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# Ethical Sensitivity and Moral Reasoning in Medical Students in Ecuador: Insights for Medical Education in Latin America

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**Additional Declarations:** No competing interests reported.

# Abstract

**Introduction:** Ethical decision-making is a core competency in medical training. However, evidence regarding moral reasoning and ethical sensitivity among medical students in Latin America remains limited, particularly in settings with heterogeneous formal bioethics training.

**Objective:** This study aimed to examine the relationship between formal bioethics training, moral reasoning, and ethical sensitivity among medical students at different stages of training.

**Methodology:** A cross-sectional descriptive study was conducted among 60 medical students from a public university in Ecuador, including pre-clinical, clinical, and internship levels. Ethical sensitivity was assessed using the Problem Identification Test (PIT), and moral reasoning using the Defining Issues Test (DIT), both internationally recognized instruments.

**Results:** Results showed a statistically significant increase in ethical sensitivity across training levels ($p = 0.008$), while no significant differences were observed in moral reasoning ($p = 0.961$). Despite exposure to bioethics education, students remained predominantly within conventional stages of moral development.

**Conclusions:** These findings suggest a divergence between ethical sensitivity and moral reasoning development and are consistent with the hypothesis of “ethical erosion” or stagnation described in medical education literature. The study raises critical questions about the effectiveness of current bioethics curricula and highlights the need to reconsider how ethical formation is integrated into medical training.


# INTRODUCTION

The incorporation of bioethics into medical education has been widely promoted as a fundamental component in the formation of ethically competent physicians. Since its consolidation as a field in the second half of the twentieth century—particularly following the work of Van Rensselaer Potter and the early conceptual contributions of Fritz Jahr—bioethics has evolved from a primarily philosophical inquiry into an applied and interdisciplinary domain closely linked to clinical practice (Jahr, 2013; Potter, 1971).

This development has been shaped not only by philosophical traditions, including those associated with Kantian ethics, but also by historical events that exposed profound ethical failures in biomedical research and clinical care. Such events underscored the necessity of integrating ethical reflection into healthcare training, reinforcing the expectation that formal instruction in bioethics would contribute to the moral development of future professionals (World Health Organization, 2009)

Within medical education, this expectation has often been framed in terms of cognitive-developmental theories, particularly those proposed by Kohlberg, which conceptualize moral reasoning as a progressive, stage-based process (Kohlberg, 1981). From this perspective, educational interventions—including

bioethics courses—are assumed to facilitate advancement toward more complex and principled forms of moral judgment (Bebeau, 2002; J. R. Rest et al., 1999).

However, empirical research has yielded inconsistent findings. While some studies report improvements in ethical sensitivity—the ability to recognize moral issues in clinical contexts—others suggest that moral reasoning either remains unchanged or may even regress during medical training. This apparent discrepancy has been described in the literature as the phenomenon of “ethical erosion,” often associated with factors such as the hidden curriculum, hierarchical clinical environments, and the pressures of professional socialization (Feudtner et al., 1994; Hicks et al., 2001).

In Latin America, and particularly in Ecuador, research on the impact of bioethics education remains limited. Existing studies point to gaps in both the teaching and assimilation of ethical principles, as well as to the need for curricular reforms that integrate bioethics in a more transversal and context-sensitive manner (World Health Organization, 2009).

Against this background, the present study aims to examine the relationship between formal bioethics training, ethical sensitivity, and moral reasoning among medical students at different stages of their education. Rather than assuming a linear progression, this study seeks to critically explore whether current educational approaches effectively contribute to moral development or whether they reveal structural limitations in how ethical formation is conceptualized and implemented in medical curricula.

# METHODS

## Study design and setting

A cross-sectional descriptive study was conducted between January and June 2020 at the School of Medicine, Faculty of Health Sciences, Universidad Técnica de Manabí, a public higher education institution located in Portoviejo, Ecuador.

## Participants and sampling

The study population consisted of medical students at three different stages of training: pre-clinical (fourth semester), clinical (sixth semester), and internship (eleventh semester). Eligibility criteria included: (a) being officially enrolled in one of the selected academic levels, and (b) providing informed consent to participate.

At the institution, bioethics is delivered as a mandatory course during the sixth semester and includes lectures on ethical principles, clinical case discussions, and professional conduct.

Students who had previously failed the bioethics course or were not actively enrolled at the time of data collection were excluded.

A non-probability convenience sampling strategy was employed. The final sample included 60 students, with 20 participants from each academic level.

## Variables and instruments

The primary variables of interest were moral reasoning and ethical sensitivity.

Moral reasoning was assessed using the Defining Issues Test (DIT), originally developed by James Rest to measure moral judgment development through ethical dilemmas(J. Rest, 1979; J. R. Rest et al., 1999). Ethical sensitivity was assessed using the Problem Identification Test (PIT), following the approach described by Yugero et al. in medical student populations in Ethiopia(Yuguero et al., 2019). Given the limited availability of formally validated Spanish-language versions for Latin American medical students(Bebeau, 2002; Pérez-Olmos & Dussán-Buitrago, 2009; Zerpa & Ramírez, 2004), both instruments underwent cultural adaptation, pilot testing, and contextual validation prior to implementation in our study population.

In addition, a brief sociodemographic questionnaire was specifically developed for this study to collect participant background information (Supplementary File 1).

## Data collection procedure

Data were collected through self-administered questionnaires distributed to students in each academic level. Participation was voluntary and anonymous. Prior to participation, all students received information about the study objectives and signed an informed consent form.

# Statistical analysis

Data were analyzed using Microsoft Excel and IBM SPSS (version 23). Descriptive statistics were calculated for all variables. Continuous variables were summarized using means and ranges, while categorical variables were expressed as percentages.

To assess differences across academic levels, the non-parametric Kruskal–Wallis test was applied, given the non-normal distribution of the data. A significance level of $p < 0.05$ was established.

## RESULTS

# Sample characteristics

A total of 60 medical students participated in the study, with equal representation across the three academic levels (n = 20 per group: fourth, sixth, and eleventh semesters). The sample was predominantly female (60%), and most participants identified as heterosexual (98%) and Christian (72%). The majority

of students were between 20 and 23 years of age (64%), and slightly more than half reported that their parents were married (55%). Most participants originated from Portoviejo (77%). No statistically significant associations were found between sociodemographic variables and either moral reasoning or ethical sensitivity (Table 1).

Table 1
Sample characteristics of medical students (N = 60)

| Variable | Category | n (%) |
|---|---|---|
| **Sex** | Female | 36 (60%) |
| | Male | 24 (40%) |
| **Sexual orientation** | Heterosexual | 59 (98%) |
| | Homosexual | 1 (2%) |
| **Age (years)** | 20–23 | 38 (64%) |
| | Other ages | 22 (36%) |
| **Parents' marital status** | Married | 33 (55%) |
| | Other | 27 (45%) |
| **Religion** | Christian | 43 (72%) |
| | Other | 17 (28%) |
| **City of origin** | Portoviejo | 46 (77%) |
| | Other cities | 14 (23%) |

a Values are presented as number (percentage).

b Age was categorized according to the most represented group (20–23 years).

c "Other" categories include all responses not specified in the main category.

## Ethical training performance

Among students who had completed the bioethics course (sixth semester), academic performance ranged from 76 to 100 points, with a mean score of 88.7. Internship students (eleventh semester) showed a similar distribution, with scores ranging from 80 to 98 and a mean of 90.3. According to institutional grading standards, these results correspond to a "very good" level of performance.

# Ethical sensitivity (PIT)

Ethical sensitivity, as measured by the Problem Identification Test (PIT), showed a progressive increase across training levels. Fourth-semester students obtained a mean score of 1.78, compared to 2.83 among sixth-semester students and 3.42 among internship students.

The Kruskal–Wallis test indicated a statistically significant difference in ethical sensitivity across the three groups ($p = 0.008$), suggesting an increase in the ability to identify ethical issues as students advance in their training.

Mean Problem Identification Test (PIT) scores by academic level. Ethical sensitivity increased progressively from the fourth semester to internship. Differences between groups were statistically significant (Kruskal–Wallis test, $p = 0.008$).

# Moral reasoning (DIT)

Moral reasoning, as assessed by the Defining Issues Test (DIT), remained relatively stable across the three academic levels. Fourth-semester students were primarily situated at stage 4 of moral development. Sixth-semester students showed a mean score corresponding to stage 3.99, while internship students presented a mean of 3.96.

The Kruskal–Wallis test revealed no statistically significant differences in moral reasoning across groups ($p = 0.961$), indicating no measurable progression in moral development associated with academic level or exposure to bioethics training.

Mean Defining Issues Test (DIT) scores by academic level. Moral reasoning remained stable across training stages, with no statistically significant differences (Kruskal–Wallis test, $p = 0.961$).

# Comparative analysis of PIT and DIT

While ethical sensitivity demonstrated a statistically significant increase across academic levels, moral reasoning did not show a corresponding improvement. This divergence suggests that the ability to recognize ethical issues may develop independently from the capacity for advanced moral reasoning.

Table 2
Ethical sensitivity (PIT) and moral reasoning (DIT) scores across academic levels

| Academic level | PIT (mean) | DIT (mean) |
|---|---|---|
| Fourth | 1.78 | 4.00 |
| Sixth | 2.83 | 3.99 |
| Internship | 3.41 | 3.96 |

a PIT: Problem Identification Test.

b DIT: Defining Issues Test.

c Values are expressed as mean scores.

*Statistically significant difference (Kruskal–Wallis test, p = 0.008).

d No statistically significant difference (Kruskal–Wallis test, p = 0.961).

Comparative representation of PIT and DIT scores across academic levels. While ethical sensitivity increased progressively, moral reasoning remained stable, illustrating a divergence between these two dimensions of ethical development.

# DISCUSSION

The present study explored the relationships among bioethics education, ethical sensitivity, and moral reasoning among medical students at different stages of training in a Latin American context. The findings reveal a noteworthy divergence: while ethical sensitivity increased significantly across academic levels, moral reasoning remained largely unchanged. This pattern raises important questions about the nature and effectiveness of current approaches to ethics education in medical curricula.

From a cognitive-developmental perspective, particularly that of Kohlberg, moral reasoning is expected to evolve progressively through structured stages, potentially influenced by education and social experience (Kohlberg, 1981). However, the absence of significant differences in DIT scores across academic levels suggests that formal bioethics instruction alone may be insufficient to promote advancement beyond conventional stages of moral development. Students in this study remained predominantly within stage 4, characterized by adherence to social norms and institutional rules, without clear progression toward post-conventional reasoning.

In contrast, the observed improvement in ethical sensitivity suggests that students may become better at identifying ethical issues in clinical contexts as their training progresses. This distinction between recognizing ethical dilemmas and reasoning about them at a higher level is conceptually significant. Ethical sensitivity involves perceptual and contextual awareness, whereas moral reasoning requires more complex evaluative and justificatory capacities. The divergence between these domains suggests that they may develop through partially independent processes, and that current educational strategies may preferentially enhance one while neglecting the other (Bebeau, 2002; J. R. Rest et al., 1999).

These findings are consistent with previous studies that describe a phenomenon often referred to as “ethical erosion” in medical education (Feudtner et al., 1994; Hicks et al., 2001). However, given the cross-sectional design of this study, the results should be interpreted with caution. Rather than demonstrating a true decline over time, the data point to a relative stagnation in moral reasoning across different stages of training. This stagnation may nevertheless be compatible with broader theoretical accounts of ethical erosion, particularly those that emphasize structural and contextual factors within medical training environments.

One such factor is the so-called “hidden curriculum,” which encompasses the implicit values, norms, and practices conveyed through clinical training, institutional hierarchies, and professional socialization (Hafferty, 1998; Wear & Skillicorn, 2009). Exposure to time constraints, authority gradients, and routine clinical pressures may contribute to the normalization of ethically ambiguous practices, potentially limiting the development of reflective and critical moral reasoning. In this sense, formal bioethics education may be insufficient to counterbalance the powerful influence of experiential learning in clinical settings.

Furthermore, the reliance on stage-based models of moral development, such as Kohlberg’s framework, has been subject to critique. Some authors argue that these models may not fully capture the complexity of moral decision-making in real-world clinical contexts, where emotions, relationships, and situational factors play a central role (Gilligan, 1994; Noddings, 1984). Alternative perspectives—such as those emphasizing moral sensitivity, care ethics, or narrative ethics—suggest that ethical competence cannot be reduced solely to abstract reasoning stages.

Within the Latin American context, additional considerations may be relevant. Cultural, institutional, and educational factors may shape how bioethics is taught and internalized, potentially influencing both ethical sensitivity and moral reasoning (World Health Organization, 2009). The limited integration of bioethics as a transversal component of medical curricula, as well as variability in teaching methodologies, may contribute to the patterns observed in this study.

Taken together, these findings invite a critical reconsideration of how ethics is conceptualized and taught in medical education. Rather than assuming a linear progression from knowledge acquisition to moral development, it may be necessary to adopt more integrative and context-sensitive approaches that address both cognitive and experiential dimensions of ethical formation.

These findings suggest that ethics education in Latin America may need to move beyond isolated coursework toward longitudinal, reflective, and clinically integrated models of ethical formation.

# CONCLUSIONS

This study explored the relationship between bioethics education, ethical sensitivity, and moral reasoning among medical students at different stages of training in a Latin American setting. The results show that, although ethical sensitivity tends to improve as students advance in their training, moral reasoning largely remains unchanged.

This divergence indicates that current approaches to bioethics education may be more successful in increasing awareness of ethical issues than in promoting higher levels of moral reasoning. Students mainly stayed within traditional stages of moral development, without clear advancement toward post-conventional reasoning.

Instead of providing solid evidence of ethical decline, these results better fit a pattern of stagnation in moral development, which may be connected to broader issues described in the literature as “ethical erosion.” This interpretation highlights the importance of critically reevaluating how ethical training is conceptualized in medical curricula.

Future efforts should move beyond a mainly cognitive and course-based model of ethics education, toward more integrative approaches that include reflective practice, clinical context, and the impact of the hidden curriculum. Strengthening the link between ethical sensitivity and moral reasoning is likely to be essential for developing ethically competent physicians.

# LIMITATIONS

Several limitations of this study should be acknowledged.

First, the cross-sectional design limits the ability to draw causal inferences or to assess changes in moral development over time. As such, the findings do not allow for confirmation of a longitudinal process of ethical erosion, but rather provide a snapshot comparison across different stages of training.

Second, the use of a non-probability convenience sample and a relatively small sample size (n = 60) restricts the generalizability of the results. The findings should therefore be interpreted with caution and may not be representative of all medical students in Ecuador or other contexts. This study should be interpreted as exploratory and hypothesis-generating.

Third, although prior regional validation studies of the PIT remain scarce, the DIT has demonstrated acceptable psychometric performance in Latin American populations, including Colombia and Venezuela. To improve contextual appropriateness, both instruments were culturally adapted and pilot-tested before implementation in Ecuadorian medical students.

Finally, the study did not include qualitative data that could have provided deeper insight into the underlying factors shaping ethical development, such as students’ lived experiences, perceptions of the hidden curriculum, or contextual influences within clinical training environments.

## Declarations

# Competing interests

The authors declare that they have no competing interests.

# Consent for publication

Not applicable.

**Ethics approval and consent to participate**

The study was approved by the Bioethics Committee of Universidad Técnica de Manabí (approval code: PTM-13-20). All procedures were conducted in accordance with ethical standards for research involving human participants. Written informed consent was obtained from all participants prior to data collection.

# Funding

This research received no external funding.

# Author Contribution

DMV contributed to the conception and design of the study, data collection, analysis, and manuscript writing. MLPS contributed to data interpretation and manuscript revision. ALMP contributed to study supervision, critical revision, and final approval of the manuscript. All authors read and approved the final manuscript.

# Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

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# Figures

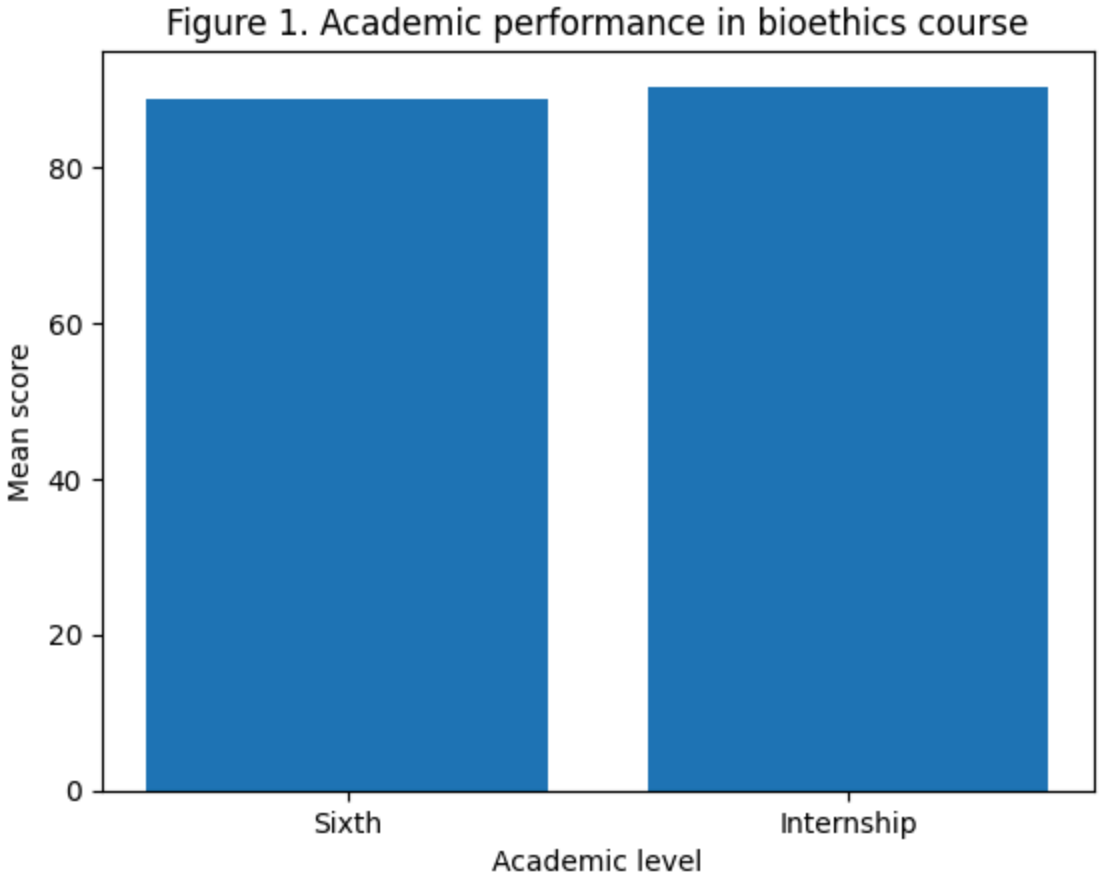



**Figure 1**

**Academic performance in bioethics course.** Mean scores obtained by students who completed the bioethics course in the sixth semester and during internship. Both groups achieved high performance, corresponding to a “very good” level according to institutional grading standards.

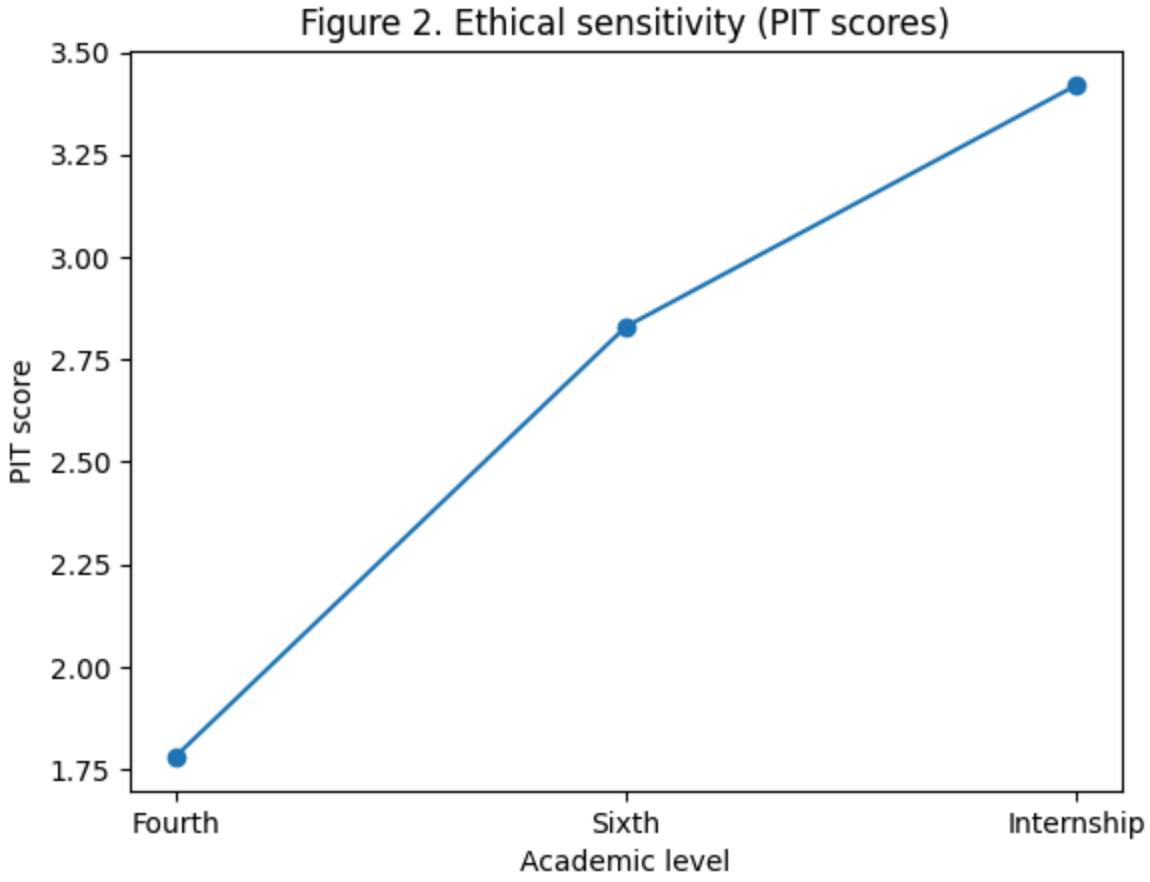



**Figure 2**

**Academic performance in bioethics course.** Mean scores obtained by students who completed the bioethics course in the sixth semester and during internship. Both groups achieved high performance, corresponding to a “very good” level according to institutional grading standards.

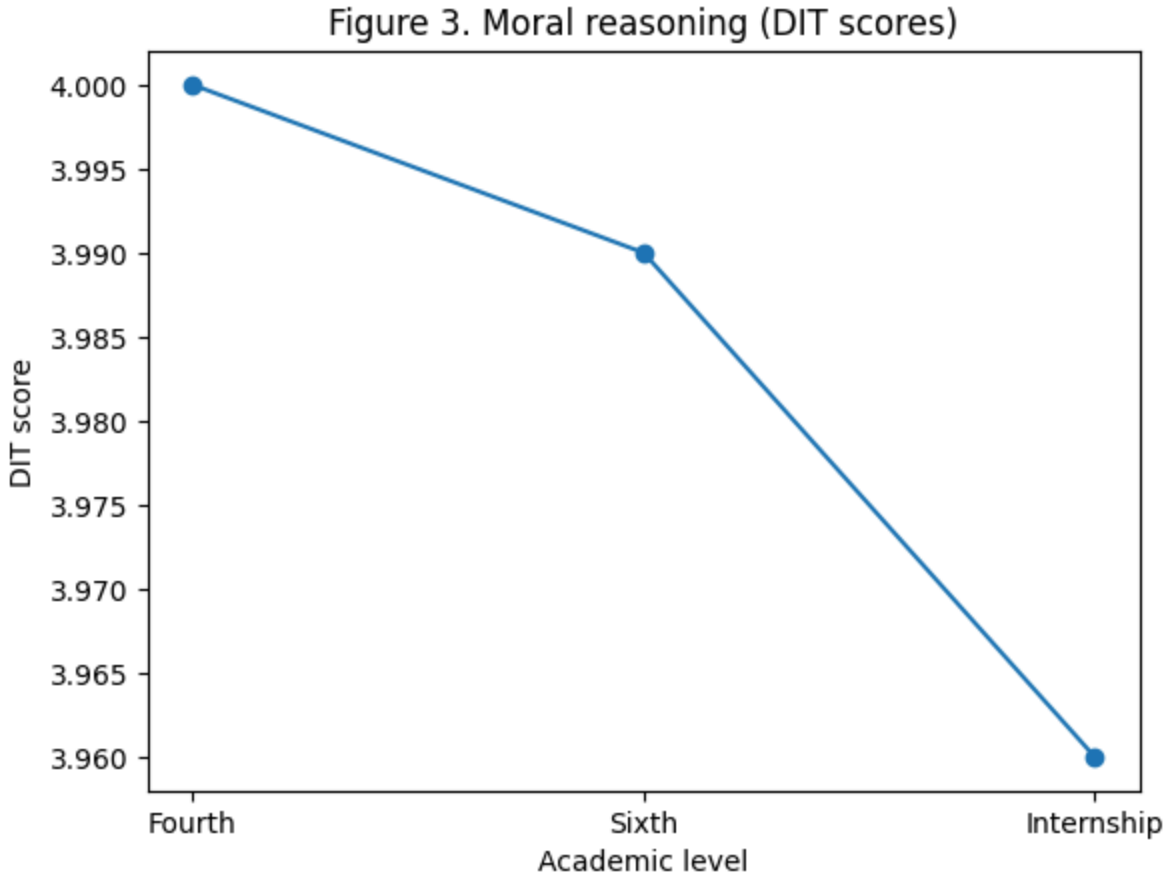



**Figure 3**

**Moral reasoning across training levels (DIT scores).**
Mean Defining Issues Test (DIT) scores by academic level. Moral reasoning remained stable across training stages, with no statistically significant differences (Kruskal–Wallis test, p = 0.961).

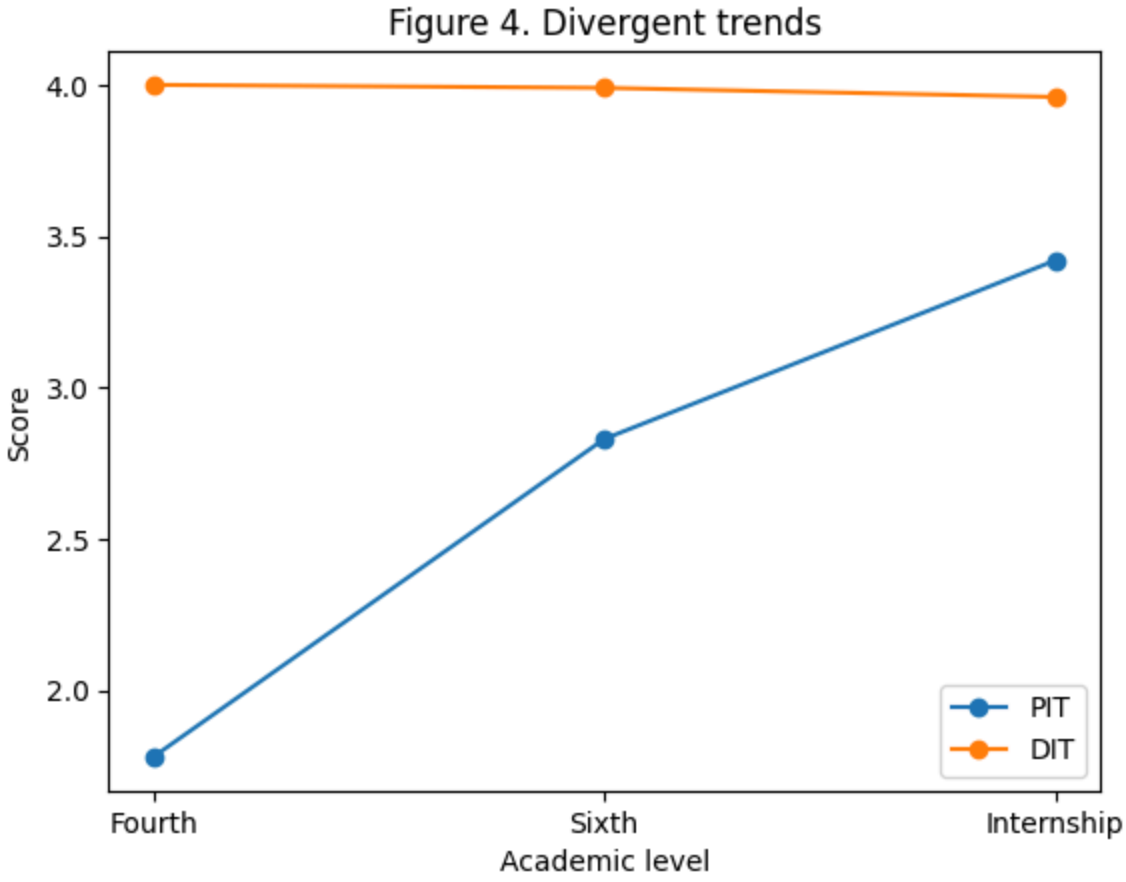



**Figure 4**

**Divergent trends in ethical sensitivity and moral reasoning.**
Comparative representation of PIT and DIT scores across academic levels. While ethical sensitivity increased progressively, moral reasoning remained stable, illustrating a divergence between these two dimensions of ethical development.

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementaryFile1.docx