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ARTICLE

WHY STUDENTS USE GENERATIVE ARTIFICIAL INTELLIGENCE FOR ESSAY EDITING: A CONFIGURATIONAL METHOD AND MULTIDIMENSIONAL ETHICS SCALE PERSPECTIVE

Por que os estudantes usam a Inteligência Artificial Generativa na edição de ensaios: uma perspectiva baseada em métodos configuracionais e na Escala Ética Multidimensional

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ABSTRACT | Background: The rapid emergence of generative artificial intelligence (GAI) is having a substantial impact across numerous areas of higher education, including academic writing. Its use as a linguistic assistant occupies an ethically ambiguous position between legitimate academic support and practices that may foster technological dependence or compromise academic integrity. **Objective:** Examining the use of GAI among university students in a specific academic scenario: its use as a linguistic assistant to improve the writing quality and clarity of essays previously produced by the student, without substantially altering their content. The objective is to analyze how different ethical judgments shape students' adoption of this practice, which occupies an intermediate position between legitimate academic support and potential risks of technological dependence or academic fraud. **Methods:** The study draws on the Multidimensional Ethics Scale, considering four moral dimensions: justice, relativism, consequentialism, and deontology. It also incorporates sociodemographic and academic variables, including gender, employment status, and perceived academic performance. Methodologically, fuzzy-set qualitative comparative analysis is applied to identify causal configurations associated with both the use and nonuse of GAI. **Results:** Acceptance does not depend on a single ethical dimension but on specific combinations of moral judgments. Consequentialism emerges as the most relevant condition in the pathways leading to use and is often combined with favorable perceptions of justice and relativism. In contrast, rejection shows a more fragmented structure and lower





explanatory coverage, particularly when unfavorable ethical assessments, especially consequentialist assessments, are combined with sociodemographic factors. **Conclusion:** Students' acceptance and rejection of GAI-supported essay editing follow asymmetric configurational logics, showing how different ethical judgments combine to explain academic technology use in a morally ambiguous context. The findings highlight the need for clear institutional rules, ethical training, and transparent criteria for academic GAI use. Universities should distinguish between acceptable linguistic support and practices that may compromise academic integrity, while helping students develop responsible and reflective uses of GAI.

Keywords | Generative artificial intelligence (GAI), Essay writing, Multidimensional Ethics Scale (MES), Configurational analysis, Fuzzy set qualitative comparative analysis (fsQCA).

RESUMO | Contexto: A rápida emergência da inteligência artificial generativa (IAG) está a ter um impacto substancial em numerosas áreas do ensino superior, incluindo a escrita académica. A sua utilização como assistente linguístico ocupa uma posição eticamente ambígua entre o apoio académico legítimo e práticas que podem fomentar a dependência tecnológica ou comprometer a integridade académica. **Objetivo:** Examinar a utilização da IAG por estudantes universitários num cenário académico específico: a sua utilização como assistente linguístico para melhorar a qualidade da escrita e a clareza de ensaios previamente elaborados pelo estudante, sem alterar substancialmente o seu conteúdo. O objetivo é analisar de que modo diferentes juízos éticos moldam a adoção desta prática pelos estudantes, que ocupa uma posição intermédia entre o apoio académico legítimo e os potenciais riscos de dependência tecnológica ou fraude académica. **Métodos:** O estudo baseia-se na Escala Multidimensional de Ética, considerando quatro dimensões morais: justiça, relativismo, consequentialismo e deontologia. Incorpora também variáveis sociodemográficas e académicas, incluindo género, situação laboral e desempenho académico percebido. Metodologicamente, aplica-se a análise qualitativa comparativa de conjuntos fuzzy (fsQCA) para identificar configurações causais associadas tanto à utilização como à não utilização da IAG. **Resultados:** A aceitação não depende de uma única dimensão ética, mas de combinações específicas de juízos morais. O consequentialismo emerge como a condição mais relevante nas trajetórias que conduzem à utilização e surge frequentemente combinado com perceções favoráveis de justiça e relativismo. Em contraste, a rejeição apresenta uma estrutura mais fragmentada e uma menor cobertura explicativa, particularmente quando avaliações éticas desfavoráveis, especialmente avaliações consequentialistas, se combinam com fatores sociodemográficos. **Conclusão:** A aceitação e a rejeição, por parte dos estudantes, da edição de ensaios apoiada pela IAG seguem lógicas configuracionais assimétricas, mostrando como diferentes juízos éticos se combinam para explicar a utilização de tecnologia académica num contexto moralmente ambíguo. Os resultados destacam a necessidade de regras institucionais claras, formação ética e critérios transparentes para a utilização académica da IAG. As universidades devem distinguir entre apoio linguístico aceitável e práticas que possam comprometer a integridade académica, ajudando simultaneamente os estudantes a desenvolver utilizações responsáveis e reflexivas da IAG.

Palavras-chave | Inteligência Artificial Generativa (IAG), Escrita de Ensaios, Escala Multidimensional de Ética (MES), Análise Configuracional, Análise Qualitativa Comparativa De Conjuntos Fuzzy (FSQCA).

INTRODUCTION

Generative artificial intelligence (GAI) is deeply influencing teaching and learning processes during the 2020s. GAI applications encompass a wide range of educational uses, ranging from individualized tutoring systems to tools designed to assist students in academic writing, and can strengthen teaching by expanding access to content and fostering student engagement, motivation, and participation (Basch et al., 2025). However, it also poses significant moral and educational concerns since improper use may hinder students' acquisition of core academic competencies (Licht, 2024). Therefore, the integration of the GAI into education should aim to harness its benefits while



ensuring responsible, equitable use focused on strengthening students' intellectual autonomy and reducing its potential negative effects (Gorrieri, 2025).

Assignments consisting in essay elaboration occupy a key position in university assessment because it serves as a channel for presenting knowledge and as a cognitive practice through which students construct understanding and strengthen critical reasoning (Livian, 2026). In higher education, the essay is a highly relevant pedagogical resource, as it allows students to demonstrate their ability to argue and present ideas clearly and coherently. Beyond encouraging critical reflection, essay writing demands advanced linguistic competence, as the strength of an argument is closely linked to the conceptual accuracy, clarity, and expressive depth of the written discourse (Dahl et al., 2023).

Thus, this research assesses how moral judgments of higher education students are linked to their decision to employ the GAI to edit essay text. The assessed scenario involves the use of the GAI only to make minor textual corrections to a text produced autonomously. This practice is widely accepted in academic research (Dwivedi et al., 2023) and is already partially performed by existing word processors (Gorrieri, 2025).

Students differentiate the moral consequences of employing the GAI as a language-support tool and applying it more substantially in essay composition since they systematically attribute greater ethical acceptability to the former type of use (Pérez-Portabella et al., 2025). However, this application has moral issues. University students are still in the process of developing their skills, relying on GAI may reduce their personal effort to improve written expression, fostering dependence on GAI (Livian, 2026). Moreover, even if the application of a GAI in the assessed setting is considered appropriate, it may facilitate its use in fraudulent practices, such as the substantial production of an essay (Campo et al., 2025). This transition could be justified by the law of the instrument and, from the psychology of self-control, by ego depletion theory (Pérez-Portabella, de Andrés-Sánchez, Arias-Oliva, & Padilla-Castillo, 2026).

This study analyses whether students' decision to use the GAI for the linguistic correction of their academic work is influenced by ethical judgments. However, framing this issue as a simple dichotomy between "ethical" and "unethical" in questionable academic behaviors is overly reductionist since moral philosophy offers different normative approaches for understanding ethical decision-making (Yang, 2012). To explain the use of the GAI, this study adopts the conceptual framework of the Multidimensional Ethics Scale (MES) (Reidenbach & Robin, 1990). This scale has been used in research on questionable academic behaviors related to the misuse of information technologies (Arli et al., 2015; Leonard et al., 2017; Prashar et al., 2023; Yang, 2012). Pérez-Portabella, de Andrés-Sánchez, Arias-Oliva, and Souto-Romero (2026) apply the MES to a situation closer to that analyzed in this study, although clearly associated with cheating: the complete production of academic essays using the GAI. Pelegrín-Borondo et al. (2024) do so to explain its adoption by university instructors, endorsing students to adopt AI for educational purposes.

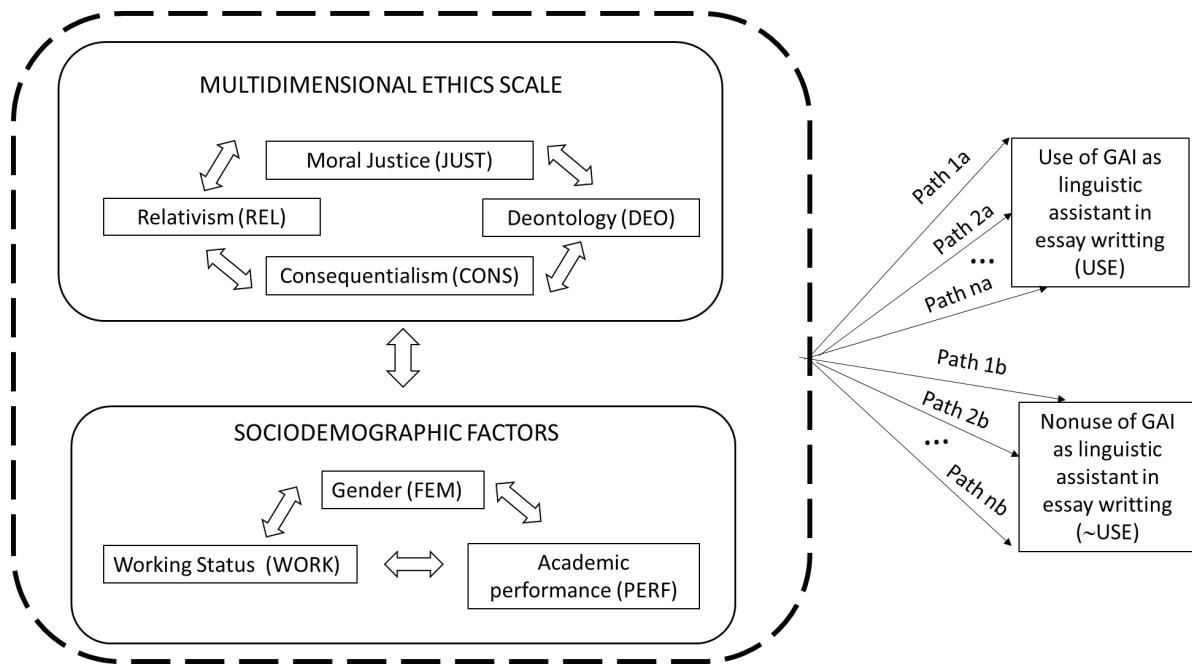


Figure 1. Theoretical groundwork used in this paper

From an analytical point of view, this study adopts complexity theory (Woodside, 2014), according to which, in terms of social phenomena, the same result may arise from different causal combinations. Complexity theory assumes the possible existence of multiple paths emerging from interactions among factors that lead to the same outcome. Similarly, this perspective holds that the presence and absence of an outcome are not necessarily symmetrical (Fiss, 2011). Thus, this research aims to identify the configurations of ethical judgments that precede both students' decision to use the GAI as a linguistic assistant and their decision not to use it. To this end, one suitable instrument is fuzzy-set qualitative comparative analysis (fsQCA) (Woodside, 2014).

The remainder of the paper is organized as follows. The Theoretical Groundwork section develops the conceptual framework of the study. The Data and Methods section describes the sample, measurement instrument, and analytical procedure. The Results section presents the empirical findings, followed by the Discussion of their theoretical and practical implications. Finally, the Conclusions section summarizes the main findings, limitations, and avenues for future research.

Theoretical Groundwork

This section develops the conceptual ground displayed in Figure 1 by analyzing how moral judgments may influence the acceptance of the use of the GAI in the scenario under study. The model is based on the application of the MES (Reidenbach and Robin, 1990) adapted for use by higher education students in several academic settings (Pérez-Portabella et al., 2025). Specifically, the propensity to employ a GAI (USE) is explained on the basis of the following ethical judgments: justice, moral relativism, consequentialism and deontology.



Three sociodemographic variables are added to these four constructs. The first is gender, which different authors consider relevant for understanding decision-making in settings with moral implications (Nguyen et al., 2008). The other two refer to the student's personal situation in relation to their academic activity: whether or not they combine their studies with employment and their academic performance. Both variables may influence the decision to use the GAI as a writing assistant (Pérez-Portabella et al., 2025). Whereas hypotheses are proposed for ethical judgments regarding their average influence on the use of the GAI from a correlational perspective, the sociodemographic and contextual variables are incorporated as control variables.

Correlational Hypotheses Regarding the Influence of Ethical Variables on the Use of GAI

Moral justice (JUST) concerns individuals' capacity to judge whether a situation is just or unjust, together with their broader understanding of moral rightness and wrongness. It reflects an impartial orientation toward equity, equality, and fundamental rights, as well as a critical stance toward unfair conditions (Killen, 2018).

In this way, GAI use can be interpreted favorably when it helps reduce differences in students' academic opportunities. In particular, it may assist learners whose writing competence is still developing, including international students and those with particular learning-related difficulties (Kasneci et al., 2023). The evaluation of the essay could focus more on the students' understanding of the subject and academic knowledge, preventing linguistic factors from conditioning the final evaluation. However, academic essays play a fundamental role in the development of linguistic and argumentative skills. Therefore, excessive use of the GAI could limit the development of these competences and generate excessive dependence on the tool for academic text production. Moreover, intensive use of the GAI may weaken the value attributed to academic merit (Livian, 2026).

Issues related to equal conditions of access to the GAI also fall within the domain of justice.

The effective use of these tools depends on reliable internet access and appropriate technological equipment and resources that are not necessarily available to every student (Silva & Janes, 2025). Moreover, unequal access to premium versions, which often provide more advanced capabilities than free alternatives do, may reinforce existing disparities within the student population (Biloš & Budimir, 2024). Therefore,

Hypothesis 1 (H1). The perception of greater acceptability from the perspective of justice regarding the use of the GAI is positively correlated with its use.

Moral relativism (REL) rests on the idea that evaluations of right and wrong are shaped by the decision maker's social and cultural circumstances (Baghratian & Carter, 2025). Students' close social and educational setting significantly influences willingness to perform specific academic conducts. The implicit rules transmitted by peers, teachers, and institutional role models act as behavioral guides, either explicitly or through more subtle signals (Andersen & Hjortskov, 2019). Both the influence exerted by classmates (Strzelecki, 2024) and instructors (Pelegrín-Borondo et al., 2024) may play a decisive role in either promoting or inhibiting students' use of GAI. Thus, we propose the following:



Hypothesis 2 (H2). The perception of greater acceptability from the perspective of moral relativism regarding the use of the GAI is positively correlated with its use.

Consequentialism (CONS) evaluates the moral acceptability of an action according to its outcomes, considering it ethically justified when it generates a favorable balance of utility or well-being (Sinnott-Armstrong, 2023). Within this framework, two main orientations can be distinguished: moral egoism and utilitarianism. Moral egoism understands an action as ethical when it serves the interests of the individual who performs it, whether through short-term or future benefits. Utilitarianism, in contrast, defines moral correctness in terms of the maximization of collective well-being (Pérez-Portabella, Arias-Oliva, et al., 2026).

From the standpoint of moral egoism, students may view the use of GAI in graded essays as beneficial because it can improve textual clarity, organization, and coherence, thereby potentially increasing their academic performance (Naznin et al., 2025). From a utilitarian perspective, the use of a GAI may foster academic development, support the organization of study activities and enable students to resolve doubts more efficiently (Menon & Shilpa, 2023), increasing both the ease and depth of learning. After receiving training in ChatGPT, Cebrián Cifuentes et al. (2024) reported that students achieved significant gains in several competencies, including analytical thinking, synthesis, information management, and autonomous learning.

However, GAI use also has negative externalities. Frequent use of GAI could prevent less proficient students from developing their writing abilities and, at the same time, weaken these skills among students who have already acquired a solid command of them (Silva & Janes, 2025). There are issues concerning privacy and data management, particularly because such data may be exposed to inappropriate or malicious use. Moreover, if the output is not reviewed, it may introduce input derived from hallucinations (Dwivedi et al., 2023). Thus, we postulate the following:

Hypothesis 3 (H3). The perception of greater acceptability from the perspective of consequentialism regarding the use of the GAI is positively correlated with its use.

According to deontology (DEO), behaviors are judged not by the outcomes they produce but by the extent to which they comply with preexisting ethical rules, principles, and obligations (Alexander & Moore, 2024). Within a higher education setting, this means that students' actions must be evaluated by their alignment with the moral and normative commitments established among students, institutions, and society beyond immediate personal benefits (Pérez-Portabella, de Andrés-Sánchez, Arias-Oliva, & Padilla-Castillo, 2026).

Students' implicit obligations toward their university, their families, and society involve, first, basic academic responsibilities like refraining from questionable conduct and taking seriously the development of academic learning objectives (Ramberg & Modin, 2019). They also entail a responsibility to take full advantage of the educational opportunities provided, particularly in publicly funded institutions. From this perspective, academic achievement is not merely an individual outcome but also an expression of moral gratitude toward the community that underpins the educational system (Barbosa, 2024).

Allowing the use of the GAI for language correction or failing to regulate such use clearly may create room for misuse. When institutions permit limited editing, students may understand



this permission as an implicit acceptance of using GAI to produce significant portions of the essay (Pérez-Portabella, de Andrés-Sánchez, Arias-Oliva, & Padilla-Castillo, 2026). Thus,

Hypothesis 4 (H4). Perceiving a greater acceptability from deontology regarding the use of the GAI is positively correlated with its use.

Configurational Propositions Regarding the Influence of Ethical Variables on the GAI

The hypotheses developed in the above subsection can be tested through correlations or regression coefficients, which estimate the average direction of relationships in the sample. However, such correlational approaches do not account for the possibility that different combinations of explanatory variables may produce the same outcome.

There is no single typology of users of a given technology or of nonusers. Thus, while Birkland (2019) distinguishes, among users, between enthusiasts, practicalists, socializers, traditionalists, and guardians, Gauttier (2019) distinguishes, among nonusers, resisters, rejecters, expelled, and excluded. The use of fsQCA, a case-oriented technique, makes it possible to understand that a specific outcome, or its absence, may result from different causal paths (Woodside, 2014). These causal paths can be assimilated into typologies of potential users who accept or reject the technology under analysis (Pérez-Portabella, de Andrés-Sánchez, Arias-Oliva, & Souto-Romero, 2026). In our case, with the MES as the theoretical groundwork, fsQCA allows us to empirically identify different paths or profiles of users and nonusers of the GAI in the proposed scenario on the basis of their ethical judgments.

Unlike correlational methods, fsQCA does not formulate strong hypotheses but rather proposes what are known as “soft laws”, also referred to as propositions (Rutten & Robinson, 2022). Thus, we propose the following:

Proposition 1 (P1): The configurations leading to the use of a GAI contain at least one of the following ethical conditions: the presence of a positive evaluation in justice, relativism, consequentialism, or deontology.

Proposition 2 (P2): The configurations leading to the nonuse of the GAI contain at least one of the following conditions: the absence of a positive evaluation in justice, relativism, consequentialism, or deontology.

Notably, the profiles of individuals who use a technology are not necessarily symmetrical with those of individuals who do not use it. While the nonacceptability of a technology implies rejection, its acceptability does not necessarily lead to its use (Gauttier, 2019). Therefore, we propose the following:

Proposition 3 (P3): The explanatory configurations for the use and nonuse of GAI are asymmetrical.



DATA AND METHODS

Sample Profile

This study involved students enrolled in social science degrees at two Spanish universities, including programs in business administration, economics, and social work. This context was selected because essay writing is commonly used in social science higher education both as a learning activity and as an assessment tool (Lukeman, 1992). Participants were recruited through purposive sampling, and the fieldwork was carried out between May and July 2025. The final sample comprised 151 participants. The survey was distributed through a hyperlink posted in selected virtual classrooms and was completed anonymously and without supervision.

The profile of the final sample analyzed is shown in Table 1.

Table 1. Sociodemographic profile of the sample (N=151)

Variable	Category
Total sample	Participants 151 (100%)
Gender	Men (35%)
	Women (65%)
Age	20 years old or younger (33%)
	21 years old (22%)
	22 years old (18%)
	23 years old or older (26%)
	Not reported (1%)
Perceived academic performance	Average or below (71%)
	Above average (29%)
Employment status	Full-time employed (38%)
	Part-time employed or unemployed (63%)

Measurement Instrument

The questionnaire was written in Spanish and, after a brief introductory section, respondents were asked about the outcome variable, which was operationalized through a single item capturing students' actual use of GAI as an editing aid in the preparation of academic essays. ChatGPT was provided as an illustrative example of GAI because of its widespread popularity in Spain (Pérez-Portabella et al., 2025). However, the questionnaire did not collect information on the specific GAI tools used by respondents.

Participants were subsequently asked about their level of agreement with a set of items measuring their judgments across the ethical dimensions developed in the Theoretical Groundwork section. These items are detailed in Table 2 and are based on the version of the MES refined by Shawver and Sennetti (2009) and used in studies on the use of the GAI in scenarios other than the one presented in this study (Pérez-Portabella, Arias-Oliva, et al., 2026; Pérez-Portabella et



al., 2025). All questions were answered on a scale ranging from zero (strongly disagree) to ten (strongly agree).

Table 2. Items used in this paper to assess ethical decision-making in the use of the GAI to improve essay readability

GAI use (USE)

USE: I use the GAI to improve academic essay readability without making substantial changes.

Moral Justice (JUST)

JUST1: Using GAI to improve or correct assignments before submitting them seems fair to me.

JUST2: Using the GAI to improve or correct assignments before submitting them seems equally accessible to all students.

JUST3: Using the GAI to improve or correct assignments before submitting them seems morally correct and acceptable.

Relativism (REL)

REL1: My peers consider it acceptable to use the GAI to refine an academic essay.

REL2: People in my immediate environment consider it acceptable to use the GAI to refine an academic essay.

REL3: People whose opinions I value consider it admissible to use the GAI to refine an academic essay.

Consequentialism (CONS)

CONS1: Employing the GAI to refine the essay may enhance its visibility and recognition.

CONS2: Employing the GAI to refine the essay is worthwhile.

CONS3: Employing the GAI to refine the essay is beneficial.

CONS4: Employing the GAI to refine the essay offers a favorable trade-off between costs and expected gains.

Deontology (DEO)

DEO1: Using the GAI to refine an academic essay is consistent with my implicit obligations toward my environment and society.

DEO2: Using the GAI to refine the essay is consistent with my role as a student

Data Analysis

In this paper, the procedure proposed by Pappas and Woodside (2021) is used for the use of fsQCA with Likert scales. First, the internal consistency, convergent validity, and discriminant validity of the constructs are assessed using SmartPLS 4.1.1.7. Subsequently, construct scores are created and, in order to respect their original assessment, are calculated using the standard arithmetic mean method.

Next, the membership functions for the ethical constructs and USE are constructed. Full membership is assigned to scores equal to or greater than 8, while full nonmembership is assigned to scores equal to or lower than 2. Between values of 2 and 8, membership is graded linearly.

With regard to the sociodemographic variables, the membership functions were constructed according to the following criteria:

1. For gender (FEM), full membership (1) was assigned to responses from women, whereas nonmembership (0) was assigned to all other cases.



2. For employment status (WORK), full membership was assigned to those who combined full-time employment with their studies, and nonmembership was assigned to all other cases.
3. For academic performance (PERF), full membership was assigned to students who reported their academic performance as above average, and nonmembership was assigned to all other cases.

Once the variable scores had been transformed into membership levels, the fsQCA analysis itself was implemented using fsQCA 3.1 (Ragin, 2018). First, an analysis of necessary conditions was conducted to assess whether the presence and absence of explanatory factors were necessary for both use (USE) and its negation, that is, nonuse (~USE).

Subsequently, parsimonious and intermediate solutions were established for both USE and ~USE; that is, the set of causal paths, also referred to in the fsQCA literature as recipes, configurations, or prime implicants. The intermediate solution was constructed by formulating hypotheses about the relationship (presence or absence) between the ethical conditions and USE and ~USE, derived from the previously established positive correlational relationships.

Depending on whether the conditions present in the paths of the intermediate solution also appeared in the parsimonious solution, a distinction was made between the core conditions and peripheral conditions (Fiss, 2011).

RESULTS

Descriptive Results and Measurement Model Assessment

The descriptive statistics in Table 3 show a relatively high level of GAI use among the respondents. The mean value of USE is above the neutral midpoint of the scale, 5, reaching 6.9, although it does not indicate extremely intensive use, as the mean remains below 7. Overall, the ethical evaluations of GAI use are also relatively positive, particularly in the dimensions of moral justice, relativism, and consequentialism, where most items present mean values around or above 7. However, some exceptions are worth noting. First, REL3 has a lower mean value than the other relativism items do, remaining below 7. This may suggest that respondents perceive the opinion of certain reference groups, such as respected professors or parents, differently from that of classmates or peers. Second, the DEO items present lower scores, with mean values of approximately 6.



Table 3. Descriptive statistics of the questions analyzed in this paper

Question	Mean	Median	Min	Max	SD
USE	6.9	8	0	10	2.8
JUST1	7.6	8	0	10	2.0
JUST2	7.7	8	0	10	2.1
JUST3	7.0	7	0	10	2.0
REL1	7.8	8	2	10	2.0
REL2	7.6	8	1	10	1.9
REL3	6.3	7	0	10	2.6
CONS1	8.0	8	2	10	2.0
CONS2	6.6	7	0	10	2.6
CONS3	8.4	9	1	10	1.9
CONS4	7.3	8	0	10	2.1
DE01	6.2	6	0	10	2.4
DE02	5.8	6	0	10	2.7

Note: SD=Standard deviation.

The results in Table 4 suggest adequate internal consistency, as the Cronbach's alpha and composite reliability values exceed the recommended threshold of 0.70 and remain below the upper limit of 0.95. Convergent validity is supported since the average variance extracted (AVE) values are above 0.50 for all the constructs (Hair et al., 2019). The data in Table 5 suggest that the measurement model has discriminant validity, as the correlations are below the conservative threshold of 0.85 and the square root of each reflective construct's AVE is greater than its correlations with the other constructs (Cheung et al., 2024).

Table 5 also makes it possible to assess the correlational hypotheses H1–H4. In all cases, the correlations between the ethical constructs and USE are positive and statistically significant. Therefore, these hypotheses are empirically supported. Moreover, these results justify the use of these positive relationships as the basis for formulating the directional expectations required to generate the intermediate solution from the parsimonious solution in the fsQCA analysis.

Table 4. Scale reliability and convergent validity measures

Item	CA	ρ_A	ρ_C	AVE
JUST	0.86	0.86	0.91	0.78
REL	0.84	0.85	0.91	0.76
CONS	0.88	0.89	0.92	0.74
DEO	0.87	0.87	0.94	0.88

Note: CA = Cronbach's alpha; ρ_A = Dijkstra–Henseler's rho; ρ_C = composite reliability; AVE = average variance extracted.



Table 5. Correlation matrix and Fornell–Larcker discriminant validity measures

	USE	JUST	REL	CONS	DEO	FEM	WORK	PERF
USE	1							
JUST	0.62**	0.88						
REL	0.50**	0.70**	0.87					
CONS	0.70**	0.79**	0.72**	0.86				
DEO	0.47**	0.62**	0.60**	0.58**	0.94			
FEM	0.09	-0.15	-0.03	-0.03	-0.12	1		
WORK	-0.15	-0.07	0.09	-0.14	0.09	-0.02	1	
PERF	0.18*	0.11	0.13	0.15	0.10	-0.08	-0.09	1

Note: Diagonal values for reflective constructs represent the square root of the average variance extracted (AVE), following the Fornell–Larcker criterion. The off-diagonal values are Pearson correlations. * $p < .05$; ** $p < .01$.

Results of the fsQCA

Table 6 presents the necessary condition analysis for USE and ~USE. In the case of USE, the ethical constructs generally show higher levels of consistency when considered in their presence than when considered in their absence. This pattern is also observed in the case of the FEM, whose presence is more consistent than its absence. In contrast, for WORK and PERF, the absence of these conditions is more consistent than their presence, suggesting that not working full-time and not perceiving above-average academic performance are more strongly associated with the use of GAI than their respective presences are. Particularly noteworthy is the high consistency of JUST and CONS, with values above 0.90, which suggests that they may constitute necessary conditions.

With regard to ~USE, the absence of ethical constructs shows higher levels of consistency than in the case of USE does, which is consistent with the expectation that nonuse is more closely associated with less favorable ethical evaluations. It is also observed that no condition reaches the 0.90 threshold, meaning that no strictly necessary condition for nonuse can be identified.

Table 6. Necessary condition analysis

USE			~USE		
Condition	Consistency	Coverage	Condition	Consistency	Coverage
JUST	0.93	0.84	JUST	0.70	0.23
REL	0.89	0.84	REL	0.69	0.24
CONS	0.95	0.85	CONS	0.68	0.22
DEO	0.71	0.88	DEO	0.47	0.22
FEM	0.73	0.75	FEM	0.67	0.25
WORK	0.34	0.65	WORK	0.50	0.35
PERF	0.33	0.82	PERF	0.19	0.18
~JUST	0.15	0.58	~JUST	0.52	0.73
~REL	0.19	0.62	~REL	0.53	0.64



USE			~USE		
Condition	Consistency	Coverage	Condition	Consistency	Coverage
~CONS	0.13	0.53	~CONS	0.54	0.78
~DEO	0.37	0.65	~DEO	0.74	0.48
~FEM	0.27	0.68	~FEM	0.33	0.32
~WORK	0.66	0.78	~WORK	0.50	0.22
~PERF	0.67	0.69	~PERF	0.81	0.31

Figure 2 presents the intermediate solution for USE, which also shows high consistency and coverage, with both values clearly above 0.80. The solution identifies four paths leading to USE. As expected from the analysis of necessary conditions, ethical constructs play a central role in explaining use. In particular, CONS appears in all four paths, whereas JUST appears in three paths and REL in two paths. This finding reinforces the importance of favorable evaluations from the perspectives of justice, relativism, and especially consequentialism in explaining the intensive use of the GAI. DEO is present as a condition in the second path, with considerable coverage, but is absent in the third path. However, this path has low coverage. In any case, Proposition 1 can be accepted.

USE				
Path	1	2	3	4
JUST	●	●		●
REL		●		●
CONS	●	•	●	●
DEO		●	⊗	
FEM	●		•	⊙
WORK	⊗		⊙	•
PERF			●	●
raw coverage	0.44	0.69	0.08	0.05
unique coverage	0.11	0.36	0.01	0.01
consistency	0.91	0.92	0.98	0.91

Figure 2. Intermediate solution for USE

Note: (a) Circle • indicates the presence of a factor as a condition, circle ⊗ indicates the absence of a factor, and a blank indicates no relevance in the prime implicate. Large circles represent core conditions, and small circles represent peripheral conditions. (b) The coverage of the solution is 0.85, and the consistency is 0.91

The four paths can be grouped into three main profiles. First, paths 1 and 4 share the simultaneous presence of JUST and CONS. If the lowercase denotes a peripheral condition and the uppercase denotes a core condition, they can be expressed algebraically as follows: JUST • CONS • (FEM • ~WORK + REL • ~fem • work • PERF). This profile suggests that the intensive use of GAI may



occur when students consider its use to be fair and, at the same time, perceive positive consequences derived from it. This profile does not apply to all students but is nuanced by sociodemographic variables and relativism.

Second, path 2, JUST • REL • cons • DEO, indicates that USE exists in the presence of positive evaluations across the different ethical dimensions considered. This path has the highest raw coverage and the highest unique coverage, making it the most empirically relevant profile in the solution.

Path 3 presents a configuration involving the absence of an unfavorable deontological judgment and students with above-average performance (CONS • ~DEO • fem • ~work • PERF). However, its coverage is very low (raw coverage = 0.08; unique coverage = 0.01), so it should be interpreted as a minority profile.

Figure 3 presents the intermediate solution for ~USE. Overall, the solution shows adequate consistency (0.86), similar to that obtained for USE. However, the solution coverage is clearly lower (0.33 compared with 0.85 in the solution for USE).

The solution identifies six configurational paths leading to ~USE. In all of them, the absence of at least one positive ethical judgment appears to be a relevant condition, usually as a core condition. These results support Proposition 2, according to which configurations leading to the nonuse of GAI tend to include the absence of favorable ethical evaluations. However, unlike the solution for USE, the paths leading to ~USE show lower individual coverage and greater configurational fragmentation.

The six paths can be grouped into four profiles of rejecters. First, path 1 represents the first profile, which can be expressed as ~JUST • ~FEM • WORK • ~perf. This profile shows that, from an ethical standpoint, the absence of a favorable evaluation in justice may be sufficient to lead to nonuse when combined with male students who work full-time and who do not perceive their academic performance as above average. This path shows very high consistency (0.98), although its coverage is low (raw coverage = 0.07; unique coverage = 0.03).

Second, paths 2 and 4 reflect a profile characterized by an overall unfavorable ethical evaluation across the four ethical constructs: ~just • ~rel • ~CONS • ~deo • (~FEM + WORK). Notably, only the absence of CONS acts as a core condition, while ~just, ~rel, and ~deo play a peripheral role. These paths suggest that nonuse may be explained by broad ethical disapproval, especially when combined with the ~FEM in path 2 or with WORK in path 4. Path 4 also has the highest raw coverage (0.17) within the solution for ~USE.

Third, path 3 represents a more specific and minority profile: ~REL • ~CONS • ~FEM • WORK • ~perf. This path combines the absence of favorable evaluations in relativism and consequentialism.

Finally, paths 5 and 6 can be grouped into a single profile as ~CONS • ~deo • WORK • (~FEM • PERF + fem • ~perf). This profile is characterized by the absence of a favorable consequentialist evaluation, accompanied by the peripheral absence of a favorable deontological evaluation. In addition, in both variants, this profile is exclusive to students who combine their studies with full-time employment. Gender and academic performance conditions differentiate the two variants.

The comparison of Figures 2 and 3 suggests that the paths leading to the nonuse of the GAI are not simply the reverse of the paths leading to its use, which supports Proposition 3.



	~USE					
	1	2	3	4	5	6
JUST	⊗	⊗		⊗		
REL		⊗	⊗	⊗		
CONS		⊗	⊗	⊗	⊗	⊗
DEO		⊗		⊗	⊗	⊗
FEM	⊗	⊗	⊗		⊗	•
WORK	•		•	•	•	•
PERF	⊗		⊗		•	⊗
raw coverage	0.07	0.09	0.04	0.17	0.02	0.16
unique coverage	0.03	0.04	0.00	0.02	0.02	0.05
consistency	0.98	0.87	0.91	0.93	0.86	0.88

Figure 3. Intermediate solution for ~USE

Note: (a) Circle • indicates the presence of a factor as a condition, circle ⊗ indicates the absence of a factor, and a blank indicates no relevance in the prime implicate. Large circles represent core conditions, and small circles represent peripheral conditions. (b) The coverage of the solution is 0.33, and the consistency is 0.86

DISCUSSION

General Questions

This study analyzes the use of GAI for language editing in academic essays through the lens of moral judgment. The use of the GAI was modeled on the basis of four ethical dimensions adapted from the MES (Reidenbach & Robin, 1990): justice (JUST), relativism (REL), consequentialism (CONS), and deontology (DEO). Sociodemographic and academic variables were also considered: sex, employment status, and academic performance. This study adopts a configurational approach through fsQCA, with the aim of identifying different causal paths leading to both the use and nonuse of the GAI as a linguistic assistant. In both cases, solutions with high consistency are obtained; however, whereas the explanatory solution for use presents very high coverage, the solution for nonuse shows lower coverage, only slightly above 0.30.

MES is particularly relevant for analyzing academic decision-making because it makes it possible to identify which moral frameworks guide students when facing situations with ethical implications rather than relying solely on dichotomous judgments about whether a conduct is ethical or unethical. In this context, the MES has proven useful for explaining behaviors and attitudes with moral implications in academic contexts using correlational approaches (Leonard et al., 2017; Pelegrín-Borondo et al., 2024; Prashar et al., 2023; Yang, 2012). However, these approaches show the average explanatory strength of each dimension but not how they combine to lead to a decision of use or nonuse, nor do they capture the asymmetry between the reasons that favor an outcome and those that explain its opposite. In contrast, configurational approaches such as fsQCA make it possible to identify differentiated profiles of potential users and nonusers grounded in moral philosophy. In this study, three profiles associated with the use of the GAI and four profiles linked



to its nonuse as a linguistic assistant are identified. These results are in line with previous research showing the usefulness of the fsQCA for analyzing ethical decision-making with the MES (Andrés-Sánchez et al., 2021), including the use of the GAI for academic fraud (Pérez-Portabella, de Andrés-Sánchez, Arias-Oliva, & Souto-Romero, 2026). As in those studies, the results show that there is more than one path toward the positive outcome and toward its inhibition, which can be interpreted as ethically grounded profiles of adoption and rejection and that these profiles are asymmetrical.

The fact that the presence of CONS is a condition in all USE configurations and its absence is present in virtually all non-USE configurations is consistent with findings in the literature that apply the MES to academic behavior, since this construct has proven relevant in several domains. These include traditional academic dishonesty, such as plagiarism, inappropriate authorship, and data falsification (Yang, 2012), and individual and group academic scenarios involving ethically questionable conduct (Leonard et al., 2017). It also includes the use of GAI, both professionally by teachers (Pelegrín-Borondo et al., 2024) and fraudulently by students (Pérez-Portabella, de Andrés-Sánchez, Arias-Oliva, & Souto-Romero, 2026).

JUST and REL also participate in configurations of use through their presence and in configurations of nonuse through their absence. Considering their role as core conditions, both constructs appear to have greater relevance in acceptance than in rejection. In the case of JUST, this relevance is consistent with the findings of previous studies that identify it as a central dimension in academic plagiarism, ICT dilemmas, and academic dishonesty more generally (Leonard et al., 2017; Prashar et al., 2023; Yang, 2012). The importance of relativism in academic and technological contexts has also been observed in different settings (Leonard et al., 2017; Pérez-Portabella, de Andrés-Sánchez, Arias-Oliva, & Padilla-Castillo, 2026).

The participation of deontology as a condition is weaker than that of the other ethical constructs. Its participation as a condition with a contradictory sign in explaining use helps us understand why the variable may not show clear statistical significance in correlational models. Moreover, in the configurations of nonuse, although it is absent, it does so as a peripheral condition. The lower relevance of deontology is consistent with the findings of previous studies in academic contexts, where its role has been more limited or nonsignificant (Leonard et al., 2017; Pérez-Portabella, de Andrés-Sánchez, Arias-Oliva, & Souto-Romero, 2026).

Although the correlational analysis does not show a clear relationship between gender or employment status and the use of the GAI and although academic performance shows a positive but moderate relationship, these variables appear in the different user and nonuser profiles in the configurational study. Gender appears repeatedly in the configurational results. In general terms, the female condition appears more frequently in the paths leading to use than in those leading to nonuse. This may seem contrary to the usual finding that women tend to show stricter ethical judgments than men do (Nguyen et al., 2008). However, this apparent inconsistency can be interpreted in two ways. First, students may not perceive clear rules regarding the academic use of GAI in this context; since women tend to rely more on explicit rules when making ethical decisions (Pilcher & Smith, 2024), the absence of such rules may weaken ethical barriers. Second, compared with men, women have been found to achieve better academic performance (Tsaousis & Alghamdi, 2022). This may imply greater perceived pressure to perform academically, which, under



certain conditions, may facilitate involvement in the use of GAI even when the practice is ethically questionable (Rua et al., 2024).

Academic performance appears more closely associated with its presence as a condition in configurations of use, in some cases even as a core condition, while its absence is usually linked to nonuse, although in this case as a peripheral condition. This may be interpreted from two opposing perspectives. On the one hand, students with better academic performance have a lower propensity for academic cheating (Campo et al., 2025). Likewise, greater academic achievements may be due to higher perfectionism. In this regard, Ahadzadeh et al. (2024) reports a positive correlation of perfectionism and the acceptance of ethically controversial technologies.

Employment status shows a counterintuitive pattern: not working is more strongly associated with use, whereas working is more closely linked to nonuse. These results contrast with the expectation that a GAI, by saving time, should be especially attractive to students who combine study and work (Pérez-Portabella et al., 2025). One possible explanation is that students who work full-time may develop a stronger orientation toward responsibility, planning, or autonomous time management, which could reduce their dependence on automated tools in academic tasks.

Theoretical and Practical Implications

The use of the GAI has been studied by several authors through approaches linked to technology adoption theories, such as the unified theory of acceptance and use of technology (UTAUT) (Venkatesh et al., 2003) and its subsequent developments. This perspective has been applied in general contexts (Camilleri, 2024), industrial settings (Yudhistyra & Srinuan, 2024), and educational environments, considering both the student perspective (Amin et al., 2025; Biloš & Budimir, 2024) and that of teaching and research staff (Strzelecki, 2024). However, given that the use of the GAI still constitutes a novel terrain in which the boundaries between legitimate and improper use are not clearly defined, as in the case analyzed in this study, the use of the MES offers an alternative perspective for understanding its adoption from the standpoint of moral judgments.

Traditionally, studies on technology adoption have relied on correlational approaches, which identify net relationships between variables but often assume a symmetrical logic between use and nonuse. In contrast, a configurational approach identifies multiple causal paths toward both adoption and rejection, showing that user and nonuser profiles may be asymmetrical. This enables richer theorization from moral philosophy by revealing not only which ethical dimensions matter but also how they combine to produce different patterns of acceptance or rejection of GAI.

The findings suggest that universities should avoid regulating the GAI in academic writing solely through general prohibitions. Instead, they should establish clear criteria distinguishing linguistic correction, stylistic improvement, and substantial content generation. This distinction could be operationalized through an institutional taxonomy classifying GAI uses as permitted, conditionally permitted, or prohibited, accompanied by concrete examples illustrating the boundaries between these categories. Since students are more likely to accept GAI when they perceive practical benefits, fair access, and social approval, institutions should define which uses are admissible, under what conditions, and how they should be declared. Instructors could also specify, for each assignment,



the degree of GAI-based linguistic assistance that is authorized and require students to provide a brief disclosure indicating the tool used, its purpose, and the main changes introduced. Such assignment-specific guidance may reduce uncertainty among students about where legitimate linguistic assistance ends and inappropriate content generation begins.

From a teaching perspective, the GAI should be integrated as a support tool while preserving students' own writing, argumentation, and critical thinking skills. For instance, students could submit an initial unaided draft, a revised version supported by the GAI, and a short reflection on the changes accepted or rejected. This would transform GAI use into a formative practice rather than a merely instrumental practice. Assessment rubrics could also distinguish between linguistic quality and the originality, reasoning, and substantive development of the student's own argument, thereby reducing incentives to delegate intellectual work to GAI. In parallel, faculty training should promote assessment practices that evaluate not only the final written product but also the writing and revision process.

Finally, because there is no single profile of users or nonusers, institutional strategies should be adapted to different student groups, especially those who perceive the GAI as useful but ethically ambiguous. Regulation should therefore be accompanied by ethical and digital literacy, as well as equitable access to GAI tools, so that their use supports autonomous learning rather than technological dependence.

CONCLUSIONS

Main Takeaways

The study revealed that students' decision to use the GAI to linguistically edit academic essays does not depend on a single ethical judgment but on combinations of moral and contextual factors. Overall, use is associated with positive perceptions of justice, relativism, and especially consequentialism: students tend to accept GAI when they consider it useful, beneficial, socially accepted, and reasonably fair. fsQCA makes it possible to identify different profiles of users and nonusers, confirming that the acceptance and rejection of the GAI are not symmetrical processes. While use is explained by relatively clear configurations with high coverage, nonuse appears more fragmented and depends on diverse combinations of unfavorable ethical judgments and variables such as gender, academic performance, or employment status.

Limitations and further research

Despite providing relevant evidence on the acceptance of the GAI in higher education, the results of this study should be interpreted in light of several limitations. These limitations also present opportunities for future research.

The analysis was restricted to a very specific scenario: the use of the GAI to make linguistic corrections to essays previously produced by the student. This delimitation allows for a more precise examination of the ethical dimension of a relatively bounded use of the tool, but it does not



capture other frequent academic practices, such as preparing summaries, supporting bibliographic searches, generating ideas, or drafting complete texts. Future research should compare different usage scenarios, especially those involving different levels of GAI intervention in the academic production process.

Another limitation concerns the measurement of GAI use through a single item. Although this operationalization captures the specific behavior examined in this study, it may not fully reflect the broader range and intensity of GAI-assisted essay-editing practices. Future research should therefore consider multi-item measures of GAI use.

The sample presents limitations in terms of representativeness. Although the sample size is adequate for the application of fsQCA, the findings cannot be automatically generalized to the university student population as a whole, not even within the Spanish context. Factors like academic perseverance, academic performance, institutional environment, academic culture, or previous experience with digital tools could substantially modify ethical perceptions and the intention to use GAI.

Another limitation derives from the cross-sectional nature of the study. Attitudes toward the GAI may change rapidly, both because of technological evolution and the emergence of new institutional rules. Therefore, longitudinal studies would be advisable to observe how ethical judgments and patterns of use evolve as GAI becomes more stably integrated into university life.

Finally, although the configurational solution for the use of the GAI presents high coverage, the explanation of rejection is more limited and fragmented. This suggests that the MES adequately captures an important part of the ethical mechanisms associated with acceptance but may be insufficient to fully explain nonuse. Future research could complement this framework with other approaches, such as UTAUT, incorporating variables related to ease of use, perceived usefulness, social pressure, facilitating conditions, or technological trust.

Institutional Review Board Statement: (1) All participants received detailed written information about the study and procedure; (2) no data directly or indirectly related to the health of the subjects were collected, and therefore the Declaration of Helsinki was not mentioned when informing the subjects; (3) the anonymity of the collected data was ensured at all times; (4) the research received a favorable evaluation from the Ethics Committee of a researcher's institution (CE_20250710_10_SOC).

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