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Artificial Intelligence in the Future of Psychology: The Role of Information, Experience, and Emotion in Shaping Psychology Students' Attitudes

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Abstract

Although Artificial Intelligence and its applications in medicine are growing rapidly, its integration into mental health remains at an early stage. The aim of the study is to evaluate psychology students' attitudes and the significance of brief interventions towards Artificial Intelligence systems and their application in mental healthcare. The study involved 62 psychology students (M= 23.19±4.69; 85.5% women). Thirty-one participants tested the Artificial Intelligence-based emotional support app *Wysa*, and thirty-one others watched a presentation on the use of Artificial Intelligence in providing psychological assistance, based on the latest scientific research. Attitudes towards Artificial Intelligence were assessed before and after the interventions using the *General Attitudes towards Artificial Intelligence Scale* and an adapted version of the *Questionnaire for Attitudes Toward Medical Application of Artificial Intelligence* to examine psychologists' attitudes towards the use of artificial intelligence in their work. During interventions, facial expression analysis software *FaceReader* was used to assess participants' emotions. Following a scientific presentation, participants showed significative increases in positive attitudes, compared to those who used *Wysa*. While improvements in negative attitudes were noted, these did not differ significantly between groups. Positive changes in perceived Artificial Intelligence advantages were positively associated with feelings of surprise and fear, and negatively with contempt and disgust. Perceived Artificial Intelligence disadvantages correlated positively with contempt. The scientific presentation helped students develop more positive attitudes toward Artificial Intelligence, suggesting that education on Artificial Intelligence is important in shaping future psychologists' view on new technologies. Emotional responses (particularly surprise, fear, disgust, and contempt) played a significant role in these attitude changes.
Key words: Artificial Intelligence, emotion, mental health, Wysa, FaceReader, psychology students.

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Novelty and Significance

What is already known about the topic?

- Emotional experiences play an essential role in shaping individuals' attitudes towards new technologies.
- Attitudes significantly influence willingness to adopt new technologies, including Artificial Intelligence.

What this paper adds?

- Evidence-based educational interventions shape future psychologists' attitudes toward Artificial Intelligence, showing the importance of educational strategies for successful technology adoption in mental healthcare.
- Emotions influence how people form attitudes toward Artificial Intelligence, showing that emotional aspects should be considered in Artificial Intelligence education.

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Constantly advancing technologies are transforming everyday life, increasing work efficiency, and enabling people to have more meaningful, productive, and fulfilling work experiences (George & George, 2022). Artificial intelligence (AI) is a science and technology that aims to create tools with human intelligence functions such as thinking, learning, and problem-solving (Theodosiou & Read, 2023). While AI tools are increasingly being applied in medicine, benefiting both medical staff and patients (Jackevičius, 2024; Liu, Liu, Wu, Xie, Feng, & Hu, 2018), their integration into mental health care remains limited (Jin, Li, Xie, & Xiao, 2023). Despite the early stages of integration, AI methods are increasingly being used in psychology (Dwyer, Falkai, & Koutsouleris, 2018). This trend is further fueled by the European Union's strategic investments in the development, application, and regulation of AI tools (Baltrūnienė, 2022), the novelty of AI in psychology, and the widespread prevalence and sensitivity of negative psychological conditions. Regarding these aspects, it is important to foster psychologists' curiosity and to encourage psychology students' interest in working in the field of AI (Gado, Kempen, Lingelbach, & Bipp, 2022).

Even though AI adoption in mental health care has been gradual, the recognition of its considerable potential in the delivery of mental health services is growing (Singh, 2023). A particularly promising area of AI in mental health is Natural Language Processing (NLP) models, as much of the data in this field consists of text and conversations (Jin *et alii*, 2023). One notable example is the utilization of chatbots, which are capable of simulating empathetic, human-like responses and providing support and assistance (Singh, 2023). Examples of such chatbots include the mobile application *Woebot*, a cognitive-behavioral therapy chatbot that has demonstrated reduced alcohol and substance use, depression, anxiety, cravings, the frequency of triggers, and higher confidence in resisting substance use; and mental health chatbot Tess, that has been observed to reduce depression and anxiety symptoms in individuals who utilized Tess over a period of four weeks (Fulmer, Joerin, Gentile, Lakerink, & Rauws, 2018; Prochaska *et alii*, 2021). These chatbots are especially promising for individuals facing challenges in accessing traditional mental health services due to factors such as time constraints, geographical distance, or financial limitations (Singh, 2023). In addition, therapies using virtual reality and chatbots can help overcome communication barriers that some people face (Zidaru, Morrow, & Stockley, 2021). Also, NLP models have been shown to predict the onset of psychosis -a classifier analyzing speech characteristics predicted psychosis with 83% accuracy when tested on the database used to train the algorithm and with 79% accuracy when tested on a separate, independent database (Corcoran *et alii*, 2018).

The advantages of applying AI in mental health care include early detection of disorders, reduced costs, the ability to meet the needs of minority groups and populations with insufficient access to psychological help, and easier accessibility for those concerned about societal stigma related to mental health. Moreover, some AI tools in this field can be used independently, allowing individuals without acute problems to work on their mental health autonomously and avoid long waiting periods to see the appropriate healthcare professional (Fiske, Henningsen, & Buyx, 2019; Zidaru *et alii*, 2021).

Despite the growing interest in using AI to treat mental health problems, several concerns have been raised (Singh, 2023). One of the primary challenges is the lack of large, high-quality datasets reflecting diverse psychological issues, as well as the specificity of the data. Unlike other chronic conditions associated with objective measurements, mental illnesses involve complex assessments that tend to include a higher degree of subjectivity (Jin *et alii*, 2023). Other areas of concern include confidentiality, privacy,

data security (Singh, 2023), and the altered relationship between specialist and patient (Tornero Costa, Martínez Millana, Azzopardi Muscat, Lazeri, Traver, & Novillo Ortiz 2023). It has also been observed that clinical researchers focus more on safety and efficacy when developing AI-based tools, whereas the private sector tends to prioritize maximizing user engagement. This difference in focus may lead to the popularity of less effective digital tools among users (Martínez Martín & Kreitmair, 2018).

Due to emerging issues, the literature often emphasizes the need for regulatory frameworks, ethical guidelines, independent audits, and specialist training. However, it is believed that AI can significantly improve mental health care by enhancing public awareness of mental health, increasing diagnostic accuracy, and taking over time-consuming tasks from specialists (Jin *et alii*, 2023; Kasula, 2023).

Intentions to adopt new technologies have been shown to be affected by individuals' attitudes (Gado *et alii*, 2022). Moreover, one of the most important and widely recognized attributes of attitudes is their influence on behavior (Rucker, 2020). An attitude is defined as an individual's evaluation of a specific object, phenomenon, or situation, and the degree to which a person perceives the object as good or bad, positive or negative (Tormala & Rucker, 2017). Regardless of the category, attitudes can vary in strength -a stronger attitude is one that exhibits persistence over time, is less susceptible to external influence, and exerts a more substantial impact on an individual's thoughts and behavior (Rucker, 2020; Xu, Briñol, Gretton, Tormala, Rucker, & Petty, 2020). The strength of an attitude is influenced by several factors, including its connection to emotions, deeper engagement, and greater certainty (Rucker, 2020). Given that the strength of an attitude is affected by the amount of thought and engagement related to the attitude object, studies examining attempts to change attitudes and behaviors (e.g., in product advertising, promoting healthy lifestyles, or political campaigning) emphasize the importance of frequent discussion of the topic (Barden & Petty, 2008).

As mentioned above, attitudes are influenced by emotions (Rucker, 2020). Affective valence is believed to influence perceived usefulness -where positive emotions contribute to a sense of benefit or satisfaction, while negative emotions lead to a perception of disadvantage or discomfort (Zeelenberg, Nelissen, & Pieters, 2007). Emotions are an integral part of human experience, helping us adapt, survive, and form connections with others (Chung, So, Choi, Yan, & Wong, 2021). Many psychologists and behavioral neuroscientists assert that emotions influence thinking, decision-making, actions, social relationships, well-being, and both physical and mental health (Izard, 2010).

Attitudes have similarly been found to influence individuals' decisions to adopt new technologies. A positive attitude towards technology use has been demonstrated to both promote interest and contribute to the intention to adopt it (Teo & Zhou, 2014). The same tendency is observed in the context of AI systems -research indicates that a favorable attitude towards AI in healthcare positively influences the intentions of future healthcare professionals to incorporate AI in their practice (Labrague, Aguilar Rosales, Yboa, Sabio, & de Los Santos, 2023; Damerji & Salimi, 2021). Conversely, a negative attitude can result in a reduced willingness to adopt AI (Damerji & Salimi, 2021). The tendency to adopt AI is also influenced by perceived ease of use, perceived usefulness, confidence in one's abilities (Gado *et alii*, 2022), and knowledge about AI (Kim *et alii*, 2020; Pinto dos Santos *et alii*, 2018).

According to Asan, Bayrak, and Choudhury (2020), a lack of trust in AI has recently become a significant barrier to its application in healthcare. Factors influencing this include education, experience, understanding of automation, and the characteristics

of the AI being used -such as its controllability, transparency, model complexity, and associated risks.

As AI methods are increasingly being used in psychology, psychologists, as professionals with expertise in human perception and behavior, can not only apply, but also effectively contribute to the development of new AI systems. There is an urgent need for in-depth research to explore the attitudes of professionals towards AI and its application in mental health care, as it is known that attitudes affect individuals' intentions to adopt new technologies (Gado *et alii*, 2022).

In the Zhang *et alii* (2023) study, which aimed to understand current perceptions and the learning needs regarding AI education among mental health professionals, participants emphasized a need to be educated on the role of AI in practice, noting that current training opportunities in this area are insufficient. They also recommended integrating this material into both undergraduate and graduate programs, ensuring that students gain relevant competencies before entering the workforce, and, in addition to being taught about the broad scope of AI technologies, they also want to be taught how to use these technologies in a hands-on way. To create effective educational initiatives, it is essential to consider the specific needs of mental health professionals to guarantee that these programs are both relevant and sustainable over time (Zhang *et alii*, 2023). To facilitate this transition, it is essential to identify mechanisms through which AI technologies can be integrated into formal psychological education (Gado *et alii*, 2022).

Emotions are an integral part of human experience, helping us adapt, survive, and form connections with others (Chung *et alii*, 2021). Many psychologists and behavioral neuroscientists assert that emotions influence thinking, decision-making, actions, social relationships and well-being (Izard, 2010). It is also known that emotions can affect attitudes, as affective valence is believed to influence perceived usefulness -positive emotions contribute to a sense of benefit or satisfaction and negative emotions lead to a perception of disadvantage or discomfort (Zeelenberg *et alii*, 2007). In this study, we aim to investigate potential AI-based educational methods for future psychologists and assess their potential impact on attitudes. Given that existing research on attitudes predominantly relies on subjective assessments, our approach incorporates both subjective and objective measurements, including objective emotion evaluation, to provide a more comprehensive analysis.

Method

Participants

Participants were students (18 years and older) from the Lithuanian University of Health Sciences, enrolled in Health Psychology or Clinical Health Psychology programs. Recruitment was conducted through convenience sampling, with students invited during their lectures. Inclusion criteria were enrollment in one of these programs and being at least 18 years old. No additional exclusion criteria were applied. Participation was entirely voluntary, and no compensation was provided. Sixty-two students (*M*age= 23.19 ±4.69; 85.5% female) took part and were included in the data analysis.

Design

This study used an experimental, between-subjects design with two intervention conditions: the use of an AI-based emotional support app (*Wysa*), and a presentation on

artificial intelligence in psychology. The independent variable was the type of intervention (AI-based app vs. presentation), while the dependent variables were participants' attitudes toward artificial intelligence, measured both before and after the intervention using two self-report questionnaires: The *General Attitudes towards Artificial Intelligence Scale* (GAAIS) and an adapted version of the *Questionnaire for Attitudes Toward Medical Application of Artificial Intelligence*. Physiometric facial data (emotion recognition) was recorded during the intervention using *FaceReader* software to capture potential emotional responses to the stimuli.

Participants were randomly assigned to one of the two groups by drawing a folded paper labeled with a group name from an opaque bag. After group assignment, they completed identical questionnaires using a notebook computer provided.

Wysa Group: After completing the questionnaires, students in this group used the AI-based emotional support app *Wysa* using the same laptop. Participants were asked to test the Talk feature of the app in a free-form manner, allowing them to choose the course of the conversation themselves. Subjects were informed that their conversation with the AI was confidential and would be immediately deleted at the end of the session. The *FaceReader* software was activated simultaneously with the app to monitor participants' emotions throughout the 10-minute conversation. The subject was then asked to complete the same questionnaires again.

Presentation Group: After completing the questionnaires, the students in this group watched a presentation on AI and its application in psychology, prepared and recorded by the first author, based on the latest scientific findings. At the same time as the recording of the presentation was played, the physiometric facial data capture program *FaceReader* was started. The duration of the presentation was 10 minutes and 36 seconds. At the end of the presentation, the *FaceReader* application was switched off and the participant was asked to complete the same questionnaires again.

To ensure group equivalence at baseline, independent samples *t*-tests were conducted on the pre-intervention attitude measures. Results showed no significative differences between the groups indicating that the groups were comparable prior to the intervention.

Instruments and Measures

General Attitudes towards Artificial Intelligence Scale (GAAIS; Schepman & Rodway, 2020) used to assess general, not domain-specific attitudes towards AI. The GAAIS consists of 20 items divided into two subscales named *Positive General Attitudes towards AI* and *Negative General Attitudes towards AI*, with higher scores on both indicating more positive attitudes toward AI. Items are rated on a 5-point Likert scale ranging from strongly disagree to 5 strongly agree, with higher scores on both subscales indicating more positive attitudes toward AI overall. An example item from the positive subscale is: "Much of society will benefit from a future full of artificial intelligence." An example item from the negative subscale is: "I find artificial intelligence sinister." Internal consistency analysis showed that the scale was reliable (according to Dalyanto, Sajidan, Siswandari, & Sukarmin, 2021) at pre-intervention and improved at post-intervention for both subscales: for the *Positive General Attitudes towards AI* subscale, Cronbach's alpha was 0.77 (pre) and 0.85 (post); for the *Negative General Attitudes towards AI* subscale, α= 0.77 (pre) and α= 0.85 (post). The scale was translated into Lithuanian using the double translation method by the author.

Questionnaire for Attitudes Toward Medical Application of Artificial Intelligence (Oh, Kim, Choi, Lee, Hong, & Kwon, 2019) that was adapted to examine psychologists' attitudes towards the use of AI in psychology, with wording adjusted for the psychology domain where needed (originally designed to examine attitudes toward the application of artificial intelligence in medicine). Questionnaire consists of three question groups: Perception of AI in psychology, Advantages of AI in psychology, and Disadvantages

of AI in Psychology. The questionnaire contains 15 items in total. Items are rated on a 5-point Likert scale (1= strongly disagree to 5= strongly agree). Based on Abdullah and Fakieh (2020), the closed-ended questions regarding the advantages and concerns of artificial intelligence, which originally allowed respondents to select only one answer option, were adapted in this study to a Likert scale format, where each statement from the original questionnaire was rated individually. An example item from the Perception of AI in psychology question group is "Artificial intelligence could replace me in my job". An example item from the Advantages of AI in psychology question group is "AI can deliver vast amounts of clinically relevant high-quality data in real time". An example item from Disadvantages of AI in Psychology question group is "It is difficult to apply to controversial subjects" The internal consistency of the questionnaire was reliable enough (according to Dalyanto *et alii*, 2021) at pre-test (α= 0.57) and higher at post-test (α= 0.87). The increase in Cronbach's alpha values after the interventions in both questionnaires is consistent with evidence that responses become more internally consistent as attitudes crystallize with greater familiarity and confidence in the topic, reflecting more coherent opinions and thereby increasing scale reliability (Kroh, Winter, & Schupp, 2016). The questionnaire was translated into Lithuanian using a double translation method, and also included demographic questions on age, gender and year of study.

FaceReader (Noldus Information Technology, 2016). *FaceReader* version 8.1.15 was used to capture physiometric facial data and recognize emotions through a video camera (Logitech Brio, 1080p, 30 FPS). *FaceReader* uses *Facial Action Coding System* (FACS), a systematic approach measuring seven basic emotions identified by Ekman and Friesen (1986): anger, happiness, fear, surprise, disgust, sadness and contempt, as well as the neutral state. FACS is a coding system for analyzing facial expressions that relies exclusively on muscle activity, utilizing the smallest observable facial muscle movements, referred to as *Action Units* (AU), which are triggered by muscle activation that modifies facial expressions. These AU's serve as the means through which nearly any anatomically feasible facial expression can be encoded (Noldus, 2020; Kripas, 2021; Zhu, Boonipat, Cherukuri, & Bite, 2024). For instance, the conjunction of AU 6 ("cheek raiser", muscle Orbicularis oculi pars orbitalis) and AU 12 ("lip corner puller", muscle Zygomaticus major) is indicative of the emotion of joy (Noldus Information Technology, 2020).

Wysa (Touchkin, 2016). *Wysa* is an AI-based mobile chatbot designed to foster psychological resilience and promote mental well-being through a text-based conversational interface, creating an external and responsive self-reflection tool (Inkster, Sarda, & Subramanian, 2018). The app does not require user registration and no personally identifiable information is requested during use. *Wysa* complies with the United Kingdom's National Health Service (NHS) digital clinical safety standard DCB 0129 and has been assessed as clinically safe (Chang, Sinha, Roy, & Wong, 2024). By using the app, participants agreed to its privacy policy.

Procedure

The research project, as well as its ethical aspects, were approved by the institutional bioethics review board (approval registration No. 2023-BEC2-264). Data collection took place between November 2023 and March 2024. The experiment took place at the Lithuanian University of Health Sciences, Faculty of Public Health. Written informed consent was obtained from all participants prior to their involvement in the study. Participants were randomly assigned to either the *Wysa* Group or the Presentation Group by drawing a folded paper labeled with a group name from an opaque bag.

All participants first completed identical questionnaires using a notebook computer provided. They then underwent their assigned intervention (either interacting with the *Wysa* app or watching the pre-recorded presentation), during which emotional responses were recorded using *FaceReader* software. After the intervention, participants completed the same questionnaire again.

At the end of the session, participants were informed that they could contact the first author in the future if they wished to receive a summary of the study's results.

Data Analysis

The data were analyzed using SPSS version 27.0. Normality assumptions were assessed using skewness and kurtosis values, outlier analysis, and consideration of the sample size. Skewness and kurtosis were within acceptable normality range of -1 to +1 (Hair, Black, Babin, & Anderson, 2019). Outlier analysis identified outliers, which were removed. Considering the sample size the data were deemed suitable for parametric statistical analysis. All subscales were found to be normally distributed.

Two-way repeated measures ANOVA was used to test for interaction effects with the between-group factor being the intervention group and the within-group factor being the time of the survey (before and after intervention). Mauchly's test was used to examine sphericity of data, and the Greenhouse-Geisser correction was used to analyze non-spherical data. In the presence of a significative interaction effect, a simple main effects analysis was performed for each factor.

Each of the eight emotions measured by *FaceReader* was ranked from the most prevalent emotion (rank= 8) to the least prevalent emotion (rank= 1) for each individual. This ranking approach enabled a relative comparison of emotion dominance within participants, taking into account for individual differences in expressiveness. To examine differences in emotion rankings between the intervention groups the Mann-Whitney *U* test was used. Spearman's correlation (ρ) was used to analyze the relationship between emotion ranks and the changes in questionnaire subscale scores. The attitude change scores were calculated by subtracting the initial questionnaire score from the second evaluation, with positive values indicating a shift towards a more positive attitude.

For all tests, the level of significance was set at $p < .05$. According to Abdullah and Fakieh (2020), mean Likert scale scores ranging from 1.00 to 2.60 were considered low, scores from 2.61 to 3.40 were considered moderate, and scores from 3.41 to 5.00 were considered high.

Results

The overall score on the GAAIS *Positive General Attitudes toward AI* subscale was high (*M*= 3.76, *SD*= 0.48). The most frequently disagreed statement was "For routine transactions, I would rather interact with an artificially intelligent system than with a human", with 25.8% of participants somewhat disagreeing and 37.1% completely disagreeing. Psychology students most frequently agreed with the statements "There are many beneficial applications of Artificial Intelligence" (somewhat agreed 38.7%, completely agreed 59.7%), and "I am impressed by what Artificial Intelligence can do" (somewhat agreed 43.5%, completely agreed 50%).

The score on the GAAIS Negative Attitude subscale was moderate (*M*= 2.64, *SD*= 0.58), a higher subscale score indicates a more positive evaluation of AI. Psychology students most frequently agreed with the statement "I find artificial intelligence sinister" (somewhat agreed 43.5%, completely agreed 4.8%). The most frequently disagreed statements were "People like me will suffer if Artificial intelligence is used more and more" (somewhat disagreed 29%, completely disagreed 22.6%), and "Artificial intelligence might take control of people" (somewhat disagreed 27.4%, completely disagreed 17.7%).

The overall score for *Perception of AI in psychology* was low (M= 2.44, SD= 0.42). The most frequently disagreed statement was "Artificial intelligence could replace me in my job", with 59.7% of participants disagreeing and 27.4% completely disagreeing.

The evaluation of *Advantages of AI in psychology* was high (M= 3.94, SD= 0.35). Psychology students most frequently agreed with the following advantages: "AI can deliver vast amounts of clinically relevant high-quality data in real time" (agreed 72.6%, completely agreed 16.1%), and "AI has no emotional exhaustion nor physical limitation" (agreed 38.7%, completely agreed 53.2%).

The overall concern regarding the application of artificial intelligence was high (*Disadvantages of AI in psychology* M= 3.60, SD= 0.55). The most frequently cited concern among psychology students was "It is difficult to apply to controversial subjects", with 51.6% of participants agreeing and 22.6% completely agreeing.

Before analyzing changes in attitudes after different demonstrations, independent samples *t*-tests were conducted to confirm that there were no significative baseline differences between the groups on any of the five subscales (p >.05). Two-way repeated measures ANOVA was used to determine whether the interaction of the time (Before intervention vs. After intervention) and the type of intervention (*Wysa* Group or Presentation Group) influenced the changes in attitudes of psychology students. For further exploration of these interaction effects, simple effects analysis was used (see Figure 1).

For *Positive General Attitudes Towards AI* a significative time effect was observed [$F_{(1,60)}$= 11.399, p= .001, η^2= 0.160]. Additionally, a significative time x group interaction effect was found [$F_{(1,60)}$= 5.066, p= .028, η^2= 0.078]. Simple effects analysis revealed that the presentation group exhibited significative differences [$F_{(1,30)}$= 20.973, $p \leq$.001, η^2= 0.411)], having more positive general attitudes after the intervention (M= 49.39, SD= 6.30) than prior (M= 46.16, SD= 5.99), while the *Wysa* Group revealed no significative changes.

For *Negative General Attitudes Towards AI*, while a significative time effect was found [$F_{(1,60)}$= 10.066, p= .028, η^2= 0.078], and the time x group interaction was not significative.

For P*erception of AI in Psychology* a significative time effect was found, [$F_{(1,60)}$= 9.492, p= .003, η^2= 0.137], and a significative time x group interaction was also observed [$F_{(1,60)}$= 14.531, p= .001, η^2= 0.195]. Simple effects analysis revealed that the presentation group showed significative positive attitudes after the intervention [M= 11.81, SD= 2.44; $F_{(1,30)}$= 27.83, $p \leq$ .001, η^2= 0.481], compared to prior (M= 9.68, SD= 1.85). In the *Wysa* Group simple effects analysis revealed no significative changes.

For *Advantages of AI in Psychology* no significative time effect was found indicating that perceptions of AI's advantages did not change significantly over time. However, a significative time x group interaction was observed [$F_{(1,60)}$= 5.667, p= .020, η^2= 0.08]. Simple effects analysis revealed that the presentation group exhibited significative differences [($F_{(1,30)}$= 7.940, p= .008, η^2= 0.209] having more positive attitudes after the intervention (M= 20.94, SD= 2.57) than prior (M= 19.55, SD= 1.67). In the Wysa group, simple effects analysis revealed no significative changes.

For *Disadvantages of AI in Psychology*, a significative time effect was found [$F_{(1,60)}$= 9.409, p= .003, η^2= 0.136], indicating that perceptions of AI's disadvantages changed over time. However, the time x group interaction was not significative.

To examine the relationship between emotion rankings and changes in attitudes toward AI, Spearman's correlation was used. Eight emotions were measured in both groups during interventions using *FaceReader*, each of them was ranked from the

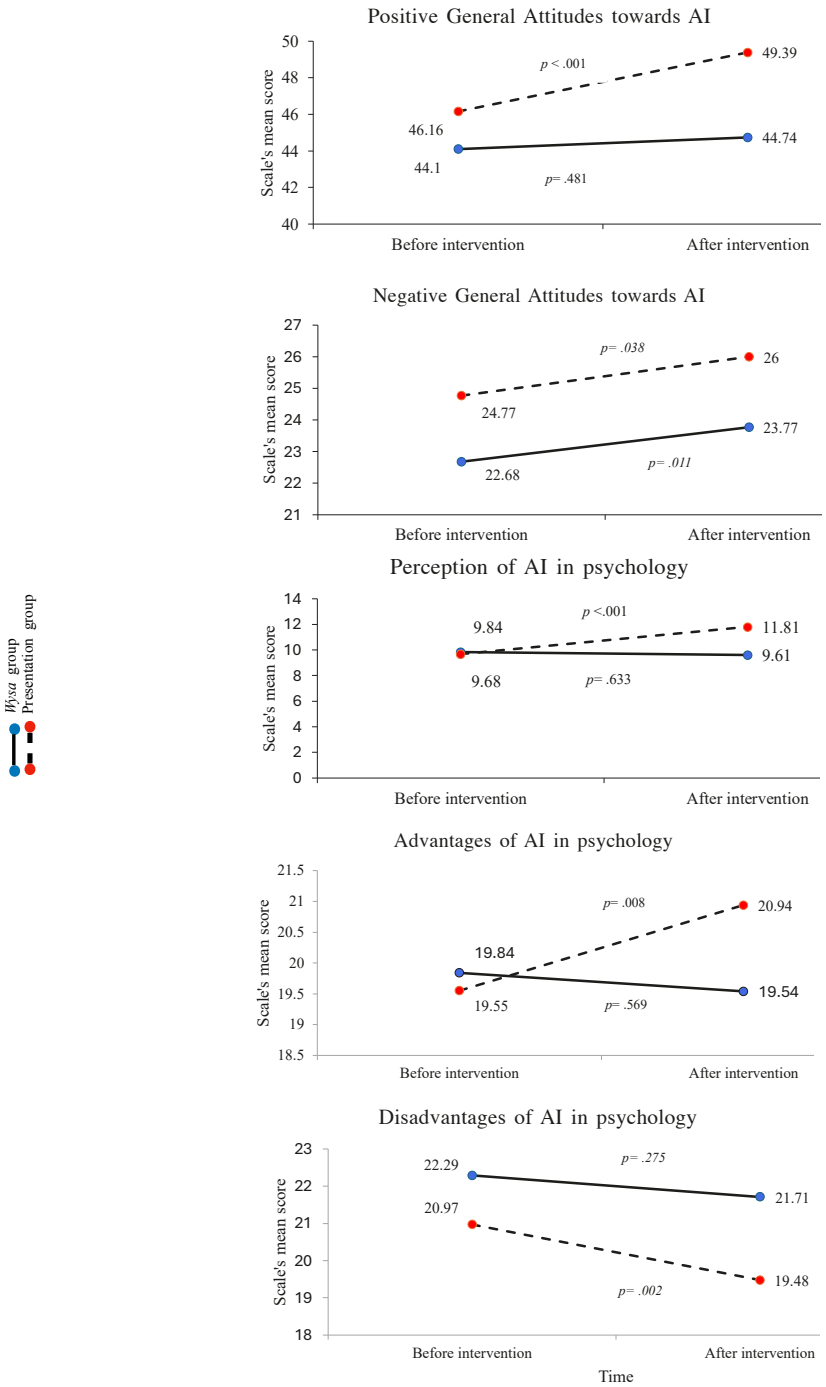

Figure 1. Means of subscales before and after interventions in *Wysa* and Presentation groups.

most prevalent emotion (rank= 8) to the least prevalent emotion (rank= 1) for each individual, allowing for a relative comparison of emotion dominance within participants and accounting for individual differences in expressiveness. A statistically significative positive correlation was found between the change in scores of *Advantages of AI in psychology* and the rankings of the emotions surprised (ρ= .316, p= .012) and scared (ρ= 0.255, p= .045). Significative negative correlations were observed between the change in *Advantages of AI in psychology* and the rankings of contempt (ρ= -0.368, p= .003) and "disgusted" (ρ= -0.292, p= .021). For the change in attitudes toward the disadvantages of AI in psychology (where a higher subscale score means a higher prevalence of perceived disadvantages), significative correlation was found with the ranking of "contempt" (ρ= 0.257, p= .044).

We next focused on analyzing the overall emotional patterns observed during the interventions. In both groups, neutral facial expression was the most prevalent emotion (59.4 % in *Wysa* Group and 78.3 % in the presentation group), followed by sadness, anger, and disgust in *Wysa* Group (17.6 %, 9.9 %, and 6.3 %, respectively) and sadness, anger, and surprise in Presentation Group (12.7 %, 4.2 % and 2.3 %, respectively).

To determine whether students' emotions differed between two intervention groups, the Mann-Whitney *U* criterion was used. Participants in the *Wysa* Group ranked Happy [*Mean* rank (*M*r)= 38.53] and Disgusted (*M*r= 37.76) as more common or intense emotions compared to the Presentation Group (*M*r= 24.47 and *M*r= 25.24, respectively) (U= 262.5, p= .002; U= 286.5, p= .006, respectively), while the Presentation Group ranked Scared (*M*r= 36.82) and Surprised (*M*r= 36.79) as more common or intense emotions than the *Wysa* Group (*M*r=26.18 and *M*r= 26.21, respectively) (U= 315.5, p= .017; U= 316.5, p= .019, respectively) (see Table 1). The distribution of emotions is presented in Figure 2.

Table 1. Comparison of emotions in intervention groups.

Emotion	Wysa Group		Presentation Group		*U*	*p*
	Mr	Sum of Ranks	*Mr*	Sum of Ranks		
Neutral	30.00	930.00	33.00	1023.00	434.000	.078
Sad	28.87	895.00	34.13	1058.00	399.000	.187
Happy	38.53	1194.50	24.47	758.50	262.500	.002
Angry	29.44	912.50	33.56	1040.50	416.500	.350
Disgust	37.76	1170.50	25.24	782.50	286.500	.006
Scared	26.18	811.50	36.82	1141.50	315.500	.017
Contempt	32.10	995.00	30.90	958.00	462.000	.788
Surprised	26.21	812.50	36.79	1140.50	316.500	.019

Notes= *Mr*= Mean rank; *U*= Mann-Whitney *U*

Discussion

The objective of this study was to evaluate the attitudes of psychology students toward artificial intelligence systems that provide psychological assistance. While Artificial Intelligence and its applications are advancing in the field of medicine (Liu *et alii*, 2018), its integration into mental health care remains limited (Jin *et alii*, 2023). Psychologists,

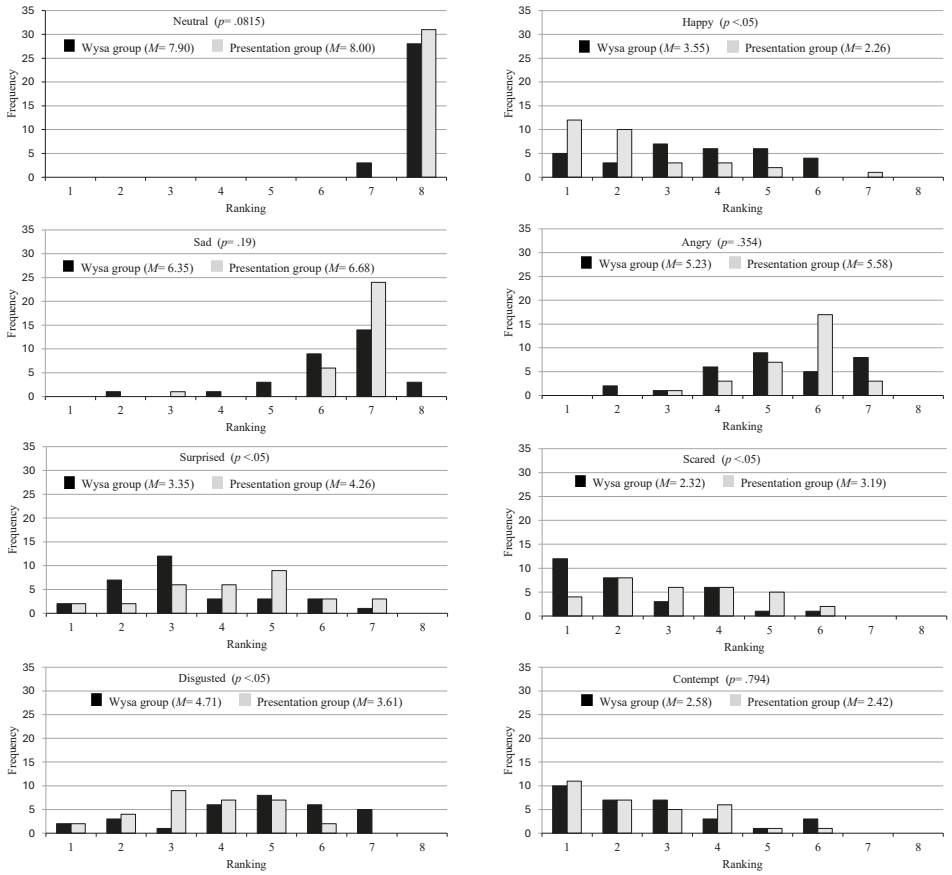

Figure 2. Emotion distribution *Wysa* and Presentation groups.

as specialists with expertise in human perception and behavior, can effectively contribute to the development of new AI systems and ethical guidelines, therefore, it is important to foster curiosity among psychologists and encourage psychology students to work in the field of artificial intelligence (Gado *et alii*, 2022; Jin *et alii*, 2023). To facilitate the integration of artificial intelligence technologies into the psychological educational framework, it is necessary to identify effective methodologies for doing so (Gado *et alii*, 2022).

This study showed that, overall, positive general attitudes toward artificial intelligence among psychology students were high, while negative general attitudes toward AI were moderate. The results show that psychology students generally hold positive views toward artificial intelligence, although some concerns remain. These findings are consistent with previous research (Schepman & Rodway, 2020; Kaya, Aydin, Schepman, Rodway, Yetişensoy, & Demir Kaya, 2024), which also observed that people tend to score high on positive attitudes toward AI and moderately on negative ones when using the *General Attitudes Toward Artificial Intelligence Scale*.

However, in this study, the assessment of AI applications in psychology was low. This difference from the general, psychology-nonspecific AI attitudes may be

attributed to the specific nature of psychology as a field and the strong need for social connection within it. For example, Schepman and Rodway (2020), in their research on AI application areas mentioned, analyzed which of these applications made people feel uncomfortable. They found that participants felt less comfortable with AI applications in fields requiring deep social understanding (e.g., psychological counseling) and felt more comfortable with AI use in scientific, less personal fields (e.g., using human exhaled breath for disease detection). However, when interpreting these results, it is important to note that their study did not analyze the perspectives of healthcare professionals. When examining literature on attitudes toward AI specifically among healthcare professionals, different patterns emerge -the low assessment of AI applications in psychology observed in the present study stands in contrast to the findings of Abdullah and Fakieh (2020), who reported moderate attitudes among psychiatrists, and Sarwar *et alii* (2019), who found favorable attitudes toward AI applications in pathology. According to Doraiswamy, Blease & Bodner (2020), differences in AI attitudes across healthcare fields may be linked to the level of AI advancement and integration in each field and it is viewed more critically by mental health professionals than, for example, radiologists, where AI tools are becoming standard practice (Jackevičius, 2024). Doraiswamy *et alii* (2020) also hypothesize that healthcare professionals may underestimate the speed of AI development, raising concerns about their preparedness to adapt to technological changes in healthcare.

It was also found that psychology students most frequently disagreed with the idea that artificial intelligence could replace them in their field of work. This result aligns with the study by Doraiswamy *et alii* (2020), where most psychiatrists did not believe that AI would be able to perform psychiatric work as well as or better than human psychiatrists in the future. Such a perspective may be influenced by factors such as a deep understanding of their profession's complexity or concerns about job security, as replacing mental health professionals with AI could lead to a reduction in job opportunities.

This study also found that students' ratings of AI advantages in psychology and their concerns about AI disadvantages were high. These findings partially align with the study by Abdullah and Fakieh (2020), which showed that the perceived advantages and concerns of AI among healthcare workers were moderate. The difference in AI attitudes between professionals in different fields further supports the idea that attitude differences arise from the specific nature of each healthcare profession -a factor also confirmed by Abdullah and Fakieh (2020), who found significative variation in AI attitudes across different healthcare specialties. The high ratings for both advantages and disadvantages in this study may indicate that psychology students are highly aware of the issue and show low levels of indifference.

One of the aims of this study was to compare how different forms of introducing AI technology to psychology students relate to attitude change. To examine this, students were divided into two groups: one group interacted with the *Wysa* chatbot, while the other watched a theoretical presentation about AI in psychology. The study found that, compared to the *Wysa* Group, participants who watched the presentation demonstrated significantly higher post-intervention scores in the *Perception of AI in psychology*, *Advantages of AI in psychology*, and *Positive General Attitudes towards AI* subscales. For *Negative General Attitudes Towards AI* and *Disadvantages of AI in Psychology,* significative time effects only (without interaction effects) were observed, indicating that attitudes in these question groups improved similarly across both groups. Overall, these results suggest that while attitudes generally became more positive over time across all

subscales, the presentation-based intervention was more effective than the *Wysa* chatbot in producing measurable positive changes in certain subscales.

This result aligns with the findings of Park and Kwon (2024) in the field of AI education, where an educational program about AI led to increased interest in technology and higher perceived effectiveness of AI among students. The observed attitude changes following the scientific presentation, despite the fact that it included both the advantages and disadvantages of AI applications in psychology, may also indicate students' trust in scientific literature. These findings highlight a potential practical application -using effective AI education programs as a method for preparing future psychologists. According to Zidaru *et alii* (2021), professional education in AI plays an important role in improving the safety and acceptance of new AI systems.

The lack of attitude change in the *Wysa* Group could be attributed to the increasing availability and usage of more advanced AI products than the application used in this study. The *Wysa* app was selected for its clinically validated safety, but the level of AI sophistication it uses may not have met students' expectations, which could have been influenced by the popularity of newer AI tools like ChatGPT. According to Grassini (2023), the fast integration of advanced AI systems such as ChatGPT and the increasing amount of information about them are shaping public perceptions of AI and its potential applications.

Examining the relationship between emotions during interventions and changes in attitudes, it was found that emotional responses were associated with changes in attitudes. Higher levels of surprise were associated with a positive change in *Advantages of AI in psychology*, while higher levels of contempt and disgust were associated with a negative change in *Advantages of AI in psychology*. Additionally, it was determined that a positive change in the prevalence of perceived disadvantages of using AI in psychology was associated with higher contempt. This may indicate that the valence of emotions is reflected in attitudes, meaning that negative emotions can be linked to negative attitudes, as affective valence is believed to influence perceived usefulness -where positive emotions contribute to a sense of benefit or satisfaction, while negative emotions lead to a perception of disadvantage or discomfort (Zeelenberg *et alii*, 2007).

However, the study also found a relationship between higher levels of "scared" and a positive change in *Advantages of AI in psychology*. In discussions regarding AI, it has been suggested that fearing AI does not necessarily mean that people will reject it. As noted by Cugurullo and Acheampong (2024), most people are clearly afraid of being inside or even near a vehicle that is autonomously controlled by artificial intelligence. However, fear does not prevent people from wanting to use the same technology as soon as possible -while people recognize the risks, they also see the benefits of AI, and their fear of artificial intelligence may not be strong enough to discourage them from adopting such technologies.

The emotional evaluation results of this study revealed that different demonstrations elicited different emotions. The presentation group exhibited higher levels of surprised and scared, whereas those using the *Wysa* application demonstrated heightened disgusted and happy. The higher level of surprise observed among participants in the presentation group could be attributed to their exposure to new scientific information, which may have been unexpected or surprising to them. According to Xu, Modirshanechi, Lehmann, Gerstner, & Herzog (2021), surprise is generated by a discrepancy between expectations based on the current world model and actual observations; it has been suggested that surprise helps people quickly adapt their behavior to changes in the environment (Xu *et*

alii, 2021). Furthermore, a higher prevalence of scared was observed in the presentation group. Fear is defined as a signal that indicates a situation potentially threatening to one's goals, motivating caution and avoidance of harm (LeBlanc & Posner, 2022). The mention of AI-related risks and drawbacks in the presentation may have influenced the heightened scared scores in the presentation group. Another potential explanation is the fear of being replaced by artificial intelligence, although no direct correlation was found between scared in the presentation group and the survey item regarding the fear of being replaced by AI in one's profession.

It has been observed that those in the *Wysa* Group exhibited higher levels of disgust and happiness. Disgust, as defined by Gan *et alii* (2022), is understood to be a defensive-avoidance response that plays a role in avoiding contamination by pathogens and facilitating the prevention of harmful social interactions. Meanwhile, happiness is often seen as a signal of satisfaction with one's circumstances, as described by LeBlanc & Posner (2022). However, it is likely that the emotional expressions exhibited during this AI testing were related to the conversation participants engaged in with the chatbot and the subjects addressed during it.

This study has several limitations. This study did not apply a dimensional model of emotion assessment, which would have allowed for better comparability with a broader body of scientific literature on emotions. In addition, to gain a deeper understanding of the potential application of artificial intelligence in psychology, it is essential to evaluate not only specialists' but also clients' attitudes toward AI systems. Such findings, combined with data on specialists' perspectives, could contribute to both the development of AI systems and the preparation of professionals for the possible implementation of AI tools.

Several strengths of this study can also be highlighted. First, it employed an experimental research design, which enabled a more precise evaluation of the effectiveness of AI demonstrations and provided a clearer understanding of factors influencing attitude formation. Additionally, to improve the accuracy and objectivity of the results, *FaceReader* was used to ensure an objective assessment of emotions.

Taken together, these findings offer insight into how psychology students perceive and emotionally respond to AI, and how different forms of introducing AI can shape those perceptions. The study revealed that psychology students held positive general attitudes toward artificial intelligence, while their negative attitudes were moderate. However, when it came to the application of AI in psychology, students expressed less favorable perceptions and concerns about its application.

A comparison of the emotional responses observed during the interventions revealed notable differences. Participants using the *Wysa* app felt more happiness and disgust, while those who received the scientific presentation showed stronger feelings of surprise and fear. Following the presentation on the use of AI in providing psychological assistance, there was a notable shift in attitudes towards AI in psychology. In contrast, testing the AI-based emotional support app did not elicit a similar change in attitudes.

The findings indicate that emotional valence plays a role in shaping attitudes toward AI, as it was found that positive changes in attitudes toward *AI advantages in psychology* were linked to higher levels of surprise and scared, while negative changes were associated with stronger feelings of contempt and disgust. Additionally, perceiving more disadvantages of AI in psychology correlated with higher expressions of contempt. These results suggest that emotional responses -both positive and negative- contribute to how individuals change their attitudes toward AI in psychology and show the importance of affective experience in evaluating new technologies in mental health contexts.

References

Abdullah R & Fakieh B (2020). Health Care Employees Perceptions of the Use of Artificial Intelligence Applications: Survey Study. *Journal of Medical Internet Research*, *22*, 5, e17620. Doi: 10.2196/17620

Asan O, Bayrak AE, & Choudhury A (2020). Artificial Intelligence and Human Trust in Healthcare: Focus on Clinicians. *Journal of Medical Internet Research*, *22*, 6, e15154. Doi: 10.2196/15154

Baltrūnienė J (2022). *Dirbtinis intelektas ir duomenų apsauga kriminalistikos plėtros kontekste*. *Kriminalistikos teorijos plėtra ir teismo ekspertologijos ateitis* [Artificial Intelligence and Data Protection in the Context of Development of Criminalistics. Developments of criminalistics theory and future of forensic expertology]. Liber Amicorum Profesoriui Vidmantui Egidijui Kurapkai. Vilnius: Lietuvos kriminalistų draugija, Mykolo Romerio universitetas.

Barden J & Petty RE (2008). The mere perception of elaboration creates attitude certainty: Exploring the thoughtfulness heuristic. *Journal of Personality and Social Psychology*, *95*, 3, 489-509. Doi:10.1037/a0012559

Chang CL, Sinha C, Roy M, & Wong JCM (2024). AI-Led Mental Health Support (Wysa) for Health Care Workers During COVID-19: Service Evaluation. JMIR Formative Research, 8, e51858. Doi:10.2196/51858

Chung JWY, So HCF, Choi MMT, Yan VCM, & Wong TKS (2021). Artificial Intelligence in education: Using heart rate variability (HRV) as a biomarker to assess emotions objectively. *Computers and Education: Artificial Intelligence*, *2,* 100011. Doi: 10.1016/j.caeai.2021.100011

Corcoran CM, Carrillo F, Fernández Slezak D, Bedi G, Klim C, Javitt DC, Bearden CE, & Cecchi GA (2018). Prediction of psychosis across protocols and risk cohorts using automated language analysis. *World Psychiatry*: *Official Journal of the World Psychiatric Association, 17*, 1, 67-75. Doi: 10.1002/wps.20491

Cugurullo F & Acheampong RA (2024). Fear of AI: an inquiry into the adoption of autonomous cars in spite of fear, and a theoretical framework for the study of artificial intelligence technology acceptance. *AI & Society, 39*, 1569-1584. Doi: 10.1007/s00146-022-01598-6

Dalyanto A, Sajidan, Siswandari, & Sukarmin (2021). Developing instrument to measure entrepreneur skills of vocational school students based on sustainable development. *Journal of Physics: Conference Series*, *1842*, 1, 012025. Doi:10.1088/1742-6596/1842/1/012025

Damerji H & Salimi A (2021). Mediating effect of use perceptions on technology readiness and adoption of artificial intelligence in accounting. *Accounting Education*, *30*, 2, 107-130. Doi: 10.1080/09639284.2021.1872035

Doraiswamy PM, Blease C, & Bodner K (2020). Artificial intelligence and the future of psychiatry: Insights from a global physician survey. *Artificial Intelligence in Medicine*, *102*, 101753. Doi: 10.1016/j.artmed.2019.101753

Dwyer DB, Falkai P, & Koutsouleris N (2018). Machine Learning Approaches for Clinical Psychology and Psychiatry. *Annual Review of Clinical Psychology*, *14*, 91-118. Doi: 10.1146/annurev-clinpsy-032816-045037

Ekman P & Friesen WV (1986). A new pan-cultural facial expression of emotion. *Motivation and Emotion*, *10,* 2, 159-168. Doi: 10.1007/BF00992253

Fiske A, Henningsen P, & Buyx A (2019). Your Robot Therapist Will See You Now: Ethical Implications of Embodied Artificial Intelligence in Psychiatry, Psychology, and Psychotherapy. *Journal of Medical Internet Research*, *21*, 5, e13216. Doi: 10.2196/13216

Fulmer R, Joerin A, Gentile B, Lakerink L, & Rauws M (2018). Using Psychological Artificial Intelligence (Tess) to Relieve Symptoms of Depression and Anxiety: Randomized Controlled Trial. *JMIR Mental Health*, *5,* 4, e64. Doi: 10.2196/mental.97

Gado S, Kempen R, Lingelbach K, & Bipp T (2022). Artificial intelligence in psychology: How can we enable psychology students to accept and use artificial intelligence? *Psychology Learning & Teaching*, *21*, 1, 37-56. Doi: 10.1177/14757257211037149

Gan X, Zhou X, Li J, Jiao G, Jiang X, Biswal B, Yao S, Klugah-Brown B, & Becker B (2022). Common and distinct neurofunctional representations of core and social disgust in the brain: Coordinate-based and network meta-analyses. *Neuroscience and Biobehavioral Reviews*, *135*, 104553. Doi: 10.1016/j.neubiorev.2022.104553

George AS & George ASH (2020). Industrial revolution 5.0: The transformation of the modern manufacturing process to enable man and machine to work hand in hand. *Journal of Seybold Report, 15,* 214-234. Doi: 10.5281/zenodo.6548092.

Grassini S (2023). Development and validation of the AI attitude scale (AIAS-4): A brief measure of general attitude toward artificial intelligence. *Frontiers in Psychology*, 14, 1191628. Doi: 10.3389/fpsyg.2023.1191628

Hair JF, Black WC, Babin, BJ, & Anderson RE (2019). *Multivariate data analysis* (8th ed.). New York: Wiley.

Inkster B, Sarda S & Subramanian V (2018). An empathy-driven, conversational artificial intelligence agent (Wysa) for digital mental well-being: Real-world data evaluation mixed-methods study. *JMIR mHealth and uHealth*, *6*, 11, e12106.

Izard CE (2010). The Many Meanings/Aspects of Emotion: Definitions, Functions, Activation, and Regulation. *Emotion Review*, *2*, 4, 363-370. Doi:10.1177/1754073910374661

Jackevičius M (2024). Artificial intelligence in radiology. *Health Sciences in Eastern Europe*, *34*, 1, 64-66. Doi: 10.35988/sm-hs.2024.017A

Jin KW, Li Q, Xie Y, & Xiao G (2023). Artificial intelligence in mental healthcare: An overview and future perspectives. *The British Journal of Radiology*, *96*, 1150, 20230213. Doi: 10.1259/bjr.20230213

Kaya F, Aydin F, Schepman A, Rodway P, Yetişensoy O, & Demir Kaya M (2024). The roles of personality traits, AI anxiety, and demographic factors in attitudes toward artificial intelligence. *International Journal of Human-Computer Interaction*, *40*, 2, 497-514. Doi: 10.1080/10447318.2022.2151730

Kasula BY (2023). Ethical Considerations in the Adoption of Artificial Intelligence for Mental Health Diagnosis. *International Journal of Creative Research in Computer Technology and Design*, *5*, 5, 1-7.

Kim SH, Kwon D, Lee S, Son SW, Kwon JT, Kim PJ, Lee YH, & Jung YS (2020). Concentration- and Time-Dependent Effects of Benzalkonium Chloride in Human Lung Epithelial Cells: Necrosis, Apoptosis, or Epithelial Mesenchymal Transition. *Toxics*, *8*, 1, 17. Doi:10.3390/toxics8010017

Kroh M, Winter F, & Schupp J (2016). Using Person-Fit Measures to Assess the Impact of Panel Conditioning on Reliability. *Public Opinion Quarterly*, *80*, 4, 914-942. Doi: 10.1093/poq/nfw025

Kripas P (2021*). Įvesties ir veido išraiškos analizę taikanti priemonė besimokančiųjų įsitraukimui vertinti* [Application for evaluating engagement of learners using input and facial analysis]. Magistro baigiamasis projektas, Kauno Technologijos Universitetas.

Labrague LJ, Aguilar Rosales R, Yboa BC, Sabio JB, & de Los Santos JA (2023). Student nurses' attitudes, perceived utilization, and intention to adopt artificial intelligence (AI) technology in nursing practice: A cross-sectional study. *Nurse Education in Practice*, *73*, 103815. Doi: 10.1016/j.nepr.2023.103815

LeBlanc VR & Posner GD (2022). Emotions in simulation-based education: friends or foes of learning? *Advances in Simulation*, *7*, 1, 3. Doi: 10.1186/s41077-021-00198-6

Liu C, Liu X, Wu F, Xie M, Feng Y, & Hu C (2018). Using Artificial Intelligence (Watson for Oncology) for Treatment Recommendations Amongst Chinese Patients with Lung Cancer: Feasibility Study. *Journal of Medical Internet Research*, *20*, 9, e11087. Doi: 10.2196/11087

Martínez Martín N & Kreitmair K (2018). Ethical Issues for Direct-to-Consumer Digital Psychotherapy Apps: Addressing Accountability, Data Protection, and Consent. *JMIR Mental Health*, *5*, 2, e32. Doi: 10.2196/mental.9423

Noldus Information Technology (2016). *FaceReader™ 8*. Wageningen, The Netherlands.

Noldus Information Technology (2020). *Facial Action Coding System* (FACS). Wageningen, The Netherlands

Oh S, Kim JH, Choi SW, Lee HJ, Hong J, & Kwon SH (2019). Physician Confidence in Artificial Intelligence: An Online Mobile Survey. *Journal of Medical Internet Research*, *21*, 3, e12422. Doi: 10.2196/12422

Park W & Kwon H (2024). Implementing artificial intelligence education for middle school technology education in Republic of Korea. *International Journal of Technology and Design Education*, *34*, 1, 109-135. Doi: 10.1007/s10798-023-09812-2

Pinto dos Santos D, Giese D, Brodehl S, Chon SH, Staab W, Kleinert R, Maintz D, & Baeßler B (2018). Medical students' attitude towards artificial intelligence: A multicentre survey. *European Radiology*. Doi: 10.1007/s00330-018-5601-1

Prochaska JJ, Vogel EA, Chieng A, Kendra M, Baiocchi M, Pajarito S, & Robinson A (2021). A Therapeutic Relational Agent for Reducing Problematic Substance Use (Woebot): Development and Usability Study. *Journal of Medical Internet Research*, *23*, 3, e24850. Doi: 10.2196/24850

Rucker DD (2020). Attitudes and attitude strength as precursors to object attachment. *Current Opinion in Psychology, 39,* 38-42. Doi: 10.1016/j.copsyc.2020.07.009

Sarwar S, Dent A, Faust K, Richer M, Djuric U, Van Ommeren R, & Diamandis P (2019). Physician perspectives on integration of artificial intelligence into diagnostic pathology. *NPJ Digital Medicine*, 2, 28. Doi: 10.1038/s41746-019-0106-0

Schepman A & Rodway P (2020). Initial validation of the general attitudes towards Artificial Intelligence Scale. *Computers in Human Behavior Reports*, *1*, 100014. Doi: 10.1016/j.chbr.2020.100014

Schepman A & Rodway P (2023). The General Attitudes towards Artificial Intelligence Scale (GAAIS): Confirmatory validation and associations with personality, corporate distrust, and general trust. *International Journal of Human-Computer Interaction*, *39*, 13, 2724-2741. Doi:10.1080/10447318.2022.2085400

Singh OP (2023). Artificial intelligence in the era of ChatGPT. Opportunities and challenges in mental health care. *Indian Journal of Psychiatry*, *65*, 3, 297-298. Doi: 10.4103/indianjpsychiatry.indianjpsychiatry_112_23

Teo T & Zhou M (2014). Explaining the intention to use technology among university students: a structural equation modeling approach. *Journal of Computing in Higher Education*, *26*, 124-142. Doi: 10.1007/s12528-014-9080-3

Theodosiou AA & Read RC (2023). Artificial intelligence, machine learning and deep learning: Potential resources for the infection clinician. *Journal of Infection*, *87*, 4, 287-294. Doi: 10.1016/j.jinf.2023.07.006

Tormala ZL & Rucker DD (2017). Attitude certainty: Antecedents, consequences, and new directions. *Consumer Psychology Review*, *1*, 1, 72-89. Doi: 10.1002/arcp.1004

Tornero Costa R, Martinez Millana A, Azzopardi Muscat N, Lazeri L, Traver V, & Novillo Ortiz D (2023). Methodological and Quality Flaws in the Use of Artificial Intelligence in Mental Health Research: Systematic Review. *JMIR Mental Health*, *10*, e42045. Doi: 10.2196/42045

Touchkin (2016, October 6). *Wysa: Anxiety, therapy chatbot* [Mobile app]. Google Play Store. Available at: https://play.google.com/store/apps/details?id=bot.touchkin

Xu HA, Modirshanechi A, Lehmann MP, Gerstner W, & Herzog MH (2021). Novelty is not surprise: Human exploratory and adaptive behavior in sequential decision-making. *PLOS Computational Biology*, *17*, 6, e1009070. Doi: 10.1371/journal.pcbi.1009070

Xu M, Briñol P, Gretton JD, Tormala ZL, Rucker DD, & Petty RE (2020). Individual Differences in Attitude Consistency Over Time: The Personal Attitude Stability Scale. *Personality and Social Psychology Bulletin*, *46*, 10, 1507-1519. Doi:10.1177/014616722090899

Zeelenberg M, Nelissen RMA, & Pieters R (2007). Emotion, motivation and decision making: A feeling is for doing approach. In H Plessner, C Betsch, & T Betsch (Eds.), *Intuition in Judgment and Decision Making* (pp. 173-189). Hillsdale, NJ: Lawrence Erlbaum Associates.

Zhang M, Scandiffio J, Younus S, Jeyakumar T, Karsan I, Charow R, Salhia M, & Wiljer D (2023). The Adoption of AI in Mental Health Care-Perspectives from Mental Health Professionals: Qualitative Descriptive Study. *JMIR Formative Research*, *7*, e47847. Doi: 10.2196/47847

Zhu A, Boonipat T, Cherukuri S, & Bite U (2024). Defining Standard Values for FaceReader Facial Expression Software Output. *Aesthetic Plastic Surgery*, *48*, 785-792. Doi: 10.1007/s00266-023-03468-y

Zidaru T, Morrow EM, & Stockley R (2021). Ensuring patient and public involvement in the transition to AI-assisted mental health care: A systematic scoping review and agenda for design justice. *Health Expectations*, *24*, 4, 1072-1124. Doi: 10.1111/hex.13299

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