

## Study of Moral Judgment in the Professional Training of the Bachelor in Pharmaceutical Biological Chemistry (PBC)

(es) Estudio del juicio moral en la formación profesional del Licenciado en Químico Fármaco Biólogo (QFB)

(port) Estudo do julgamento moral na formação profissional do bacharel em Química Farmacêutica Biológica (PBC)

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## Abstract

This study analyzes the development of moral judgment in students enrolled in the Bachelor's Degree in Pharmaceutical Biological Chemistry (PBC), emphasizing the integration of cognitive and emotional dimensions in ethical decision-making. Grounded in Kohlberg's theory of moral development and recent neuroscientific findings on the role of moral emotions and metacognition, the research implemented a deliberative workshop based on the discussion of the Heinz dilemma within a virtual bioethics course. 14th students participated in structured dialogic sessions designed to foster ethical reflection, value hierarchy recognition, and collective deliberation. Qualitative analysis of participants' arguments revealed the coexistence of preconventional, conventional, and postconventional reasoning, with a progressive shift toward higher-order moral justifications emphasizing social responsibility, preservation of life, and professional duty over economic interests. Emotional awareness, contextual sensitivity, and metacognitive regulation emerged as key elements supporting ethical competence construction. Findings suggest that dialogic moral dilemmas constitute effective pedagogical tools for humanizing scientific education and strengthening ethical competencies in future health professionals. The study contributes to contemporary debates on moral education in higher education by evidencing the need to integrate emotional education, neuroscientific perspectives, and deliberative methodologies in professional training.

**Keywords:** Value judgment; pharmacists; professional education.

## Resumen

El estudio analiza el desarrollo del juicio moral en estudiantes de la Licenciatura en Químico Fármaco Biólogo, destacando la integración de dimensiones cognitivas y emocionales en la toma de decisiones éticas. Basado en la teoría del desarrollo moral de Kohlberg y en aportes recientes de las neurociencias sobre emociones morales y metacognición, se implementó un taller deliberativo centrado en la discusión del dilema de Heinz dentro de un curso virtual de bioética. Participaron 14 estudiantes en sesiones dialógicas estructuradas orientadas a promover la reflexión ética, la jerarquización de valores y la deliberación colectiva. El análisis cualitativo de los argumentos evidenció la presencia de razonamientos preconventionales, convencionales y posconvencionales, observándose una transición progresiva hacia justificaciones morales de mayor nivel que priorizan la responsabilidad social, la preservación de la vida y el deber profesional sobre el interés económico. La conciencia emocional, la sensibilidad contextual y la regulación metacognitiva emergieron como factores clave en la construcción de competencias éticas. Los resultados indican que los dilemas morales dialogados son herramientas pedagógicas eficaces para humanizar la formación científica y fortalecer la ética profesional en el ámbito de la salud. El estudio aporta evidencia sobre la necesidad de integrar educación emocional, enfoques neurocientíficos y metodologías deliberativas en la educación superior.

**Palabras clave:** Juicio de valor; farmacéuticos; educación profesional.

## YUYAY Vol. 5. N.2

## Resumo

O estudo examina o desenvolvimento do juízo moral em estudantes da graduação em Química Farmacobiológica, enfatizando a integração das dimensões cognitivas e emocionais na tomada de decisões éticas. Fundamentado na teoria do desenvolvimento moral de Kohlberg e em achados neurocientíficos recentes sobre emoções morais e metacognição, foi implementado um workshop deliberativo baseado na discussão do dilema de Heinz em um curso virtual de bioética. Participaram quatorze estudantes em sessões dialógicas estruturadas destinadas a estimular a reflexão ética, a hierarquização de valores e a deliberação coletiva. A análise qualitativa dos argumentos revelou a coexistência de raciocínios pré-convencionais, convencionais e pós-convencionais, observando-se uma evolução para justificativas morais de nível superior, centradas na responsabilidade social, preservação da vida e dever profissional acima de interesses econômicos. A consciência emocional, a sensibilidade contextual e a regulação metacognitiva destacaram-se como elementos centrais na construção de competências éticas. Os resultados indicam que dilemas morais dialogados são ferramentas pedagógicas eficazes para humanizar a formação científica e fortalecer a ética profissional na área da saúde. A pesquisa contribui para o debate contemporâneo sobre educação moral no ensino superior ao evidenciar a importância de integrar educação emocional, perspectivas neurocientíficas e metodologias deliberativas.

**Palavras-chave:** Julgamento de valor; farmacêuticos; formação profissional.

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*The authors declare no competing interests*

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## Introduction

Education is currently undergoing a crisis and a constant process of reconstruction and reflection. Reflective work is necessary at all educational levels, including Higher Education, where traditionally the emphasis has been placed on the construction of knowledge, relegating the participation of emotions as part of the comprehensive educational process to a secondary role.

Comprehensive training today acknowledges the need for greater involvement in the development of emotional education and its implications for the development of values. This directly involves and impacts the assumption of a more active role in the process of humanization, including the humanization of science. Therefore, activities aimed at the educational process of students in the bachelor's Degree in Pharmaceutical Biochemistry (PBC) to address the learning of ethics and its impact on research involving living beings are necessary.

In the present role would identify the results of how students analyze and employ moral judgments in the deliberation process during the ethics seminar. This seminar consisted of various activities dealing with issues related to respect for the human person and living beings, the humanization of science, bioethical approaches, and aspects involving regulations and proper conduct in professional practice. The selected activity was the formation of deliberative groups to analyze a dilemma as part of the educational process in Higher Education students.

## Theoretical Framework

### Emotions and Scientific Training

Throughout history, the humanbeing have evolved socially to survive natural adversity and improve quality of life through scientific and technological advances. These advances have increased since René Descartes (1596–1650) delineated the scientific method.

The rationalist foundation proposed by Descartes, which centered to the recognition of the unique truth as a method registered the base to consider a second role of feelings, claiming that “feeling is no other thing than thinking.” This diminished the second role of emotions, relegating them to the humanities and social sciences, which deal with behavior and subjectivity. His “methodical doubt” questioned human nature, suggesting emotions were unreliable and not needed for rational decision-making (Uriarte, 2019).

This skepticism—linked to the fear of manipulation by so-called “evil geniuses”—was later challenged by authors such as Spinoza, Hume, and Smith, who revisited emotional analysis, in the role in morality. However, its analysis is more directed towards the analysis since a cognitive perspective in the Kohlberg’s proposal (1971) and the scientific advances newly centered to the emotions and such as relevant particularly, in the Decision-making Process (Damasio, 1984), and other support developed by neurosciences advances.

This perspective highlights the need to integrate emotions into scientific training, fostering responsible professionals who can ethically evaluate science from objective perspectives or more important, cognitive perspective.

### **Moral Dilemmas**

Emotions play a vital role in developing moral consciousness and, thus, in the holistic formation of individuals and important in the moral consciousness construction. Strengthening students' moral awareness is a responsibility educators must embrace, in the integral formation process in them as Linde (2009) argues, schools cannot (or should not) continue delivering what they currently do, in the same way, in a digital world. According to the new technological environments offer governments and educators, we have the opportunity and duty to do what has not yet been done. We must remember and address the sense of true education.

Building on Kohlberg's Moral Development Theory (1994), as initial foundation, the base was laid to recognize some elements. Initially interested in formulating a Theory which will explain the moral evolution in the human being, Kohlberg pointed out moral development into three levels—pre-conventional, conventional, and post conventional—students can be guided to advance in their moral reasoning. I. Pre Conventional Morality (Punishment Orientation / Obedience and Relative Instrumental Orientation), II. Conventional Morality (Well behaved boy /well-behaved girl Orientation and Law and order orientation) and III. Post-conventional Morality (Social Contract Orientation and Universal Ethical Principles Orientation).

Lower-levels pre-conventional, initials and expected in the first stages of development, they can be considered basic, reasoning often places moral responsibility on others or authority figures, avoiding guilt or responsibility for the acts. Achieving higher post-conventional levels, it would talk about higher levels, involve constructing moral judgments that prioritize social well-being—and even the life's preservation from others, even when your own life or that of a family member is at stake.

Despite criticism, Kohlberg's framework inspired educational experiments in moral education, such as building democratic schools and training teachers in deliberate exercises. With North American government's support, it made a teacher's training program, aimed at construction of democratic schools, through the construction of deliberative exercises (Linde, 2009). The goal was to introduce educational model with the intention of avoiding relativism and indoctrination in the training of students consisting of including participants with higher moral development levels to inspire peers with less moral levels within the groups (Linde 2009).

Kohlberg's and his disciples' contributions opened the possibility—and necessity—of moral education in classrooms. Although broad implementation failed at the time due to systemic limitations, current contributions from neuroscience and social sciences allow for a renewed application. The results on the possible generalization and implementation of your proposal on a large scale, considering that they were not the appropriate contexts for the administrations, they also required fundamental transformations, resulting in their proposal not having much support.

Currently, and with contributions from other areas of knowledge such as neuroscience and social sciences, is that we can reconsider its usefulness, identifying what other elements are part of the construction of morality. For example, personal decisions based on morality may require a process of formulating logical questions that accompany the decision-making process, this is, we can recognize a cognitive dimension with support in the neuroscientific progress.

Moral decisions involve both cognitive (reasoned) and emotional (social-moral) dimensions. Educators must support students in developing ethical decision-making skills by presenting real-life scenarios and fostering critical reflection on values. Decision-making requires a look towards the comprehensive recognition of all these advances for the accompaniment of the students in the personal development of the student body. It will contribute to the construction of close personal experiences to reality and the presentation of possible scenarios which would involve an appropriate resolution if necessary (Marshall, et al., 2025).

Besides educational, even in young children (Torquati, et al., 2025), and social-cultural system also have a great influence on decision-making and moral judgment as shown by Cheruvalath et al., (2025) investigation. Authors compared university students from India and Japan and discovered that they can improved meta-moral cognitive skills, as part of ethics curriculum. This result is according with culture influence on three elements of ethical judgment justifications when implemented ethical dilemmas. For authors, meta-moral cognitive skills involve critical thinking skills, knowledge of professional ethics, discipline, perspective-taking, commons sense and culture influences. Learning strategies which involve personal and professional cases result in efficiency for professional ethics skills, when facing a moral judgment and deciding, even observing different results, such as the presence of authority figures can shape deliberate exercises. Facilitators must consider these when promoting deliberative competencies and ethical development. Therefore, the moderator must consider into account all these variables in the construction of deliberate skills and in the construction of ethical competencies.

To do this, use is made of different moral dilemmas in the deliberation process. Moral dilemmas—short narratives depicting value conflicts—are tools for stimulating moral reasoning. In analyzing these, students must decide based on the hierarchy of values at stake, recognizing which values are at stake and the need for reflection to be carried out on the importance of the selected values (Kohlberg, 1971).

Besides the information to be considered in analysis of dilemmas, Boggio, et. al., (2023) study, we need to be alert because participants can evaluate different the results of moral actions. This shows that purity violations and moral judgement can be influenced by moral disengagement, and the black sheep effect. That's the reason that Osorio & Reyes (2025) considered crucial that decision making in Moral Judgment context, need to be modulated by individual metacognition. Which means that social context or scholar one, must develop the capacity to access and monitor one's mental states in students.

Emotional education is fundamental to human development. Emotions emerge through physiological responses, affective experiences, on an intersubjective level and value-based evaluations (Villamil-Pineda,

2011). These evolve through cultural and daily life experiences into complex moral emotions considered as cross-cultural differences in solving dilemmas and need for social acceptability (Jiang & Harvey 2025).

From a psycho pedagogical perspective, as some theorists point out, moral education is considered a higher form of emotional education (Bisquerra et al., 2021). Moral judgments, as cognitive processes, allow for value reflection and logical hierarchy construction—thus enabling conscious moral actions. Another study conducted by Heir (2025), indicates, as we explain, that the social domain accounts of moral development. If one student constantly is exposure to and reasoned engagement with moral information, this means that is probably useful tools to guide moral reasoning, by experiences. These results are similar to Simic, Sacchi, & Perugini's (2025), that suggest that within- and between-person changes in future self-relatedness might be used to predict everyday moral concerns and behavior.

Therefore, fostering moral awareness in students is essential. This contributes to the humanization of science and falls under the responsibility of higher education institutions, especially amid digital-era challenges. To explore the humanization of science through moral judgment and decision-making, an ethics-based activity was developed for pharmaco biological chemist students engaged in research involving living beings.

### **Ethical Education in Health Sciences Tendencies**

Need for identification which ethical competence in Health Sciences must be recognized (Al Akko et al., 2025). For that, we can identify some important studies. For instance, we can recognize the role of moral integrity as a mediation model in nurses (Ne'eman-Haviv, Blau & Ofri, 2025). Moral integrity is considered as the association between moral self and moral sensitivity. This moral integrity seems to be the most important component of nurses's professionals. Also, can consider in nurses's formation the inclusion of Model of Moral Behavior (Ha & Oh, 2025; Halldorsdottir & Bryngeirdottir 2025; Mbazo, Rasesemola, & Ndawo 2025).

But in daily practice, health professionals constantly avoid difficult as ethical judgments (Lemli & Landy, 2025), or transgressive behavior (Mac Gillavry, Mujulja & Nekvapilová 2025), including the consideration of effects of medication in patient's decision (Martinez, et. al., 2025).

As researched by Mac Gillavry, Mikulka & Nekvapilová (2025), moral dilemmas can used to explain disruptive conducts, considered for example, unjustifiable violence impossible to recognize as highly undesirable conduct in male's participant of the study, affecting moral decision-making. These results remain the need for moral and ethical education programs in higher education. But other components must be considered more related to emotions for professionals and for patients, as autonomy, and self-determination (Annoni, 2025).

Moral dilemmas are implemented in education, but new variables need to be analyzed. For example, as meta-moral cognitive skills described before (Cheruvath, Manalo, & Ayabe, 2025); and moral character cues as self-sacrifice as important signal for decision (Bigman, Gray & Choshen-Hillel, 2025). We have the possibility of prediction decision-making including meditation of cardiac vagal modulation (Prell, Maggioni & Starcke 2025), as well as new technologies (Macías-Galeas, 2024) as IA (Qingui, et.al., 2025). Moral and ethics educational

programs in health sciences must consider new information and evaluate the progress of future professionals implementing these considerations. Next, we explain the methodology.

## Methodology

The work was conducted within the course "Bioethics in Research on Living Beings," under a virtual learning environment. Based on the Learning management systems model, the course utilized telematic tools, with institutional support via the TEAMS platform, as requested by the Academic Secretariat of the degree program. The learning group received support from the instructor through group chat and email to clarify doubts.

Regarding learning objects, educational materials accessible from any location were selected. The sessions were primarily asynchronous, while synchronous sessions were held for doubt clarification, topic closure, and formative activities.

The course lasted 20 weeks during the Spring semester. It required students to have access to computers and telecommunications. A curricular design tailored to the virtual modality was created, following the ADDIE model.

Recommendations from ANUIES (2003) were followed for building appropriate learning environments under new educational modalities:

These changes imply new challenges for IES: coverage, quality of services, engagement with various social and productive sectors, lifelong education, a transition from a closed system to an open one, and becoming gateways to the knowledge society. This dynamic demands the creation of self-directed, participatory, flexible, and relevant learning environment" (ANUIES, 2003, p. 132).

Regarding course instructors, requirements for virtual or distance teaching were fulfilled, including training in instructional design and educational platform use. Virtual learning management requires greater involvement of academic bodies to ensure standards. In this case, the instructor also had training in ethics and experience in teaching the ethics course.

The general objectives also included developing social awareness to respond to societal needs, fostering proactive attitudes toward society in response to market globalization, and promoting ethical civic education through discussions on ethically relevant topics. The design aimed at building learning communities and forming groups sharing common goals, capable of working toward consensus through deliberative processes, without excluding participants or opinions.

## Participants

Fourteen students participated in the activity: six men and eight women. In a synchronous session, as part of the activities analyzing the humanization of science—and prior to reviewing materials related to human rights, bioethical principles, values, dignity, and the recognition of the human person—the group was convened to conduct a final activity review.

## Instrument

The instrument used was "Heinz Dilemma" developed by L. Kohlberg (1994) which points out below:

In Europe, a woman is suffering from a special type of cancer and is going to die soon. There is a drug that doctors believe can save her. It is a form of radium that a pharmacist in the same city has just discovered. The drug is expensive, but the pharmacist is charging ten times what it cost him to make. He paid \$200 for the radium and charged \$5,000 for a small dose. The sick woman's husband, Heinz, tries to borrow money from everyone he knows, but can only gather \$2,500, half the cost. He asks the pharmacist to sell it cheaper or let him pay later. The pharmacist says: "No, I discovered it, and I'm going to profit from it." Desperate, Heinz considers breaking into the pharmacy to steal the drug for his wife.

The following questions were discussed in the session: Should Heinz steal the medicine? ¿Why? If it were a stranger instead of his wife, should Heinz steal the medicine to save her?, ¿her? What conflict of values is presented in this case? ¿What values are at stake? and ¿do you believe the pharmacist's behavior is appropriate? The dilemma was analyzed during the synchronous session, and the following results were obtained.

## Results and Discussion

We can present the analysis of results considering the general comments from participants during the group analysis session of dilemma. As part of the reflection and analysis of formative learning activities, the presence of the following aspects was identified: a) Ethical attitudes, b) Prosocial behaviors, c) Social and moral values (consensus, otherness, etc.), and d) Use of ethical concepts (principles, goods).

Proposals for individual or collaborative alternative solutions were considered appropriate strategies for developing moral judgment and decision-making skills. Below are some of the answers given by students in relation to the levels of moral development analyzed and their interpretation.

As an example, for the students 'answer from the level of the preconventional morality, we found this answer like the next participant's:

“Well, I think Mr. Heinz should not steal the medicine because the doctors may be sure, but there’s a margin of error in the medication—it might not work. Also, if he gets caught and goes to jail, his wife will be left alone and he won’t be there when she dies.”.

In this participant we can recognize a level of pre-conventional morality, however, is considered, which could result in an affectation to the wife’s health, if the medication is not successful, even though it is difficult to establish moral values such as justice that are suitable for identification in the form of decisions. In another example we can recognize the Conventional Morality level shown in the participant:

“I think he shouldn’t steal it. If it were my case and I had a sick family member, I don’t think any of my relatives would ask me to go to jail or do something like that—stealing. There could be many complications from stealing. I might hurt someone, and then I wouldn’t be able to be with my family members when they die.”

Although in this case there is greater respect to the laws, for example, do not steal, and it is assumed that it is the support from family members in this decision, higher moral judgments are not yet assumed, such as justice and valuation of life in comparison to monetary value. This is important in the training process of future pharmacological biological chemist graduates, prioritizing the preservation of life over economic gains.

Finally, we can identify that most of the study participants showed a pre-conventional morality level, as shown in the next case. When asked whether the pharmacist is doing the right thing, the participant reports the following:

“From my point of view, no, the pharmacist is not doing the right thing, because you make an oath and your main duty is to help society, not harm it. It’s fine to take your time, but you shouldn’t exaggerate with your discovery”.

This participant demonstrates a post-conventional level, emphasizing social responsibility, life preservation, and criticism of immoral profit motives. The decision to save the wife’s life is assumed to be morally adequate. The immoral conduct of the pharmacist is judged as contrary to the oath to preserve health against economic interests. This behavior is expected from future pharmacy biologists, from an ethical point of view. And affirmation that “you make an oath” represents a higher level of moral judgment, or metacognitive as Osorio & Reyes (2025), indicates.

In the following case, the idea that theft is wrong for the right reason is clearly evident:

“In my case, if the medicine is stolen, well, it’s for a good cause. It’s not like stealing something useless. Since the drug is expensive, and as we’ve seen, every scientist should help society and not harm it, stealing the drug would be the most reasonable option”.

In the participant, an example of a level of post-conventional morality can also be identified. A justification is included with the use of recognition of the preservation of health, as a good, which is not provided by the conduct of the pharmacist. Again, the metacognitive level of moral judgment is shown, and no harm as an

important effort of scientist confirms the responsibility of their actions in a personal perspective, but contradictory as Boggio et al., (2025) considered.

Emotional education is becoming relevant, and their attention is impacting on students of different educational levels, now including basic education. Nevertheless, the results of the research are analyzed quantitatively (Zavaleta y Márquez, 2014), which leaves aside de behaviors and analysis of the form of action that truly led the participants of the research, in the comprehensive training process. In the results of this research, Linde´s (s/f) recommendations were implemented, for the construction of ethical competencies in the first rounds of deliberations, arguments were shown against, but later, after the argumentative rounds and teaching meditation, the favorable response was determined by consensus.

We can therefore point out that in relation to the other questions about “If it were a stranger” ¿Should Heinz steal the medicine to save him?, all the students agree that the robbery should not be carried out to save a stranger. In the case of the question about ¿What conflict of values is raised in this issue? The value of preserving the health of sick family members is recognized. Just as everyone agrees that the pharmacist´s conduct was not ethically appropriate.

These results show us that the process of construction a post-conventional morality is developing in future graduates in chemical pharmacobiology, giving indications that their performance at a professional level will also correspond to ethical conduct professionally speaking. We believe that this learning should be emphasized in professional training, considering the different examples necessary for the comprehensive training of university students.

Consequently, emotions must be considered in the educational process as involved and learned forms, that together with more dialogic learning strategies or participants in deliberative process, they will provide future professionals with the foundations for decision-making and value judgments. Also, an effort must be made to develop metacognition levels of moral judgment in participants of seminars.

Emotions as conscious, voluntary superior elements and are the object of learning and promotion to higher categories such as moral emotions. Its link and association with values allows for the development of tools for correct action in conflict situations or those that require a decision based on social reality. This exercise will allow students to develop the identification of moral emotion and their role in decision-making, with a sense of justice and preservation of universal values.

Consciousness, according to Sartre and Solomon, considers understanding of emotional life, being this necessary for the acquisition of values and therefore, the construction of moral conscience. This awareness, once developed in future professionalism, will constitute the necessary guide for ethical conduct and socially responsible management.

## Conclusions

The use of deliberative strategies, supported by moral emotion formation, directly contributes to the development of ethical competencies. While pre-conventional morality indicators still appear in some students, these are minimal. Deliberative strategies and multiple discussion rounds allow participants to generate new arguments, recognize key values, and make well-reasoned decisions.

The pharmacist's behavior was unanimously perceived as immoral and inappropriate, becoming a key case study in PBC training. The use of moral dilemmas to foster ethical development must be supported by a solid foundation in universal values, human rights, and ethical principles. This supports the training of well-rounded professionals and provides motivating experiences for students that are significant for their future careers.

The results indicate that students are undergoing higher stages of moral development and are making appropriate decisions, in line with theoretical models, and neuroscientific basis. University-level educators must understand moral development stages and emotional education transitions. They must also recognize the advanced thinking and decision-making capabilities present in higher education students. This represents a promising path toward analyzing social situations and acting responsibly.

Future professionals will therefore be able to decide on their actions by assimilating thought or moral conscience autonomously or metacognitive speaking, giving them the tools to act independently in professional, and in daily living. Healthcare professionals limited ethical competence can be developing ethical competence but moral emotions, metacognitive processes and innovative strategies.

## References

- Al Akko, M., Elias, M., Chelliahpillai, Y., Shahid, A., & Airia, P. (2025). Moral Reasoning and Development in Medical School: A Literature Review. *University of Toronto Medical Journal* (1982), 102(1). <https://doi.org/10.33137/utmj.v102i1.43104>
- Annoni, M. (2025). Autonomy, Self-Determination and Substitute Judgement: The Limits of AI-Based Personalised Patient Preference Predictors (P4s) in Surrogate Decision-Making. *Journal of medical ethics* jme-2025-110959-. <https://doi.org/10.1136/jme-2025-110959>
- ANUIES (2003). Documento estratégico para la educación superior.
- Bigman, YE, Gray, K. & Choshen-Hillel, S. (2025). ¿Morally Motivated? People Use Self-Sacrifice as a Cue for Moral Character." *Decision*. <https://psycnet.apa.org/doi/10.1037/dec0000262>
- Bisquerra, R. Buxarrais, M. A., Martínez, M y Tey, A. (2021). Fundamentos emocionales de la educación moral: aplicaciones para la práctica. *Revista Internacional de Educación Emocional y Bienestar* 1(2), 71-100. <https://doi.org/10.48102/riieb.2021.1.2.13>
- Boggio, P.S., Rego, G.G., Everett, J.A.C., Bonato, G., Graves, R. Sinnott-Armstrong, W. (2025). Who Did It? Moral Wrongness for Us and Them in the UK, US, and Brazil. *Philosophical psychology*. 38(4), 1660-1680. <https://doi.org/10.1080/09515089.2023.2278637>
- Cheruvath, R., Manalo, E., & Ayabe, H. (2025). The role of rationales for and criticisms of ethical decision in the development of meta-moral cognitive skills. *Ethics & Behavior*, 35(3), 240-258. <https://doi.org/10.1080/10508422.2024.2332915>
- Damasio, A.R. (1984). *El error de Descartes. La razón de las emociones*. Barcelona: Andrés Bello.
- Ha, K, & Oh, Y. (2025). Assessing Educational Needs of Nurses' Ethical Competence Based on the Four Components Model of Moral Behaviour: A Cross-Sectional Study Using the Borich Needs Assessment and Locus for Focus Models. *BMC nursing* 24(1), 615–13. doi: 10.1186/s12912-025-03269-5. PMID: 40448248; PMCID: PMC12123757.
- Halldorsdottir, S. & Bryngjersdottir H.S. (2025). Ethical Competence in Nursing: A Theoretical Definition. *Nursing ethics*. 0(0). 1-29 doi: [10.1177/09697330251346437](https://doi.org/10.1177/09697330251346437)
- Heir, A., (2025). Rational intuitions: How reason underlies deontological moral judgments. *Philosophical Psychology*. 38(4), 1800-1824. <https://doi.org/10.1080/09515089.2023.2290172>
- Jiang, X., & Harvey, N. (2025). Cross-cultural differences in resolving sacrificial dilemmas: choices made and how they relate to judgments of their social acceptability. *Frontiers in Psychology*, 16, 1448153-. <https://doi.org/10.3389/fpsyg.2025.1448153>
- Kohlberg, L. (1971). Stages of moral development as a basis for moral education. En B. Munsey (Ed.), *Moral development, moral education and Kohlberg* (pp. 15-98). Birmingham. Religious Education Press.
- Kohlberg, L. (1994). *Moral development's psychology*. San Francisco, CA: Harper & Row.
- Lemli, B. A., & Landy, J. F. (2025). Preference reversals in ethical judgments of medical treatments. *PloS One*, 20(4), e0319233-. <https://doi.org/10.1371/journal.pone.0319233>
- Lind, Georg. (s/f). "Educación de competencia moral por el Konstanzer Methode der Dilemma-Diskussion, KMDD®". [http://www.uni-konstanz.de/ag\\_moral/moral/dildisk-sp.htm](http://www.uni-konstanz.de/ag_moral/moral/dildisk-sp.htm)
- Linde Navas, A. (2009). Moral education according to Lawrence Kohlberg: Utopy possible. *Praxis Filosófica*, (28), 7-22. [http://www.scielo.org.co/scielo.php?script=sci\\_arttext&pid=S0120-46882009000100001&lng=en&tng=es](http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0120-46882009000100001&lng=en&tng=es).
- Mac Gillavry, D.V., Mikulka, M. G. & Nekvapilová, I. (2025). On communal Transgressive Behavior; A moral Dilemma Variation on the Classic Asch Paradigm. *Basic and Applied Social Psychology*, 47(3), 142-152. <https://doi.org/10.1080/01973533.2024.2433724>
- Macías-Galeas, I. (2024). Transformación y desafíos de la educación superior en la era digital: Estrategias para el desarrollo de competencias en el siglo XXI. *YUYAY: Estrategias, Metodologías & Didácticas Educativas*, 3(1), 17–33. <https://doi.org/10.59343/yuyay.v3i1.57>

### YUYAY Vol. 5. N.2

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- Marshall, J., Wilks, M., Caviola, L. & Nelder, L. (2025). When Development Constricts Our Moral Circle. *Nature human behaviour* 0(0). 1-9. <https://doi.org/10.1038/s41562-025-02212-7>
- Martinez, R. M., Wei, L., Fan, Y.-T., Chen, Y.-C., Goh, K. K., Lin, Y.-N., Yang, C.-T., Cheng, Y., & Chen, C. (2025). Acute lorazepam administration does not significantly affect moral attitudes or judgments. *Scientific Reports*, 15(1), Article 16108. <https://doi.org/10.1038/s41598-025-01109-9>
- Mbazo, K., Rasesemola, R. M., & Ndawo, G. (2025). Moral injury and its effects on academic performance of student nurses in South Africa. *Curationis (Pretoria)*, 48(1), e1-8. <https://doi.org/10.4102/curationis.v48i1.2697>
- Ne'eman-Haviv, V., Blau, A., & Ofri, L. (2025). The role of moral integrity in the association between moral self and moral sensitivity among nurses: A mediation model. *Nursing Ethics*, 32(3), 828-836. <https://doi.org/10.1177/09697330241263994>
- Osorio, H. & Reyes, G. (2025). Decision Making in Moral Judgment Context is Modulated by Individual Metacognition. *Psychological Reports*. 128(4), 2846-2865. <https://doi.org/10.1177/00332941231191067>
- Prell, R., Maggioni, M. A., & Starcke, K. (2025). Cardiac vagal modulation predicts decision-making in sacrificial and everyday moral dilemmas. *Scientific Reports*, 15(1), Article 13029. <https://doi.org/10.1038/s41598-025-96475-9>
- Qinggui, H., Xiuqiong, T., Hui, C. y Jinsong, W. (2025). Riesgos éticos y soluciones de la caja negra algorítmica en inteligencia artificial médica. *Acta Bioethica*, 31 (1). 25-34. <https://actabioethica.uchile.cl/index.php/AB/article/view/78363>
- Regenwetter, M., Currie, B., Huang, Y., Smeulders, B., & Carlson, A. K. (2025). (Ir)rationality of Moral Judgment. *Perspectives on Psychological Science*, 20(3), 555–571. <https://doi.org/10.1177/17456916241260611>
- Simic, A., Sacchi, S. & Perugini, M. (2025). When Future Leads to a Moral Present: Future Self-Relatedness Predicts Moral Judgments and Behavior in Everyday Life. *Personality and Social Psychology Bulletin*, 5(7). 1240-1258.
- Torquati, J.C, Liu, D. & Shin, H. (2025). A developmental and ecological investigation of preschool children's environmental moral reasoning. *Environmental Education Research*, 31(5), 964-980.
- Uriarte, J. M. "René Descartes". Para: *Caracteristicas.co*. Última edición: 14 de noviembre de 2019. Fuente: <https://www.caracteristicas.co/rene-descartes/#ixzz7LsgF46Cn>
- Villamil-Pineda, M. Á., (2011). Emociones y ética. *Revista de las ciencias del espíritu*. LIII (156), 171-210. <https://www.redalyc.org/articulo.oa?id=343529077007>
- Zavaleta, I. y Márquez, S., (2014). La discusión de dilemas morales para fomentar el desarrollo moral en alumnos de primaria. En Heredia Escorza, Y. y Márquez Guzmán, S. (2014) (Eds.), *Desarrollo Moral y Competencia Ciudadana*. 76-92.

