PSYCHO
MACHINA

Ethical Standard in Psychological Research: A Review

Jiayao Hu

Henan Polytechnic University, People's Republic of China

Correspondence Email:
hjy@home.hpu.edu.cn*

Keywords
algorithmic bias; artificial intelligence; ethical dilemmas; ethical guidelines; ethical research

Abstract

Psychological research is the study of human beings' self-perception of the way they think and behave, and the study of the psychological and behavioral patterns of how they perceive external information and how they internalize it. Integral to the integrity and credibility of this research enterprise is adherence to ethical standards that uphold the rights, well-being, and dignity of research participants. As the scientific exploration of the human mind continues to evolve, so does the ethical framework that guides researchers in their quest for knowledge. This article delves into the multifaceted nature of ethical standards in psychological research. By scrutinizing historical precedents, contemporary guidelines and emerging challenges, this exploration aims to illuminate the critical role that ethical considerations play in shaping the methodology, implementation, and interpretation of psychological research. The paper first presents the historical trajectory of ethical issues and ethical guidelines in psychological research. Secondly, ethical dilemmas in psychological research are presented, emphasizing the complex interplay between the pursuit of knowledge and the responsibility to protect the rights and well-being of research participants. In addition, the advent of the digital age has created a new set of ethical challenges for psychological research. The convergence of Artificial Intelligence (AI) and psychological research has opened up transformative possibilities for data analysis, pattern recognition and the exploration of complex psychological phenomena, and the issue of algorithmic bias cannot be ignored. A final conclusion is made that ethical standards in psychological research are the ethical backbone of a discipline dedicated to revealing the complexity of the human mind, and that emerging challenges need to be actively addressed.

INTRODUCTION

Psychological research, with its profound implications for understanding human behavior and mental processes (Nguyen et al., 2023), is a discipline entrusted with the responsibility of conducting studies that contribute to the advancement of knowledge (Guzzo et al., 2022). Integral to the integrity and credibility of this research enterprise is the adherence to ethical standards that safeguard the rights, well-being, and dignity of research participants (Huminuik, 2023). This introductory section seeks to provide a nuanced exploration of the ethical dimensions inherent in psychological research, acknowledging the pivotal role ethical considerations play in shaping the research landscape.

As the scientific exploration of the human mind has evolved, so too have the ethical frameworks that guide researchers in their quest for knowledge (Yua et al., 2022). The origins of ethical standards in psychological research can be traced to historical instances of research misconduct and the ethical lapses that precipitated significant harm to participants (Alessi & Kahn, 2023). Prominent cases, such as the Milgram experiment and the Stanford prison

study, underscore the need for a conscientious and robust ethical framework to govern psychological research (Casewell, 2022).

The purpose of this paper is to delve into the multifaceted terrain of ethical standards in psychological research. By scrutinizing historical antecedents, contemporary guidelines, and emerging challenges, this exploration aims to shed light on the critical role played by ethical considerations in shaping the methodology, execution, and interpretation of psychological studies. Furthermore, this paper seeks to provide a comprehensive understanding of how ethical standards not only protect the rights of research participants but also enhance the credibility and applicability of research findings.

In an era marked by increasing interdisciplinary collaboration and advancements in research methodologies, the ethical dimensions of psychological research become even more salient (Cikara et al., 2022). Researchers, practitioners, and stakeholders are called upon to navigate a complex ethical landscape (Mohammad Amini et al., 2023), where considerations of cultural sensitivity, diversity, and technological advancements necessitate continuous reflection on and adaptation of ethical standards (Stahl & Eke, 2024). As such, this paper endeavors to contribute to the ongoing dialogue surrounding ethical practices in psychological research, fostering a greater awareness of the ethical imperatives that underpin the pursuit of knowledge in this dynamic field. Paper structure is shown in Figure 1.
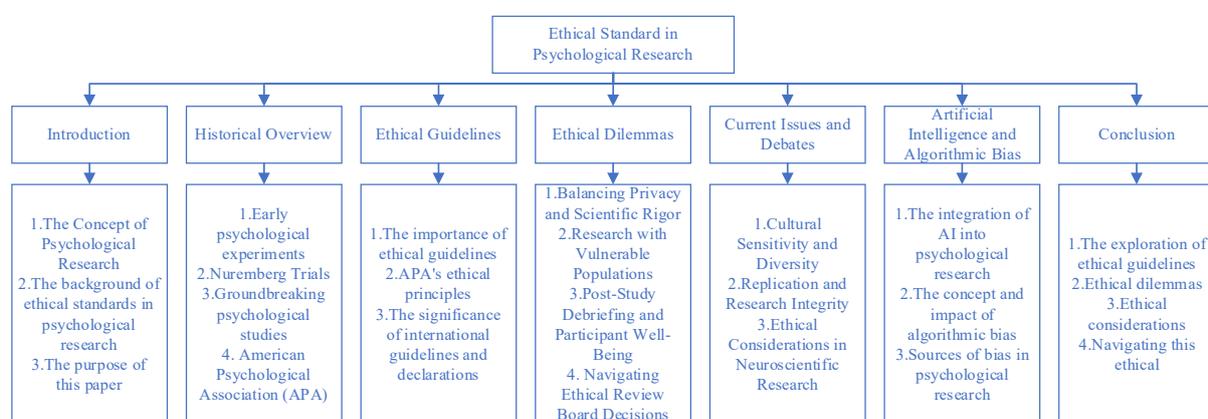

Figure 1. Paper structure

HISTORICAL OVERVIEW

The historical trajectory of ethical concerns in psychological research is marked by pivotal moments that have shaped the ethical landscape of the discipline (Hodgetts et al., 2023). Early psychological experiments, such as those conducted by Wilhelm Wundt in the late 19th century, often lacked clear ethical guidelines (Benjamin Jr, 2023), with researchers exploring the human mind with a nascent understanding of the potential impact on participants (Wang et al., 2023).

One of the landmark events that ignited a broader awareness of ethical issues was the Nuremberg Trials following World War II (Schmidt, 2023). The heinous experiments conducted by Nazi physicians prompted the international community to establish ethical principles, known as the Nuremberg Code, to safeguard human participants in research (Schütz & Braswell, 2023). This watershed moment served as a catalyst for the development of ethical standards not only in medical research but also in psychological investigations (Pritchett et al., 2023).

The 20th century witnessed groundbreaking psychological studies that, while contributing significantly to the understanding of human behavior, raised ethical questions that reverberate to this day (Lomas, 2022). Stanley Milgram's obedience experiments, conducted in the early 1960s, exposed participants to psychological distress as they believed they were delivering harmful electric shocks to others (Grzyb & Dolinski, 2023). Similarly, the Stanford Prison Study led by Philip Zimbardo in 1971, where participants assumed roles of prisoners and guards, resulted in unforeseen emotional and psychological consequences (Hassan, 2022). These studies prompted ethical reflection within the field and underscored the need for stringent guidelines to prevent harm to participants (Farnicka, 2022).

In response to these ethical lapses, professional organizations in psychology, such as the American Psychological Association (APA), developed formal ethical codes to guide researchers (Silander & Tarescavage, 2023). The APA's first ethical code was introduced in 1953 and has undergone multiple revisions to address evolving ethical

concerns (Greeny et al., 2022). These codes, often informed by philosophical principles like autonomy, beneficence, and justice, serve as a compass for researchers navigating the ethical terrain of psychological inquiry (Tritt, 2022).

As technology has advanced, ethical considerations have extended beyond traditional experimental settings (Blanco-Gonzalez et al., 2023). The advent of the internet and digital data collection has introduced novel challenges related to privacy, consent, and the responsible use of technology in research (Rizi & Seno, 2022). The discipline now grapples with ethical considerations in online studies, big data analytics, and the potential misuse of artificial intelligence in psychological research (De Gagne et al., 2023). Some of the ethical issues and coping strategies faced by researchers in psychological research are shown in Table 1.

Table 1. Ethical issues and coping strategies

Ethical issue	Coping strategy
Issues of privacy and confidentiality	Research subjects in psychology involve people's personal privacy and confidentiality. Therefore, the researcher must respect the privacy of the research subjects and not disclose their personal information. In psychological research, the researcher must clearly inform the research subject of the purpose and effect of the experiment involved, and strictly keep the results of the experiment from public disclosure.
Informed consent and voluntary participation	In psychological research, research subjects are often subject to many outside distractions. In order to avoid such interferences, it is important to ensure that the research subjects give informed consent and are able to participate in the research voluntarily. Before conducting experiments and collecting data, the researcher should give the necessary instructions to the research subjects, inform them of the risks and benefits of the experiment, and obtain their written consent, and ensure that the research subjects are able to voluntarily participate in the experiment.
Ethical question	In psychological research, some experiments may have issues that are unethical. For example, abuse, deception and deprivation of liberty of research subjects. Researchers must ensure that their research subjects are not exploited and harmed, and must be honest and trustworthy in their research and follow the ethics of scientific research. For experiments with ethical issues, researchers should follow the procedures of research ethics review, put advocates to respect the rights and interests of the research subjects, and ensure that the experiments are legally compliant.
Guaranteeing the welfare of research subjects	In psychological research, there should be long-term benefits to the physical and mental development of the research subjects. Researchers must ensure that their research does not cause harm to the health and life of the research subjects. If the research subject suffers some harm during the experiment, the researcher should provide the necessary help and support, such as medical treatment and reasonable financial improvement, to ensure that the research subject can receive appropriate compensation and indemnity.

ETHICAL GUIDELINES

The conduct of ethical research is foundational to the credibility and trustworthiness of psychological inquiries (Ivey, 2023). Ethical guidelines serve as a set of principles and standards that guide researchers in the design, implementation, and reporting of studies (Spranger et al., 2022). These guidelines are not only essential for safeguarding the rights and well-being of participants but also for upholding the integrity of the scientific process (Kipkemboi & Naanyu, 2022).

With regard to ethical guidelines concerning animal experimentation, it is widely recognised that the use of experimental animals may be necessary in certain circumstances in order to bring about improvements for humans, animals or the environment. At the same time, it is widely recognised that animals have a moral status and that our treatment of them should be subject to ethical considerations.

The American Psychological Association (APA) stands as a prominent authority in the establishment of ethical standards for psychological research (O'Donohue & Fisher, 2022). The APA's "Ethical Principles of Psychologists and Code of Conduct" outlines a comprehensive framework that psychologists worldwide adhere to (Ejidike et al., 2023). This code emphasizes principles such as respect for individuals, beneficence and non-maleficence, integrity, and justice (Young & Kenny, 2023). Five general principles of ethical guidelines are listed below, as shown in Table 2.

Table 2. Ethical guidelines

General principles	Ethical guidelines followed by psychologists
Beneficence and non-maleficence	Psychologists should endeavour to benefit their clients and take care to avoid causing harm.
Loyalty and responsibility	For psychologists to build trusting relationships with those with whom they work, they need to be aware of their professional and scientific responsibilities to society and to the particular field they serve.
Integrity	Psychologists are expected to promote conscientiousness, honesty and trustworthiness in the conduct of psychological research, teaching and practice.
Justice	The principle of justice and fairness means that everyone has the right to benefit from psychology, and psychologists need to be fully aware of this and treat all people equally in the course of their work and services.
Respect the autonomy and rights of individuals	Psychologists respect each person's self-esteem, worth, individual right to privacy, confidentiality and self-determination.

Researchers must respect the autonomy and rights of individuals, ensuring that participation is voluntary and based on informed consent (Aluko-Arowolo et al., 2023). Informed consent involves providing participants with clear and understandable information about the study's purpose, procedures, risks, and benefits (Mascalzoni et al., 2022).

Researchers are obligated to maximize benefits and minimize harm to participants. This principle underscores the responsibility to weigh potential risks against the anticipated benefits of the research (Perez et al., 2023). Integrity: Researchers must uphold the highest standards of honesty and accuracy in all stages of research, including the reporting of results (Allum et al., 2023). Transparency in research practices is crucial to maintaining the credibility of the scientific enterprise (Grant et al., 2022). Justice: The principle of justice mandates fair treatment and equitable distribution of the benefits and burdens of research (Bhaskar, 2023). Researchers must be vigilant in avoiding biases related to gender, ethnicity, socioeconomic status, or other relevant factors (Washington et al., 2023).

In addition to the APA's ethical principles, various international guidelines and declarations contribute to the global discourse on ethical standards in psychological research (Jegan & Dierickx, 2023). The Declaration of Helsinki, developed by the World Medical Association, provides ethical guidelines for medical research involving human participants and has implications for psychological studies conducted within a medical context (Petkov et al., 2022).

ETHICAL DILEMMAS

Ethical dilemmas in psychological research arise when researchers encounter situations where ethical principles conflict or when the ethical course of action is unclear (Drolet et al., 2023). These dilemmas underscore the complex interplay between the pursuit of knowledge and the responsibility to protect the rights and well-being of research participants (Daradkeh, 2023). Understanding and navigating these dilemmas are essential aspects of ethical research practice (Hota et al., 2023). The ethical dilemmas are shown in Figure 2.
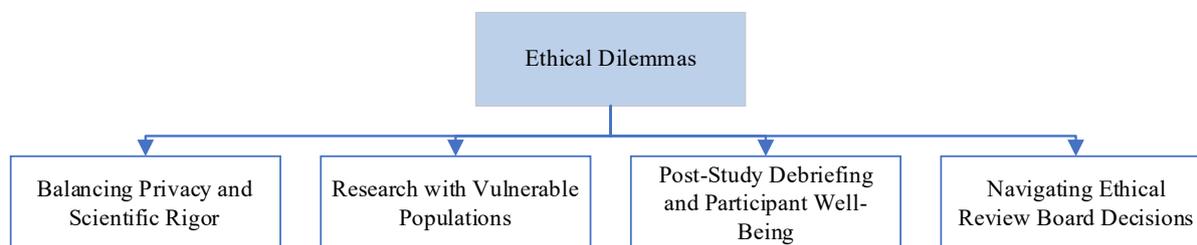

Figure 2. Ethical dilemmas

One prevalent ethical dilemma revolves around the tension between obtaining informed consent and the use of deception in research (Shamim & Qureshi, 2023). Informed consent, a cornerstone of ethical research, requires researchers to provide participants with comprehensive information about the study (Laurijssen et al., 2022). However, in certain experimental designs, full disclosure may compromise the validity of the research (Liu & Wei, 2023). Striking a balance between disclosing sufficient information to ensure informed consent and maintaining the study's integrity poses a significant ethical challenge (De Sutter et al., 2022).

Balancing Privacy and Scientific Rigor: With advancements in technology and data analytics, researchers face ethical dilemmas concerning the collection and use of sensitive information (Khoa et al., 2023). Balancing the need for scientific rigor with the protection of participant privacy is an ongoing challenge (Sinclair et al., 2023). The risk of data breaches and the potential identification of individuals in studies that explore sensitive topics demand careful consideration (Henry et al., 2022).

Research with Vulnerable Populations: Ethical dilemmas are particularly pronounced when conducting research with vulnerable populations, such as children, individuals with cognitive impairments, or those in institutional settings (Walker, 2022). Striking a balance between the scientific value of the research and the protection of vulnerable participants requires heightened ethical sensitivity (Friesen et al., 2023).

Post-Study Debriefing and Participant Well-Being: The ethical obligations of researchers extend beyond the data collection phase to post-study debriefing (Adley et al., 2023). Providing participants with a thorough explanation of the study's purpose and addressing any concerns or misconceptions is crucial. However, ethical dilemmas may arise when participants experience distress during or after the study, necessitating careful navigation of the balance between scientific inquiry and participant well-being (Korzh, 2023).

Navigating Ethical Review Board Decisions: Researchers may encounter ethical dilemmas in the interpretation and application of decisions made by institutional review boards (IRBs) or ethics committees (Reynolds et al., 2022). Decisions related to study design, participant recruitment, and potential risks are subject to ethical scrutiny (Raposo et al., 2022). Researchers must grapple with aligning their research goals with the ethical standards set forth by review boards (Donovan, 2023).

CURRENT ISSUES AND DEBATES

The advent of the digital age has ushered in a new set of ethical challenges in psychological research (Egon & Julia, 2023). As researchers increasingly utilize online platforms, social media, and big data analytics, questions regarding privacy, consent, and data security have become central to ethical debates (Fadda et al., 2022). The rapid pace of technological advancement often outpaces the development of ethical guidelines, creating a complex landscape that necessitates ongoing scrutiny (Debbarma, 2023). The current issues and debates are shown in Table 3.

Table 3. Current Issues and Debates

Current Issues and Debates	Detailed description
Cultural Sensitivity and Diversity	Ensuring cultural sensitivity and diversity in psychological research is an evolving ethical consideration.
Replication and Research Integrity	The issue of replication, or the ability to reproduce research findings, has gained prominence in ethical discussions.
Ethical Considerations in Neuroscientific Research	Advancements in neuroscientific techniques raise unique ethical considerations.

Cultural Sensitivity and Diversity: Ensuring cultural sensitivity and diversity in psychological research is an evolving ethical consideration (Juntunen et al., 2023). Researchers must grapple with the challenge of conducting studies that are inclusive and representative of diverse populations, acknowledging the potential impact of cultural nuances on study outcomes. Ethical debates center on avoiding the imposition of Western-centric perspectives and methodologies (Goffi & Momcilovic, 2022).

Replication and Research Integrity: The issue of replication, or the ability to reproduce research findings, has gained prominence in ethical discussions (Nosek et al., 2022). Concerns about the reproducibility of studies, particularly in high-profile psychological research, have led to debates about research integrity and the robustness of the scientific process (Kekecs et al., 2023). Striking a balance between encouraging innovation and ensuring the reliability of results remains a focal point of these discussions.

Ethical Considerations in Neuroscientific Research: Advancements in neuroscientific techniques raise unique ethical considerations (Jangwan et al., 2022). Researchers employing methods such as functional magnetic resonance imaging (fMRI) or neurostimulation must navigate issues related to the invasive nature of certain procedures, potential impact on participants' autonomy, and the interpretation of complex neural data (Glannon, 2023). Debates surround the ethical boundaries of probing the intricacies of the human brain.

ARTIFICIAL INTELLIGENCE AND ALGORITHMIC BIAS

Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks that typically require human intelligence. These tasks encompass a wide range of activities, including learning, reasoning, problem-solving, perception, natural language understanding, and even creativity (Wang, 2015; Zhang, 2016). AI systems aim to simulate or replicate human cognitive functions, and they can be classified into two main categories: narrow or weak AI, and general or strong AI (Wong & Williams, 2024). Narrow AI is designed for a specific task or a set of tasks, such as image recognition or language translation (Alshahrani et al., 2024). In contrast, general AI is hypothetical and would have the ability to understand, learn, and apply knowledge across a diverse range of tasks, much like a human (Yousefi et al., 2024).

Machine learning is a critical component of AI, enabling systems to learn and improve from experience without being explicitly programmed (Sangaiah, 2020; Wang, 2018). It involves the development of algorithms and models that allow machines to recognize patterns, make decisions, and adapt to new information. AI applications are becoming increasingly prevalent in various industries (Kaneko et al., 2024), including healthcare, finance, transportation, and entertainment. While AI offers tremendous potential for innovation and efficiency (Raman et al., 2024), it also raises ethical and societal concerns, such as privacy, bias, and job displacement, prompting ongoing discussions and efforts to ensure responsible development and deployment of AI technologies (Hou, 2018; Zhang, 2015).

The integration of artificial intelligence (AI) (Wang, 2023; Zhang, 2012) into psychological research has brought about transformative possibilities for data analysis, pattern recognition, and the exploration of complex psychological phenomena (Salah et al., 2023). However, alongside these advancements (Hai et al., 2024), ethical concerns have arisen, particularly in the context of algorithmic bias. The specific manifestation of algorithmic bias is shown in Figure 3.
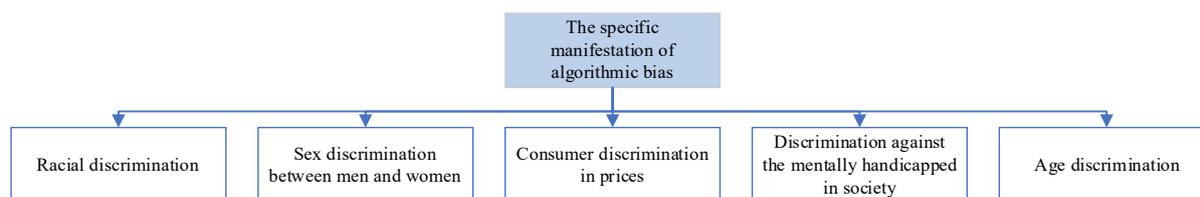

Figure 3. The specific manifestation of algorithmic bias

Algorithmic bias refers to the presence of unfair or prejudiced outcomes in algorithms (Wang, 2021; Zhang & Dong, 2020), often resulting from the biased nature of training data or the algorithm's design (Kordzadeh & Ghasemaghaei, 2022). In the context of psychological research, algorithmic bias can manifest in various ways, influencing the accuracy and fairness of results, and potentially reinforcing societal inequalities (Tilmes, 2022).

Sources of Bias in Psychological Research. (i) Training Data Bias: Algorithms are trained on datasets that may reflect existing societal biases (Castaneda et al., 2022). If the training data is not diverse or contains historical biases, the algorithm may perpetuate or amplify these biases in its predictions or classifications (von Winckelmann, 2023). (ii) Representation Bias: In psychological research, representation bias may occur when certain groups are underrepresented in the training data (Shahbazi et al., 2023). This can lead to inaccurate predictions or generalizations for underrepresented populations. (iii) Cultural and Contextual Bias: Algorithms may struggle to account for cultural variations in psychological phenomena. Failure to consider cultural nuances can result in biased interpretations of psychological states or behaviors. Sources and specific descriptions of bias in psychological research are shown in Table 4.

CONCLUSION

In the dynamic realm of psychological research, the exploration of ethical standards is both a historical retrospective and a forward-looking imperative. From its nascent stages marked by ethical lapses to the establishment of comprehensive ethical guidelines, the discipline has evolved in response to the ever-growing need to balance the pursuit of knowledge with the ethical treatment of research participants. This essay has undertaken a comprehensive journey, examining the historical underpinnings, the current ethical landscape, and emerging challenges within the field.

Table 4. Sources and specific descriptions of bias in psychological research

Sources	Specific description
Training Data Bias	Algorithms are trained on datasets that may reflect existing societal biases. If the training data is not diverse or contains historical biases, the algorithm may perpetuate or amplify these biases in its predictions or classifications.
Representation Bias	Representation bias refers to the tendency of people making probability estimates to focus excessively on certain representative features, ignoring environmental probabilities and sample sizes, leading to biased judgements. In psychological research, representation bias may occur when certain groups are underrepresented in the training data. This can lead to inaccurate predictions or generalizations for underrepresented populations.
Cultural and Contextual Bias	Algorithms may struggle to account for cultural variations in psychological phenomena. Failure to consider cultural nuances can result in biased interpretations of psychological states or behaviors.

Five ways to mitigate algorithmic bias are described below as shown in Table 5. They can be applied to businesses in a variety of industries to help ensure that AI systems are fair and accurate.

Table 5. Five ways to mitigate algorithmic bias

The way to mitigate algorithmic bias	Specific description
Getting better data	The risk of algorithmic bias can be reduced by capturing additional data points or new types of personal information, especially those who may appear inaccurate in existing data.
Preprocessing of data	This includes editing the dataset to obscure or remove information about attributes relevant to anti-discrimination law protections, such as race or gender.
Increasing the complexity of the model	A simple AI model can be easier to test, monitor and interrogate. But it can also be less accurate and lead to favouring the majority over the minority.
Modifying the system	The logic and parameters of the AI system can be proactively adjusted to directly counteract algorithmic bias. This can be done, for example, by setting different decision-making thresholds for vulnerable groups.
Changing forecast targets	The specific measures chosen to guide the AI system will directly affect the way it makes decisions in different groups. Finding a fairer measure to use as a predictive target will help reduce algorithmic bias.

The exploration of ethical guidelines, particularly those set forth by the APA, illuminated the crucial role that these principles play in ensuring the responsible conduct of research. The principles of respect for autonomy, beneficence and non-maleficence, integrity, and justice serve as a compass, guiding researchers through the ethical complexities inherent in the pursuit of knowledge about the human mind.

Ethical dilemmas, as discussed in this essay, are inherent to the research process, manifesting in decisions related to informed consent, privacy, and the treatment of vulnerable populations. The examination of these dilemmas underscores the delicate balance researchers must strike between scientific rigor and the protection of participants, emphasizing the need for nuanced ethical decision-making.

The section on current issues and debates delved into the challenges posed by the digital age, the imperative of cultural sensitivity, the replication crisis, ethical considerations in neuroscientific research, and the intersection of artificial intelligence and algorithmic bias. These issues reflect the evolving landscape of psychological research and demand ongoing ethical reflections and adaptations to ensure the responsible conduct of studies.

As the field progresses, ethical considerations in psychological research extend beyond safeguarding participants to embracing diversity, transparency, and the responsible use of cutting-edge technologies. Researchers are confronted with the task of navigating intricate ethical landscapes, from addressing algorithmic bias in artificial intelligence to promoting inclusivity in study design.

In conclusion, the ethical standards in psychological research serve as the ethical backbone of a discipline committed to unraveling the complexities of the human mind. Navigating this ethical terrain requires not only a commitment to established guidelines but also a proactive engagement with emerging challenges. By fostering a culture of ethical awareness, interdisciplinary collaboration, and a dedication to inclusivity, researchers can ensure that the pursuit of knowledge in psychology remains both scientifically robust and ethically sound. In doing so, the field continues to evolve, adapting its ethical frameworks to the ever-changing landscape of human inquiry.

ACKNOWLEDGMENT

FUNDING

REFERENCES
Adley, M., Alderson, H., Jackson, K., McGovern, W., Spencer, L., Addison, M., & O'Donnell, A. (2023). Ethical and practical considerations for including marginalised groups in quantitative survey research. *International Journal of Social Research Methodology*, 1-16.

Alessi, E. J., & Kahn, S. (2023). Toward a trauma-informed qualitative research approach: Guidelines for ensuring the safety and promoting the resilience of research participants. *Qualitative Research in Psychology*, *20*(1), 121-154.

Allum, N., Reid, A., Bidoglia, M., Gaskell, G., Aubert-Bonn, N., Buljan, I., Fuglsang, S., Horbach, S., Kavouras, P., & Marušić, A. (2023). Researchers on research integrity: a survey of European and American researchers. *F1000Research*, *12*, 187.

Alshahrani, R., Yenugula, M., Algethami, H., Alharbi, F., Goswami, S. S., Naveed, Q. N., Lasisi, A., Islam, S., Khan, N. A., & Zahmatkesh, S. (2024). Establishing the fuzzy integrated hybrid MCDM framework to identify the key barriers to implementing artificial intelligence-enabled sustainable cloud system in an IT industry. *Expert Systems with Applications*, *238*, Article 121732. https://doi.org/10.1016/j.eswa.2023.121732

Aluko-Arowolo, S., Lawal, S. A., Adedeji, I. A., & Nwaobilor, S. (2023). Ethical relativism and circumstances of social and cultural contingencies on informed consent in the conduct of research: clinical trials in Nigeria. *Asian Bioethics Review*, *15*(1), 37-52.

Benjamin Jr, L. T. (2023). *A brief history of modern psychology*. John Wiley & Sons.

Bhaskar, S. M. (2023). An Equity and Justice-Informed Ethical Framework to Guide Incidental Findings in Brain Imaging Research. *Clinics and Practice*, *13*(1), 116-124.

Blanco-Gonzalez, A., Cabezon, A., Seco-Gonzalez, A., Conde-Torres, D., Antelo-Riveiro, P., Pineiro, A., & Garcia-Fandino, R. (2023). The role of ai in drug discovery: challenges, opportunities, and strategies. *Pharmaceuticals*, *16*(6), 891.

Casewell, D. (2022). A Study of Character: Simone Weil's Psychological and Ethical Attention. *TheoLogica: An International Journal for Philosophy of Religion and Philosophical Theology*, *6*(1), 107-126.

Castaneda, J., Jover, A., Calvet, L., Yanes, S., Juan, A. A., & Sainz, M. (2022). Dealing with gender bias issues in data-algorithmic processes: a social-statistical perspective. *Algorithms*, *15*(9), 303.

Cikara, M., Martinez, J. E., & Lewis Jr, N. A. (2022). Moving beyond social categories by incorporating context in social psychological theory. *Nature Reviews Psychology*, *1*(9), 537-549.

Daradkeh, M. (2023). Navigating the complexity of entrepreneurial ethics: A systematic review and future research agenda. *Sustainability*, *15*(14), 11099.

De Gagne, J. C., Hwang, H., & Jung, D. (2023). Cyberethics in nursing education: Ethical implications of artificial intelligence. *Nursing Ethics*, 09697330231201901.

De Sutter, E., Meszaros, J., Borry, P., & Huys, I. (2022). Digitizing the informed consent process: a review of the regulatory landscape in the European Union. *Frontiers in Medicine*, *9*, 1445.

Debbarma, R. (2023). The Changing Landscape of Privacy Laws in the Age of Big Data and Surveillance. *Rivista Italiana di Filosofia Analitica Junior*, *14*(2), 1740-1752.

Donovan, L. (2023). Ethics and review boards. In *Translational Sports Medicine* (pp. 351-356). Elsevier.

Drolet, M.-J., Rose-Derouin, E., Leblanc, J.-C., Ruest, M., & Williams-Jones, B. (2023). Ethical Issues in research: perceptions of researchers, research ethics board members and research ethics experts. *Journal of Academic Ethics*, *21*(2), 269-292.

Egon, K., & Julia, R. (2023). The Evolution of Audience Research: Interdisciplinary Approaches in Information Sciences.

Ejidike, G. O., Onyemaechi, C., Edoka, A. C., Onyekachi, P., & Unadike, M. (2023). Ethical Issues in the Practice of Psychology in Nigeria and USA: Comparative Study with Special Emphasis on Psychotherapy. *International Journal For Psychotherapy In Africa*, *8*(1).

Fadda, M., Sykora, M., Elayan, S., Puhan, M. A., Naslund, J. A., Mooney, S. J., Albanese, E., Morese, R., & Gruebner, O. (2022). Ethical issues of collecting, storing, and analyzing geo-referenced tweets for mental health research. *Digital Health*, *8*, 20552076221092539.

Farnicka, M. (2022). Ethical Behaviour and Social Responsability from the Perspective of Modern Psychology. In *Security and Defence: Ethical and Legal Challenges in the Face of Current Conflicts* (pp. 123-137). Springer.

Friesen, P., Gelinas, L., Kirby, A., Strauss, D. H., & Bierer, B. E. (2023). IRBs and the protection-inclusion dilemma: Finding a balance. *The American Journal of Bioethics*, *23*(6), 75-88.

Glannon, W. (2023). Ethical Issues in Neuroscience Research. In *Medical Research Ethics: Challenges in the 21st Century* (pp. 133-149). Springer.

Goffi, E. R., & Momcilovic, A. (2022). Respecting cultural diversity in ethics applied to AI: a new approach for a multicultural governance. *Misión Jurídica: Revista de derecho y ciencias sociales*, *15*(23), 111-122.

Grant, S., Wendt, K. E., Leadbeater, B. J., Supplee, L. H., Mayo-Wilson, E., Gardner, F., & Bradshaw, C. P. (2022). Transparent, open, and reproducible prevention science. *Prevention Science*, *23*(5), 701-722.

Greeny, K., Rosenberg, N., Fettig, A., & Schwartz, I. (2022). Common struggles of behavior analysts and their relation to the professional and ethical compliance code. *Behavior Analysis: Research and Practice*, *22*(4), 368.

Grzyb, T., & Dolinski, D. (2023). You and I are alike, so I will hold back–The effect of directed empathy on the behavior of participants of Stanley Milgram's obedience paradigm. *Acta Psychologica*, *234*, 103859.

Guzzo, R. A., Schneider, B., & Nalbantian, H. R. (2022). Open science, closed doors: The perils and potential of open science for research in practice. *Industrial and Organizational Psychology*, *15*(4), 495-515.

Hai, T., Alhaider, M. M., Ghodratallah, P., Singh, P. K., Alhomayani, F. M., & Rajab, H. (2024). Techno-economic-environmental study and artificial intelligence-assisted optimization of a multigeneration power plant based on a gas turbine cycle along with a hydrogen liquefaction unit. *Applied Thermal Engineering*, *237*, Article 121660. https://doi.org/10.1016/j.applthermaleng.2023.121660

Hassan, I. (2022). The Absence Of The Role Of United Nation In Middle East Prison And Victimization, How This Affects Prisoners Health. In.

Henry, C., Gohdes, A., & Dorff, C. (2022). Digital footprints and data-security risks for political scientists. *PS: Political Science & Politics*, *55*(4), 804-808.

Hodgetts, D., Hopner, V., Carr, S., Bar-Tal, D., Liu, J. H., Saner, R., Yiu, L., Horgan, J., Searle, R. H., & Massola, G. (2023). Human security psychology: A linking construct for an eclectic discipline. *Review of General Psychology*, *27*(2), 177-193.

Hota, P. K., Bhatt, B., & Qureshi, I. (2023). Institutional work to navigate ethical dilemmas: Evidence from a social enterprise. *Journal of Business Venturing*, *38*(1), 106269.

Hou, X.-X. (2018). Seven-layer deep neural network based on sparse autoencoder for voxelwise detection of cerebral microbleed. *Multimedia Tools and Applications*, *77*(9), 10521-10538. https://doi.org/10.1007/s11042-017-4554-8

Huminuik, K. (2023). The five connections: A human rights framework for psychologists. *International Journal of Psychology*.

Ivey, G. (2023). Interpreting hidden meaning in qualitative research interview data: opportunities and challenges. *Qualitative Research in Psychology*, *20*(1), 21-51.

Jangwan, N. S., Ashraf, G. M., Ram, V., Singh, V., Alghamdi, B. S., Abuzenadah, A. M., & Singh, M. F. (2022). Brain augmentation and neuroscience technologies: current applications, challenges, ethics and future prospects. *Frontiers in Systems Neuroscience*, *16*, 1000495.

Jegan, R., & Dierickx, K. (2023). Ethics without borders: an analysis of national and international guidelines on ethics in basic medical education. *Advances in Health Sciences Education*, 1-22.

Juntunen, C. L., Crepeau-Hobson, F., Riva, M. T., Baker, J., Wan, S., Davis III, C., & Caballero, A. M. (2023). Centering equity, diversity, and inclusion in ethical decision-making. *Professional Psychology: Research and Practice*, *54*(1), 17.

Kaneko, M., Magoulianitis, V., Ramacciotti, L. S., Raman, A., Paralkar, D., Chen, A., Chu, T. N., Yang, Y., Xue, J., Yang, J., Liu, J., Jadvar, D. S., Gill, K., Cacciamani, G. E., Nikias, C. L., Duddalwar, V., Jay Kuo, C. C., Gill, I. S., & Abreu, A. L. (2024). The Novel Green Learning Artificial Intelligence for Prostate Cancer Imaging: A Balanced Alternative to Deep Learning and Radiomics. *The Urologic clinics of North America*, *51*(1), 1-13. https://doi.org/10.1016/j.ucl.2023.08.001

Kekecs, Z., Palfi, B., Szaszi, B., Szecsi, P., Zrubka, M., Kovacs, M., Bakos, B. E., Cousineau, D., Tressoldi, P., & Schmidt, K. (2023). Raising the value of research studies in psychological science by increasing the credibility of research reports: the transparent Psi project. *Royal Society Open Science*, *10*(2), 191375.

Khoa, B. T., Hung, B. P., & Hejsalem-Brahmi, M. (2023). Qualitative research in social sciences: data collection, data analysis and report writing. *International Journal of Public Sector Performance Management*, *12*(1-2), 187-209.

Kipkemboi, J., & Naanyu, V. (2022). Research ethics and scientific innovation nexus: Unpacking the essentials. In *Advances in Phytochemistry, Textile and Renewable Energy Research for Industrial Growth* (pp. 11-17). CRC Press.

Kordzadeh, N., & Ghasemaghaei, M. (2022). Algorithmic bias: review, synthesis, and future research directions. *European Journal of Information Systems*, *31*(3), 388-409.

Korzh, A. (2023). Research with institutionalized populations: Methodological and ethical dilemmas. *Qualitative Research*, 14687941231165890.

Laurijssen, S. J., van der Graaf, R., van Dijk, W. B., Schuit, E., Groenwold, R. H., Grobbee, D. E., & de Vries, M. C. (2022). When is it impractical to ask informed consent? A systematic review. *Clinical Trials*, *19*(5), 545-560.

Liu, B., & Wei, L. (2023). Unintended effects of open data policy in online behavioral research: An experimental investigation of participants' privacy concerns and research validity. *Computers in Human Behavior*, *139*, 107537.

Lomas, T. (2022). Making waves in the great ocean: A historical perspective on the emergence and evolution of wellbeing scholarship. *The Journal of Positive Psychology*, *17*(2), 257-270.

Mascalzoni, D., Melotti, R., Pattaro, C., Pramstaller, P. P., Gögele, M., De Grandi, A., & Biasiotto, R. (2022). Ten years of dynamic consent in the CHRIS study: informed consent as a dynamic process. *European Journal of Human Genetics*, *30*(12), 1391-1397.

Mohammad Amini, M., Jesus, M., Fanaei Sheikholeslami, D., Alves, P., Hassanzadeh Benam, A., & Hariri, F. (2023). Artificial Intelligence Ethics and Challenges in Healthcare Applications: A Comprehensive Review in the Context of the European GDPR Mandate. *Machine Learning and Knowledge Extraction*, *5*(3), 1023-1035.

Nguyen, M.-H., Le, T.-T., & Vuong, Q.-H. (2023). Ecomindsponge: A novel perspective on human psychology and behavior in the ecosystem. *Urban Science*, *7*(1), 31.

Nosek, B. A., Hardwicke, T. E., Moshontz, H., Allard, A., Corker, K. S., Dreber, A., Fidler, F., Hilgard, J., Kline Struhl, M., & Nuijten, M. B. (2022). Replicability, robustness, and reproducibility in psychological science. *Annual review of psychology*, *73*, 719-748.

O'Donohue, W., & Fisher, J. E. (2022). Are illiberal acts unethical? APA's Ethics Code and the protection of free speech. *American Psychologist*.

Perez, K. M., Asim, M., Weiss, E. M., Valentine, G. C., Kavi, A., Somannavar, M. S., Iwuh, I., Chiweza, C., Tickell, K. D., & Singa, B. O. (2023). Considering Risks to Researchers and Staff in Low-Resource Settings during Public Health Crises: A Proposed Conceptual Model. *Children*, *10*(3), 463.

Petkov, C. I., Flecknell, P., Murphy, K., Basso, M. A., Mitchell, A. S., Hartig, R., & Thompson-Iritani, S. (2022). Unified ethical principles and an animal research 'Helsinki' declaration as foundations for international collaboration. *Current Research in Neurobiology*, *3*, 100060.

Pritchett, M., Ala'i-Rosales, S., Cihon, T. M., & Cruz, A. R. (2023). From Fuller to Fawcett: a human rights history of research ethics in behavior analysis. In *Research Ethics in Behavior Analysis* (pp. 1-34). Elsevier.

Raman, A. G., Fisher, D., Yap, F., Oberai, A., & Duddalwar, V. A. (2024). Radiomics and Artificial Intelligence: Renal Cell Carcinoma. *The Urologic clinics of North America*, *51*(1), 35-45. https://doi.org/10.1016/j.ucl.2023.06.007

Raposo, H., Melo, S., & Egreja, C. (2022). Data Protection in Sociological Health Research: A Critical Narrative about the Challenges of a New Regulatory Landscape. *Sociological Research Online*, *27*(4), 1060-1076.

Reynolds, K. A., Harikumar, V. B., Poon, E., West, D. P., & Alam, M. (2022). While ethical considerations predominate, scientific merit can impact Institutional Review Board (IRB) determinations: a cross-sectional study. *Journal of Clinical Epidemiology*, *150*, 12-17.

Rizi, M. H. P., & Seno, S. A. H. (2022). A systematic review of technologies and solutions to improve security and privacy protection of citizens in the smart city. *Internet of Things*, *20*, 100584.

Salah, M., Al Halbusi, H., & Abdelfattah, F. (2023). May the force of text data analysis be with you: Unleashing the power of generative AI for social psychology research. *Computers in Human Behavior: Artificial Humans*, 100006.

Sangaiah, A. K. (2020). Alcoholism identification via convolutional neural network based on parametric ReLU, dropout, and batch normalization. *Neural Computing and Applications*, *32*, 665-680. https://doi.org/10.1007/s00521-018-3924-0

Schmidt, U. (2023). From Nuremberg to Helsinki: Historicizing the Codification of Post-War Research Ethics. In *Ethical Innovation for Global Health: Pandemic, Democracy and Ethics in Research* (pp. 149-174). Springer.

Schütz, M., & Braswell, H. (2023). Ethicizing history. Bioethical representations of Nazi medicine. *Bioethics*.

Shahbazi, N., Lin, Y., Asudeh, A., & Jagadish, H. (2023). Representation Bias in Data: A Survey on Identification and Resolution Techniques. *ACM Computing Surveys*.

Shamim, F., & Qureshi, R. (2023). INFORMED CONSENT IN EDUCATIONAL RESEARCH IN THE SOUTH. *Educational Research Practice in Southern Contexts: Recentring, Reframing and Reimagining Methodological Canons*.

Silander, N., & Tarescavage, A. (2023). Ideological bias in American Psychological Association communications: Another threat to the credibility of professional psychology. In *Ideological and political bias in psychology: Nature, scope, and solutions* (pp. 315-342). Springer.

Sinclair, D., Heap, A., Norris, K., Carey, R., Anderson, C., & Lea, E. (2023). End user perspectives on design and conduct of health-related disaster research. *International Journal of Disaster Risk Reduction*, *96*, 103919.

Spranger, J., Homberg, A., Sonnberger, M., & Niederberger, M. (2022). Reporting guidelines for Delphi techniques in health sciences: A methodological review. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*, *172*, 1-11.

Stahl, B. C., & Eke, D. (2024). The ethics of ChatGPT–Exploring the ethical issues of an emerging technology. *International Journal of Information Management*, *74*, 102700.

Tilmes, N. (2022). Disability, fairness, and algorithmic bias in AI recruitment. *Ethics and Information Technology*, *24*(2), 21.

Tritt, M. (2022). Social Work Experiences of Moral Distress Amid COVID-19.

von Winckelmann, S. L. (2023). Predictive algorithms and racial bias: a qualitative descriptive study on the perceptions of algorithm accuracy in higher education. *Information and Learning Sciences*, *124*(9/10), 349-371.

Walker, V. G. (2022). Elder's life course theory and person-centered research: A lens for conducting ethical nursing research and mental health nursing practice with older adults aging with the diagnosis of schizophrenia. *Journal of Psychiatric and Mental Health Nursing*, *29*(6), 904-914.

Wang, J. Z., Zhao, S., Wu, C., Adams, R. B., Newman, M. G., Shafir, T., & Tsachor, R. (2023). Unlocking the Emotional World of Visual Media: An Overview of the Science, Research, and Impact of Understanding Emotion Drawing Insights From Psychology, Engineering, and the Arts, This Article Provides a Comprehensive Overview of the Field of Emotion Analysis in Visual Media and Discusses the Latest Research, Systems, Challenges, Ethical Implications, and Potential Impact of Artificial Emotional Intelligence on Society. *Proceedings of the IEEE*.

Wang, S. (2015). Feed-forward neural network optimized by hybridization of PSO and ABC for abnormal brain detection. *International Journal of Imaging Systems and Technology*, *25*(2), 153-164. https://doi.org/10.1002/ima.22132

Wang, S. (2023). Grad-CAM: understanding AI models. *Computers, Materials & Continua*, *76*(2), 1321-1324.

Wang, S.-H. (2018). Intelligent facial emotion recognition based on stationary wavelet entropy and Jaya algorithm. *Neurocomputing*, *272*, 668-676. https://doi.org/https://doi.org/10.1016/j.neucom.2017.08.015

Wang, S.-H. (2021). Covid-19 classification by FGCNet with deep feature fusion from graph convolutional network and convolutional neural network. *Information Fusion*, *67*, 208-229. https://doi.org/10.1016/j.inffus.2020.10.004

Washington, V., Franklin, J. B., Huang, E. S., Mega, J. L., & Abernethy, A. P. (2023). Diversity, equity, and inclusion in clinical research: a path toward precision health for everyone. *Clinical Pharmacology & Therapeutics*, *113*(3), 575-584.

Wong, D. C., & Williams, S. (2024). Artificial intelligence analysis of videos to augment clinical assessment: an overview. *Neural Regeneration Research*, *19*(4), 717-718. https://doi.org/10.4103/1673-5374.382249

Young, G., & Kenny, M. C. (2023). Focusing the APA Ethics Code to Include Development: Applications to Abuse. *Journal of Child & Adolescent Trauma*, *16*(1), 109-122.

Yousefi, S., Huang, X., Poursoroush, A., Majoor, J., Lemij, H., Vermeer, K., Elze, T., Wang, M., Nouri-Mahdavi, K., Mohammadzadeh, V., Brusini, P., & Johnson, C. (2024). An Artificial Intelligence Enabled System for Retinal Nerve Fiber Layer Thickness Damage Severity Staging. *Ophthalmology science*, *4*(2), 100389. https://doi.org/10.1016/j.xops.2023.100389

Yua, E., Raymond-Yakoubian, J., Daniel, R. A., & Behe, C. (2022). A framework for co-production of knowledge in the context of Arctic research.

Zhang, Y. (2012). Classification of Fruits Using Computer Vision and a Multiclass Support Vector Machine. *Sensors*, *12*(9), 12489-12505. https://www.mdpi.com/1424-8220/12/9/12489

Zhang, Y. (2015). Pathological brain detection in MRI scanning by wavelet packet Tsallis entropy and fuzzy support vector machine. *SpringerPlus*, *4*(1), Article 716. http://www.springerplus.com/content/4/1/716

Zhang, Y.-D., & Dong, Z.-C. (2020). Advances in multimodal data fusion in neuroimaging: Overview, challenges, and novel orientation. *Information Fusion*, *64*, 149-187. https://doi.org/https://doi.org/10.1016/j.inffus.2020.07.006

Zhang, Y. D. (2016). Facial Emotion Recognition Based on Biorthogonal Wavelet Entropy, Fuzzy Support Vector Machine, and Stratified Cross Validation. *IEEE Access*, *4*, 8375-8385. https://doi.org/10.1109/ACCESS.2016.2628407