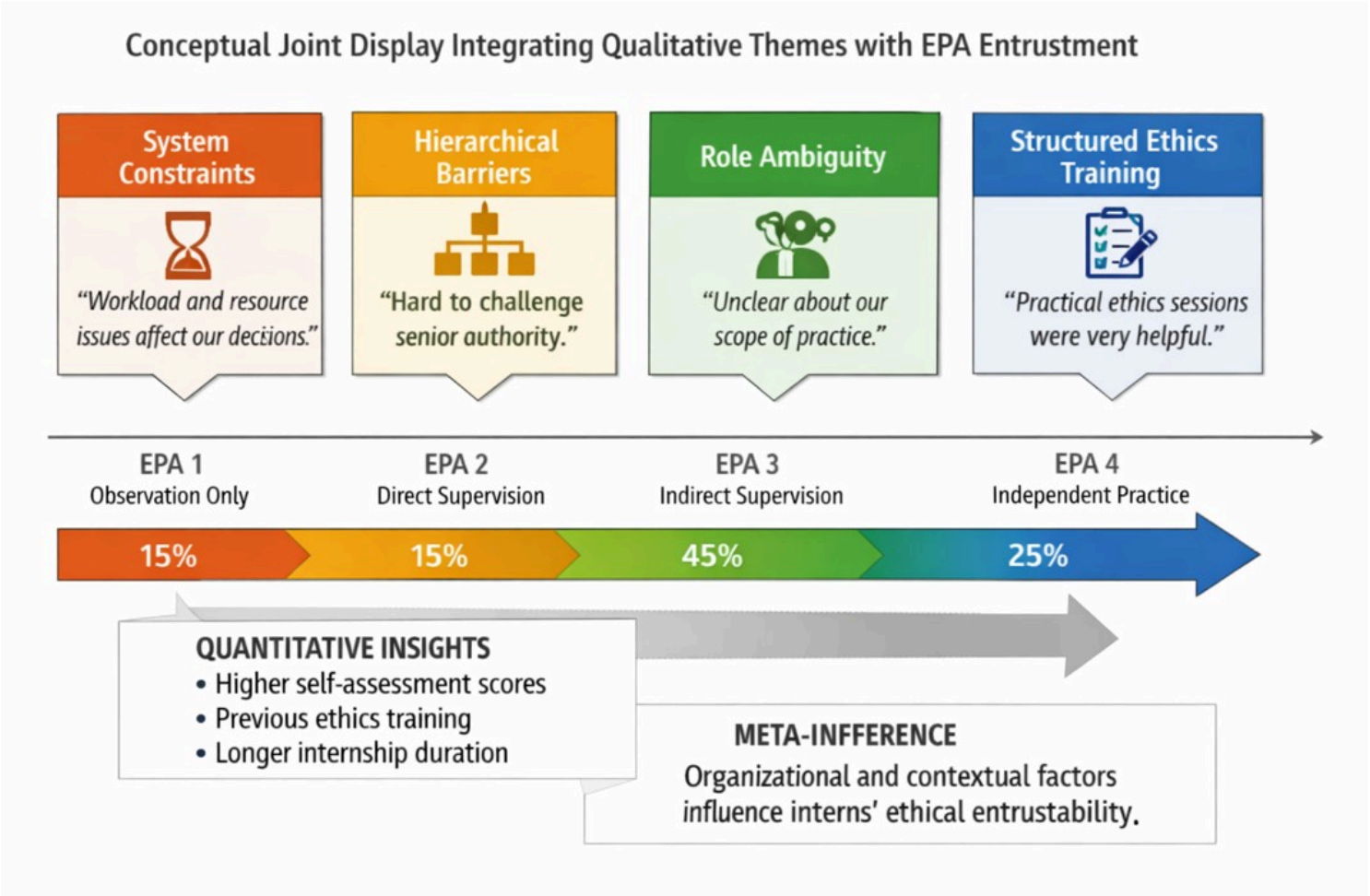


Figure 4

Conceptual Joint Display Integrating Qualitative Themes with EPA Entrustment: This joint display integrates qualitative themes with faculty-rated Entrustable Professional Activity (EPA) levels, illustrating how organizational and contextual factors influence ethical entrustability. The figure supports mixed-methods interpretation and does not represent quantitative effect sizes.