

Psychology Artificial intelligence between the two views and application

علم النفس الذكاء الاصطناعي بين النظرية والتطبيق

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Research Summary:

The study of the relationship between psychology and artificial intelligence reflects an interesting overlap between theory and practice. This study examines how AI affects individuals' behaviors and interaction with technology, opening new avenues for understanding psychological dynamics. By analyzing machine learning methods, we can explore how these technologies contribute to shaping users' emotional thinking and response patterns, as well as their impact on social relationships.

Despite the potential benefits, this study raises ethical and social issues related to the increasing reliance on artificial intelligence. Concerns about privacy and control are reviewed, which contributes to a complex picture of AI as an enabler versus a barrier to human relationships. This study is a call to rethink how AI is integrated in line with the psychosocial needs of individuals.

In conclusion, this study highlights the need to develop theoretical frameworks that are suitable for the practical applications of artificial intelligence in the field of psychology. These frameworks guide future research and provide guidelines for application designers seeking to improve the interaction

between humans and technology, enhancing public understanding of the impact of AI on the human psyche.

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ملخص البحث:

تظهر دراسة العلاقة بين علم النفس والذكاء الاصطناعي تداخلاً مثيراً بين الجوانب النظرية والتطبيقية. تركز هذه الدراسة على تأثير الذكاء الاصطناعي في سلوك الأفراد وتفاعلهم مع التقنية، مما يوفر فرصاً جديدة لفهم الديناميات النفسية. عن طريق تحليل أساليب التعليم الآلي، يمكننا اكتشاف كيفية مساهمة هذه التقنيات في تشكيل أنماط التفكير والاستجابة العاطفية للمستخدمين، وكذلك تأثيرها في العلاقات الاجتماعية.

رغم الفوائد الممكنة، تثير هذه الدراسة قضايا أخلاقية واجتماعية بسبب الاعتماد المتزايد على الذكاء الاصطناعي. تُطرح مخاوف حول الخصوصية والرقابة، مما يجعل الصورة حول الذكاء الاصطناعي معقدة؛ فهو يمكن أن يكون أداة مفيدة أو عقبة أمام العلاقات الإنسانية والعقل البشري. لذا، تعد هذه الدراسة دعوة إلى التفكير في كيفية استخدام الذكاء الاصطناعي بما يتناسب مع احتياجات الأفراد النفسية والاجتماعية.

في آخر الأمر، تُبرز هذه الدراسة أهمية تأسيس أفكار نظرية تتناسب مع تطبيقات الذكاء الاصطناعي في مجال علم النفس. تُسهم هذه الأفكار في توجيه الأبحاث المستقبلية وتقديم إرشادات للمصممين الذين يسعون لتحسين التفاعل بين البشر والتكنولوجيا، مما يُسهم في تعزيز فهم تأثير الذكاء الاصطناعي على النفس البشرية. الكلمات المفتاحية: علم النفس، الذكاء الاصطناعي.

Definition of artificial intelligence and its importance in psychology:

Artificial intelligence is emerging as a leading science with the ability to simulate human thought processes and analyze data in unprecedented ways. Its role in psychology is to develop applications that contribute to understanding human behaviors and the needs of individuals by analyzing the vast amount of information. For example, artificial intelligence is used to analyze behavioral patterns which helps psychiatrists diagnose mental

disorders more accurately, leading to improved treatment outcomes. In addition, the use of this technology contributes to the improvement of psychological support tools, as artificial intelligence systems can provide immediate and proportionate responses to a person's feelings and situation. By integrating this technology into psychology practices, specialists can develop advanced strategies to promote mental health and support individuals with various psychological challenges.

Overview of the overlap of psychology and artificial intelligence

Recent studies point to the importance of deep understanding of the overlap between psychology and artificial intelligence, as each can significantly contribute to the other. While psychology relies on theories of behavior and knowledge to understand how humans process information, AI provides models capable of mimicking these cognitive processes. For example, research shows how models such as element response theory (IRT) can be used to develop educational assessment tools that align with knowledge-based learning strategies. Psychological, as evidenced by the work done (A Rupp et al.) Which highlights the important role of cognitive processes in the development of measurement models. Also, the use of self-awareness and self-reflection, as addressed (P Hulbig), is key in addressing how individuals interact with smart systems, highlighting the need for an integrated system that combines these two areas to ensure greater effectiveness in practical applications.

Purpose and importance of research

The importance of this research is to shed light on the complex relationship between AI and psychology, as it contributes to

understanding how AI affects human behavior and daily interactions. By studying the human psyche through the lens of artificial intelligence, new insights can be provided on how to improve human-machine interaction, which goes beyond just technological application. This also requires a careful understanding of basic concepts such as military artificial intelligence, as has been put forward in previous studies, as the use of artificial intelligence in military fields aims to improve efficiency and effectiveness in military operations, which requires a clear organization and an accurate definition of these concepts. Therefore, the purpose of this research is to provide a comprehensive framework for understanding the psychological dimensions of artificial intelligence, which contributes to enhancing practical applications and establishes organizational foundations that keep pace with rapid developments in this field.

Theoretical foundations of artificial intelligence in psychology

The theoretical foundations of artificial intelligence in psychology are a starting point for understanding how intelligent systems interact with humans from a psychological perspective. By integrating research findings from comparative psychology and evolutionary biology, it is shown that emotional models play a key role in building those interactions. By developing interactive models such as the emotional threshold model and the dynamic point model, a framework is provided to understand how emotions affect human decisions and interactions with artificial intelligence (Liu C-Y). In addition, the increasing use of concepts such as emotional and participatory response supports the complexity of the human-machine relationship, calling for a reconsideration of prevailing theories

in sustainable supply chain management and the interaction of evolving systems with market needs (Govindan K) This renewed interaction shows the importance of integrating psychological insights with technological advancements to achieve a deeper understanding of the nature of AI and its effects on individuals' behaviors.

Cognitive models and their impact on the development of artificial intelligence

Cognitive models play a pivotal role in the development of artificial intelligence, contributing to understanding how intelligent systems process data and learn from experiments. These models are based on simulating human mental processes, which help create systems capable of interacting more effectively with users. By leveraging modern technology such as virtual reality, this understanding can be enhanced, as such technologies offer environments that simulate reality and allow individuals to interact with systems in new and innovative ways (Singha R et al.) Similarly, research suggests that relying on cognitive analysis enhances our ability to develop AI applications, improving the effectiveness of these applications in addressing complex problems (Hossain K) It turns out that cognitive models are not just theoretical tools, but represent the basis on which AI development stands in the age of advanced technology.

Psychological theories that inform AI behavior and decision-making

Psychological theories are deeply intertwined with AI behavior and how decisions are made. These theories represent a set of

concepts that are based on understanding human behavior and applying it to intelligent systems. For example, some theories highlight how information is processed and how this affects the reliance on big data in decision-making, reflecting the importance of having effective decision support tools aimed at improving decision quality (Pynoo et al. 2013). Similarly, a deep understanding of stakeholders' needs promotes the effectiveness of Artificial intelligence technologies, where the presence of technologies such as machine learning emphasizes their role in enhancing the ability to provide reliable analytics based on accurate data ((Ahani N et al.)). Thus, AI can be positioned to be a tool capable of simulating human behavior, facilitating decision-making and enhancing the efficiency of intelligent systems in general.

Ethical Considerations in Psychological Modeling of Artificial Intelligence

Ethics in the psychological modeling of AI is a core issue that requires special attention, as these concepts are intertwined with the basic principles of psychotherapy. To be sure, the widespread use of AI in areas such as psychotherapy can bring about positive changes, but it also brings significant risks related to self-understanding and emotions. In this context, the research points to the importance of developing AI models that are transparent and trustworthy, as equipping these models with the capabilities of theory of mind can increase of their credibility as interlocutors, enhancing teaching and learning experiences, as mentioned in (Miraglia L)other hand, competition in the development of AI models in the areas of mental health reflects an urgent need to ensure research responsibility and critical evaluation of these models, as described in (Elizabeth C Stade et

al.)Thus, psychological models of AI must adopt an ethical system capable of facing challenges and even exploring opportunities to enhance the effectiveness of psychotherapy.

Human-Artificial Intelligence Interaction

The interaction between humans and AI is a complex phenomenon that requires a deep understanding of the psychological and social transformations that occur in individuals. Many users feel that there is an emotional interaction with AI systems, which makes them deal with them in a similar way to the way they interact with humans. According to studies, the perception of AI as a level of awareness can lead to side effects on individuals' behavior towards others, as patterns of thinking and behavior are activated that can promote positive interaction between humans(Rose E Guingrich et al.)Furthermore, the results show that motivation and cognitive factors influence how individuals interact with technical systems, as the level of knowledge of individuals' behavioral performance is associated with these systems, promoting creativity and innovation (Lyu Z et al.)Therefore, this dynamic must be given importance in the study of the human psyche and the integration of artificial intelligence into everyday life.

The psychological effects of artificial intelligence on human behavior and perception

Rapid developments in the field of artificial intelligence have profoundly affected human behavior and cognition, raising questions about how this technology affects mental health. Studies show that the continued use of AI applications may lead to changes in how individuals interact with those around them,

as overreliance on these systems can lead to a deterioration in social skills and interpersonal communication. Research into the psychological effects of AI shows that these systems may promote loneliness Weakened social bonds, which compounds feelings of anxiety and depression in individuals. In this context, it is important to develop strategies aimed at balancing the use of artificial intelligence, so that human relations remain at the center, taking into account the psychological effects ((A V et al. Meshcheryakova) (Agnieszka et al. Radzimińska.(

User experience and the role of empathy in AI design

User experience contributes significantly to the success of AI applications, as it requires designing experiences that simulate users' internal needs and make them feel understood and valued. Empathy is essential in this context, as it enables developers to design intelligent systems that respond to users' feelings and behaviors. This is evident in how artificial intelligence is used to enhance diagnostic accuracy, as Saleh M pointed out(Salah M), where techniques can provide more personalized responses, enhancing the effectiveness of psychotherapy. It also reflects the growing role of AI in the development of gaming experiences, improving social understanding and ethical commitment, as outlined in (Kumar K). Hence, the necessary assurance of empathy in design highlights that applicable technology is not just technical improvements, but human experiences that strengthen the bonds between individuals and intelligent systems.

Trust and reliance on AI systems in decision-making processes

With rapid developments in the field of artificial intelligence, relying on these systems in decision-making processes is becoming increasingly important. Studies have shown that AI can improve decision-making accuracy and enhance efficiency by providing data-driven insights, reducing the risks associated with human decisions. However, reliance on these systems faces challenges related to trust, with some concerned that there are biases in AI algorithms that could affect outcomes (Balbaa M et al.) Building trust in these systems requires transparency and clarity in how they work. Understanding how AI works and how it interacts with human capabilities is essential to ensure its responsible and ethical use, enhancing community trust in technology-based systems (Antunes HS et al.).

Applications of artificial intelligence in psychological practice

Research in the field of artificial intelligence is accelerating significantly, opening up new avenues for scientists and psychologists to improve psychological applications. These applications can enhance the effectiveness of psychotherapy and provide personalized solutions that suit the needs of each individual, as artificial intelligence works to accurately analyze the behavioral and psychological data of individuals. These analyses are not only to reinforce traditional treatment methods, but also to facilitate training needs and provide data-driven feedback, leading to better outcomes in psychological practice (Chen Z) In addition, recent literature has addressed how AI relates to important ethical issues, such as privacy and accountability, requiring practitioners to be careful to ensure that technology is used in responsible and efficient ways (A Cavanna) In the end, these discussions show how AI can radically transform contemporary psychological practices, requiring

further research and study to understand these dynamics more deeply.

Artificial Intelligence in Educational Psychology and Mental Health

AI technology is increasingly intertwined with the fields of educational psychology and mental health, opening up new avenues for improving the quality of education and psychotherapy. By analyzing the uses of AI, it is shown that applications such as emotion analysis by machine learning algorithms have helped to understand human behaviors more deeply, enabling a more accurate response to the needs of individuals in education and mental health institutions (Abrar SMAM). In addition, smart chat programs such as ChatGPT are an innovative way to support mental health, providing instant and personalized interaction for people seeking help, reducing the stigma associated with seeking psychological support and increasing access to psychological resources (Lin Y) However, challenges remain related to the accuracy of the information provided by AI, which necessitates its responsible use to ensure its effectiveness and security in these areas.

The role of artificial intelligence in enhancing psychological research methodologies

Artificial intelligence has become a key element in the development of psychological research methodologies, as it clearly contributes to improving diagnostic and treatment methods. AI is a way to enhance research tools, through the use of techniques such as predictive analysis and pattern recognition, allowing researchers to deliver personalized interventions tailored to actual patient needs. In this context,

studies show that integrating AI tools into psychological research can increase the efficiency and effectiveness of clinical practices, as evidenced in the study that It included the application of modern techniques in improving accuracy and quality in psychotherapy, as it showed positive results on the development of new methodologies based on knowledge augmented by artificial intelligence (Safa' Abunasrieh et al., p. 1-5)Despite these advantages, it is also necessary to take into account ethical considerations and the challenges involved in the use of these technologies, which calls for the development of standards and guidelines to ensure responsible use (Chambers L et al.).

Challenges and limitations facing AI applications in psychology

challenges facing the applications of artificial intelligence in psychology are fundamental issues that require in-depth study. The lack of clear criteria for evaluating the effectiveness of these applications creates gaps in trust between practitioners and the tools used, negatively affecting therapeutic outcomes. In addition, the data used to train AI models often reflect social and cultural biases, which can lead to inaccurate or inappropriate recommendations for specific individual cases (Jotterand F et al.)These limitations are due to the lack of diversity in data samples and negative perceptions surrounding AI, as some believe that there are limits to what AI can offer in a humanitarian field such as psychology. Therefore, it is necessary to develop comprehensive tools that take into account the psychological and cognitive aspect of the human being to ensure effective results.

Conclusion:

The deductive process is one of the fundamental aspects of psychology, especially when it comes to understanding human interactions under advanced technology such as artificial intelligence. The ability to infer results from behavioral experiments helps form theories linking human behavior to artificial intelligence techniques. Studies such as (V Capraro et al.), indicates that linguistic axes play a crucial role in decision-making, which calls for a rethinking of how linguistic factors influence the conclusions reached by individuals. In parallel, research such as (Lyu Z et al.) The importance of psychological motivations and social interactions that occur as a result of the use of modern technologies. Hence, the conclusion calls for the integration of these variables to understand how AI affects creative behavior and innovative thought processes, contributing to the development of more effective educational and therapeutic strategies.

Summary of key findings and insights:

By reviewing the main findings in the field of AI psychology, it is clear that there is an increasing interaction between theoretical models and practical applications. Research has shown that AI can not only transcend specific applications, but must also integrate a deep understanding of the psychological dimensions associated with human decisions. This integration opens up new avenues for understanding how intelligent systems can enhance the capabilities of the human mind. Furthermore, evidence suggests that the design of decision support tools should take place Based on an in-depth analysis of users' needs, which facilitates reliance on these systems and increases their effectiveness (Ahani N et al.) Hence, the changing future in this field requires continuous innovation and a focus on

psychological factors to improve the user experience and ensure the effectiveness of AI in addressing current challenges.

Future directions for research in psychology and artificial intelligence

The intersection between psychology and artificial intelligence represents a tremendous opportunity to expand the horizons of research in both fields. In recent years, studies in this direction have seen remarkable growth, with research pointing to the importance of understanding human behavior through the lens of artificial intelligence. According to the study conducted between 2012 and 2022, consumer behavior and behavioral knowledge were studied along with machine learning techniques, highlighting the role of artificial intelligence in guiding decision-making in complex worlds (Aoujil Z et al., p. 139367-139394)). On the other hand, analysis based on technical information in education shows that the use of modern technologies can improve how students understand psychological knowledge (Liu H et al.) Therefore, researchers should seek to promote cooperation between research fields and develop strategies that combine originality and innovation, which contribute to enhancing mutual understanding and opening doors to a bright future in this field.

Final thoughts on the implications of AI in practice and psychological theory

The results of AI applications are evident in multiple fields, but its impact on practice and psychological theory is particularly important. The integration of AI in the diagnosis of mental illness

and treatment has led to significant improvements in assessment accuracy and responsiveness. These tools enable specialists to provide personalized care based on big data, enhancing the effectiveness of therapeutic approaches. However, these developments raise questions about ethics and privacy, as personal information overlaps with AI algorithms. In theory, the adoption of AI requires a reconsideration of traditional perceptions of human behavior, which calls for the development of new models that integrate technology into the psychological framework. Reflecting on this intersection between AI and psychology opens up new avenues for understanding and application but requires constant awareness of the ethical and professional challenges involved.

References:

Safa' Abunasrieh, Huthaifa Abdullah Alqeisi, Dalia Yaser Akileh, Abdallah M. A. Al-Tarawneh. "Exploring the Role of Artificial Intelligence Applications in Developing Clinical Psychological Research: Implications and Future Aspirations". 2024 2nd International Conference on Cyber Resilience (ICCR), 2024, <https://www.semanticscholar.org/paper/9f032d15fceda7ff26003dcdb2eb895de32af8>

Leah Chambers, William J. Owen. "The Efficacy of GenAI Tools in Postsecondary Education". Brock Education Journal, 2024, <https://www.semanticscholar.org/paper/21098abe35d91006c9f31eeda5642b6fc4cc0632>

Narges Ahani, Andrew C. Trapp. "Human-Centric Decision Support Tools: Insights from Real-World Design and Implementation". ArXiv, 2021, <https://www.semanticscholar.org/paper/7618ac643f75b0f2770d213758edd6a061ae2ec3>

P. Hulbig. "Metacognition at the Program for the Advancement of Learning". 2018,

Al-Iraqa Foundation for Culture and Development website (scientific website) Issue4, 29/08/2024

<https://www.semanticscholar.org/paper/1c24aff2ad734b778c734b1c93b851506007fdeb>

A. Rupp, R. Mislevy. "Cognitive Diagnostic Assessment for Education: Cognitive Foundations of Structured Item Response Models". 2007, <https://www.semanticscholar.org/paper/705d70e89fe60c9debf3fe41e31344dd859dcb69>

Zakaria Aoujil, Mohamed Hanine, E. Flores, Md Abdus Samad, Imran Ashraf. "Artificial Intelligence and Behavioral Economics: A Bibliographic Analysis of Research Field". IEEE Access, 2023, <https://www.semanticscholar.org/paper/4ae8e025ed58dfa3f32bf492b3ab28b5191f5b12>

Huan Liu, Jiayuan Chen, Yujiao Li, Wenxing Luo. "Application of information technology in education--- CiteSpace-based visualisation and analysis". Proceedings of the 2023 International Conference on Information Education and Artificial Intelligence, 2023, <https://www.semanticscholar.org/paper/e4caa7c4508c4b8dd4c1c1503a63eb641b1cc547>

Zhisheng Chen. "Responsible AI in Organizational Training: Applications, Implications, and Recommendations for Future Development". Human Resource Development Review, 2024, <https://www.semanticscholar.org/paper/1e33c6909c030039989814cf426db9695c6c8d52>

A. Cavanna. "The origin of consciousness and beyond". Frontiers in Psychology, 2014, <https://www.semanticscholar.org/paper/aded2ad11830f25f2253e3975bc30d0db2e9e432>

V. Capraro, Roberto Di Paolo, M. Perc, Veronica Pizziol. "Language-based game theory in the age of artificial intelligence". Journal of the Royal Society Interface, 2024, <https://www.semanticscholar.org/paper/bf61d4b7f52d9573e5bced3216d6a36374df3661>

Zhenlei Lyu, Xiao Wang. "The Impact of Artificial Intelligence Technology on Individual Behavior from the Perspective of Social Psychology". International Journal of Frontiers in Sociology, 2023, <https://www.semanticscholar.org/paper/5e450edc47f86e06e6919f64a1c4dc037e2d6d7c>

Al-Iraqa Foundation for Culture and Development website (scientific website) Issue4, 29/08/2024

Rose E. Guingrich, Michael S. A. Graziano. "Ascribing consciousness to artificial intelligence: human-AI interaction and its carry-over effects on human-human interaction". *Frontiers in Psychology*, 2024, <https://www.semanticscholar.org/paper/8eb3e5a8a6208226462e89d353ea22386f94af19>

Chong-Yi Liu. "Affective foundations in AI-human interactions: Insights from evolutionary continuity and interspecies communications". *Computers in Human Behavior*, 2024, <https://www.sciencedirect.com/science/article/pii/S0747563224002747>

Kannan Govindan. "Unravelling and mapping the theoretical foundations of sustainable supply chains: A literature review and research agenda". *Transportation Research Part E: Logistics and Transportation Review*, 2024, <https://www.sciencedirect.com/science/article/pii/S136655452400276X>

Mohammed Salah. "The good, the bad, and the GPT: Reviewing the impact of generative artificial intelligence on psychology". *Current Opinion in Psychology*, 2024, <https://www.sciencedirect.com/science/article/pii/S2352250X2400085X>

Kailash Kumar. "Game-changing intelligence: Unveiling the societal impact of artificial intelligence in game software". *Entertainment Computing*, 2024, <https://www.sciencedirect.com/science/article/pii/S1875952124002301>

Hossain K.. "TECHNOLOGY IS TRANSFORMING THE EDUCATION SYSTEM IN MODERN ERA". *Norwegian Journal of development of the International Science*, 2023, <https://zenodo.org/doi/10.5281/zenodo.10055074>

Ranjit Singha, The Native Tribe. "Exploring the Potential of Virtual Reality in Healthcare: Opportunities for Addiction Prevention, Management, and Mindfulness". *Open Science Framework*, 2023, <https://osf.io/ymfzw/>

A. V. et al. Meshcheryakova. "Annual Reports Of Education, Health And Sport 9781329899971". *Zenodo*, 2013, <https://zenodo.org/record/46021>

Agnieszka et al. Radzimińska. "Annual Reports Of Education, Health And Sport 9781329876002". *Zenodo*, 2013, <http://zenodo.org/record/45472>

Shulga A. M. "Lawful Behavior as a Type of Social Behavior of a Person". *Zenodo*, 2023, <https://zenodo.org/record/7699517>

Al-Iraqa Foundation for Culture and Development website (scientific website) Issue4, 29/08/2024

R. N. et al. Boris. "Annual Reports Of Education, Health And Sport 9781329900547". Zenodo, 2014, <http://zenodo.org/record/46138>

Shaikh Mohd Azhar Mohd Abrar. "Integrating Artificial Intelligence with Human Psychology". International Journal of Advanced Research in Science, Communication and Technology, 2024, <https://www.semanticscholar.org/paper/a22e7a2fd44bc5e806c8f89a7609b83d85039a7a>

Yechao Lin. "New psychological education: Leveraging the power of ChatGPT and artificial intelligence". Applied and Computational Engineering, 2024, <https://www.semanticscholar.org/paper/a6655e2c928eb563f4821e1ec97e687da5210d8d>

Muhammad Balbaa, Marina Abdurashidova. "The Impact of Artificial Intelligence in Decision Making: A Comprehensive Review". EPRA Publishing, 2024, <https://radensa.ru/wp-content/uploads/2024/05/5.MuhammadEid15747.pdf>

Henrique Sousa Antunes, Pedro Miguel Freitas, Arlindo L. Oliveira, Clara Martins Pereira, Elsa Vaz de Sequeira, Luís Barreto Xavier. "Multidisciplinary Perspectives on Artificial Intelligence and the Law". Springer, 2024, <https://doi.org/10.1007/978-3-031-41264-6>

Laura Miraglia. "The Promise of Generative Artificial Intelligence: Psychological Implications in Educational Contexts". 2024, https://rivista.pfse-auxilium.org/en/pdf/rse/laura-miraglia_rse01-2024.pdf

Elizabeth C. Stade, Shannon Wiltsey Stirman, Lyle Ungar, H. Andrew Schwartz, David B. Yaden, João Sedoc, Robert J. DeRubeis, Robb Willer, Johannes C. Eichstaedt. "Artificial Intelligence Will Change the Future of Psychotherapy: A Proposal for Responsible, Psychologist-Led Development". 2023, <https://psyarxiv.com/cuzvr>

Fabrice Jotterand, Marcello Ienca. "Artificial Intelligence in Brain and Mental Health: Philosophical, Ethical & Policy Issues". Springer Nature, 2022-02-11, https://play.google.com/store/books/details?id=G6deEAAAQBAJ&source=gbs_api