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The influence of AI Anxiety and Neuroticism in Attitudes toward Artificial Intelligence

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ABSTRACT:
This paper examines the impact of AI anxiety and neuroticism on attitudes toward Artificial Intelligence (AI) through a quantitative approach. With the pervasive integration of AI technologies across diverse domains like social media platforms, smart devices, healthcare, and education, gaining insight into how individuals perceive and engage with AI becomes essential. A sample of 197 participants (32 males, and 165 females) completed surveys assessing their levels of AI anxiety, neuroticism, and attitudes toward AI. The data were collected via Google Forms using the following structured questionnaires: Artificial Intelligence Anxiety Scale (AIA), Artificial Intelligence Attitude Scale (AIAS-4), and Neuroticism Scale. The findings indicate significant negative correlations between AI anxiety ($r=-.286$, $p<.01$), neuroticism ($r=-.196$, $p<.01$), and attitudes toward AI, suggesting that individuals with higher levels of AI anxiety and neuroticism are inclined towards adopting more skeptical viewpoints regarding AI technologies. Moreover, the AI anxiety subscales (learning, $r=-.152$, $p<.05$; job replacement, $r=-.257$, $p<.01$; sociotechnical blindness, $r=-.302$, $p<.01$, and AI configuration, $r=-.256$, $p<.01$) also showed negative significant correlations with the attitudes toward AI. At the same time, neuroticism showed significant positive correlations with the composite score of AI anxiety ($r=.301$, $p<.01$) and all its subscales (learning, $r=.219$, $p<.01$; job replacement, $r=.250$, $p<.01$; sociotechnical blindness, $r=.226$, $p<.01$, and AI configuration, $r=.277$, $p<.01$). Understanding the role of AI anxiety and neuroticism in shaping attitudes toward AI can inform the development of strategies to mitigate negative perceptions and foster more positive attitudes toward AI technologies

Keywords: artificial intelligence, anxiety, neuroticism, mediation

1. Introduction

During the last decade, the term Artificial Intelligence (AI) has gained much attention from scholars and practitioners (Brennen, Howard, & Nielsen, 2018; Fast & Horvitz, 2017). As Kieslich, Lünich, and Marcinkowski (2021) mentioned, numerous expectations concerning AI are present in the collective consciousness. Among those, we can find the hope that AI "will increase the veracity of input, effectiveness, and efficiency of procedures as well as the overall quality of outcomes" (Kieslich, Lünich, & Marcinkowski, 2021, p. 1563), or "automation and computerization will certainly transform how work is done, as AI changes or eliminates jobs and creates new ones" (Wang & Wang, 2019, p.1). However, according to Rogers (2003), the diffusion of innovation, here including new technologies and AI, at first will bring a lot of uncertainty and ambiguity as to how those developments will go on, and what social effect will generate (Pellegrino, 2015). The success of both the implementation and adoption of AI-

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based technology largely depends on the attitude of those involved and affected. Therefore, people may embrace new AI-based technologies, remain neutral, or be skeptical or even reluctant (Bauer, 1995).

Gathered under the generalized label of AI, applications regarding Big Data processing, Machine Learning, Neural Networks, and Deep Learning have generated a lot of interest in society (Kelley et al., 2019). Defined as a suite of tools and technologies able to augment and enhance organizational performance (Alsheibani, Cheung, & Messom, 2018), the rapid proliferation of AI technologies, particularly in the business sector, has significantly raised awareness among the general population, as businesses continuously seek customers and markets for their products (Bourne, 2019; Brennen, Howard, & Nielsen, 2018).

Therefore, what will follow is the inevitable impact of AI on society, as mentioned by Makridakis, (2017), Olhede and Wolfe (2018), and Vesnic-Alujevic et al. (2020). The current context reveals a reality in which individuals will have less and less power in deciding to adopt AI-based technologies (Brownsword & Harel, 2019). Instead, major decisions regarding introducing AI technologies will primarily be made by various stakeholders, such as large corporations and governments (Chen & Wen, 2021; Jones, Kaufman, & Edenberg, 2018). As AI-based technologies become increasingly common, understanding attitudes toward AI and examining the psychological factors associated with these attitudes is essential for guiding their development, adoption, and regulation (Araujo et al., 2020; O'Shaughnessy et al., 2022). Therefore, this study can yield important insights into the factors related to AI attitudes, following the work of Nadimpalli (2017) and Eitel-Porter (2021).

As mentioned by Kim and colleagues (2023) "the abstract nature of AI, its pervasive integration into daily life, and the profound implications for the future form a relentless source of stress. The complexity of AI can be overwhelming for many, fostering a heightened sense of vulnerability and a perceived loss of control. The intricate algorithms underpinning AI, their decision-making processes, and the broad societal impacts often seem overwhelmingly complex and unpredictable" (p.5).

2. Theoretical Background

Previous studies have shown that public attitudes toward AI are mixed (Fast & Horvitz, 2017; Kieslich, Keller, & Starke, 2022; Kolasinka, Lauriola, & Quadrio, 2019), some viewing it as game-changing and revolutionary, while others are anxious and suspicious about its black-box nature "because their internal workings and decision-making processes were not easily decipherable" (Kim et al., 2023, p.3).

According to various scholars (McManus et al., 2004; Milfont & Sibley, 2012), personality may have an important effect on a person's attitude, and thus it is essential to establish whether it also influences the attitudes towards AI. Moreover, as mentioned by Schepman and Rodway (2022), the personality factors that correlate with technology acceptance and adoption "can vary depending on the technology domain and type of attitude measured" (p. 2). Furthermore, Swendsen and colleagues (2013), analyzing the Big Five model of personality, identified that the intention to use technology was positively correlated with extraversion and negatively correlated with neuroticism. Similarly, Barnett

et al. (2015) identified a positive relation between actual technology use and conscientiousness, and a negative association between actual technology use and neuroticism. Moreover, Qu, Sun, and Ge (2021) revealed positive correlations between acceptance of self-driving cars and openness to experience and extraversion and negative ones with neuroticism.

Previous studies (Barlow et al., 2014; John & Srivastava, 1999) have highlighted that the presence of a high level of neuroticism is correlated with various negative consequences, including poor physical health, low life satisfaction, and an increased predisposition to mental conditions such as anxiety and depression. Additionally, people with high levels of neuroticism may struggle to maintain healthy social relationships due to their propensity for experiencing negative emotions and displaying maladaptive behaviors, such as isolation or aggression. (John & Srivastava, 1999).

Moreover, in research conducted by Barlow and colleagues (2014), the authors stated that neuroticism is generally characterized by a predisposition to experience negative emotions as reaction to various stressors. They have highlighted a wide range of negative emotions within this perspective, including "anxiety, fear, irritability, anger, sadness," with a strong emphasis on experiencing anxious or depressive moods (Barlow et al., 2014, p. 345).

Furthermore, research by McCrae and Costa (2003) indicates that individuals with high levels of neuroticism frequently exhibit negative emotional responses that may be disproportionate to the circumstances that triggered them. Lahey (2009) also mentions that individuals with high neuroticism may be self-critical, sensitive to criticism from others, and may experience feelings of inadequacy.

Moving further, Bernazzani (2017) noted that AI technologies are likely to replace a series of jobs and that increasing reliance on AI may result in a loss of meaning as human work is replaced by automation (Nauman, 2017). Additionally, people may be forced to change careers and enhance their skills, in line with Manyika and colleagues from the McKinsey Global Institute findings from 2017 who stated that "by 2030, 75 million to 375 million workers (3 to 14 percent of the global workforce) will need to switch occupational categories" (p.4). Those changes will bring, along with increased economic productivity (Wang & Wang, 2019), a series of concerns and anxiety related to AI's future development and application.

This anxiety related to current or future interactions with Ai-based technologies, together with specific negative cognitions in actual or future AI-based computer-related technology interactions (Rosen & Weil, 1990) can be defined as AI anxiety. Johnson and Verdicchio (2017) describe AI anxiety as a feeling of fear or agitation about out-of-control AI. Although previous studies (Brosnan & Lee, 1998; Wang, 2007) have shown that perceptions of anxiety linked with AI technology can either restrict or enhance future behavioral intentions, Johnson and Verdicchio (2017) pointed out that the affective response of anxiety or fear could deter individuals from engaging with AI.

Based on the findings from the literature review, the following hypotheses were selected (Figure 1):

Hy1: Artificial Intelligence Anxiety negatively correlates with Artificial Intelligence Attitude

Hy2: Neuroticism negatively correlates with Artificial Intelligence Attitude

Hy3: Neuroticism positively correlates with Artificial Intelligence Anxiety

Hy4: Neuroticism mediates the relation between Artificial Intelligence Anxiety and Artificial Intelligence Attitude

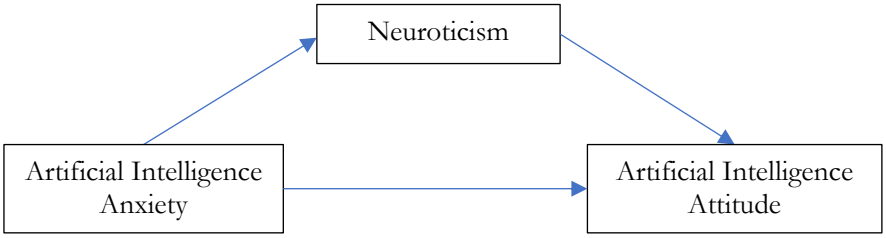

Figure 1. Conceptual framework

3. Methods

The sample included 197 participants, comprising 32 males and 165 females. Their ages ranged from 18 to 55 years, with a mean age of 20.59 and a standard deviation of 5.87. For data collection, a purposive convenience sampling method was employed, utilizing a self-reported data collection technique. Participants were provided with a brief explanation of the study's purpose before completing the survey, and informed consent was obtained. All participants were assured of the confidentiality of their data, which would be used solely for research purposes. They were asked to complete a series of questionnaires that included the following measures: Artificial Intelligence Anxiety Scale (AIA), Artificial Intelligence Attitude Scale (AIAS-4), and Neuroticism Scale

The Artificial Intelligence Attitude Scale (AIAS-4; Grassini, 2023) is a questionnaire comprising 4 items (e.g., AI technology is positive for humanity). Each item was rated on a 10-point Likert scale, where respondents indicated the extent of their agreement (10 – completely agree) or disagreement (1 – not at all) with various statements. The Cronbach Alpha coefficient of the composite score was α=.763.

The Artificial Intelligence Anxiety Scale (AIA) (Wang & Wang, 2019) consists of 21 items (e.g., I am afraid that widespread use of humanoid robots will take jobs away from people), covering four sub-scales: learning, job replacement, sociotechnical blindness, and AI configuration. Responses were rated on a seven-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). The internal consistency coefficient calculated for the current sample was α=.938.

Neuroticism Scale (Eysenck & Eysenck, 1968) is a 12-item scale (e.g., I am often troubled by feelings of guilt). Responses were measured using a 5-point Likert scale, with 1 indicating "Strongly disagree" and 5 indicating "Strongly agree". The Cronbach Alpha for the composite score was α=.917).

4. Results

After data screening and cleaning, the data were analysed using SPSS 26.0 software and the PROCESS macro version 3.2.02 developed by Andrew Hayes (Preacher & Hayes, 2004). Table 1 presents the means, standard deviations, and bivariate correlations for all the study variables. As shown, several significant positive and negative correlations were identified.

Table 1: Descriptive statistics and inter-correlations of the study variable

	Mean	SD	1	1.a	1.b	1.c	1.d	2	3
1. Artificial Intelligence Anxiety	83.64	24.11	-						
1.a Learning	23.19	10.82	.790**	-					
1.b Job replacement	30.29	8.42	.790**	.337**	-				
1.c Sociotechnical blindness	18.20	5.50	.810**	.433**	.713**	-			
1.d AI configuration	11.94	5.54	.802**	.542**	.548**	.600**	-		
2. Artificial Intelligence Attitude	28.93	6.05	-.151*	-.007	-.178*	-.208**	-.166*	-	
3. Neuroticism	41.04	10.70	.301**	.219**	.250**	.226**	.277**	-.147*	-

Specifically, the Pearson correlation between the selected variables was calculated to address our first hypothesis (Hy1: Artificial Intelligence Anxiety negatively correlates with Artificial Intelligence Attitude). The results (see Table 1) revealed a significant negative correlation ($r=-.151$, $p<.05$) between Artificial Intelligence Anxiety and Artificial Intelligence Attitude. Therefore, a greater level of AI anxiety is related to a more skeptical attitude toward AI. Thus, higher levels of AI-related anxiety are associated with diminished beliefs in the potential benefits of AI for improving quality of life (Loh et al., 2022), enhancing work conditions, and contributing to societal progress and well-being (Matytsin et al., 2023; Xia et al., 2022; Yang, 2022).

Moreover, the detailed analysis of the Artificial Intelligence Anxiety dimensions (Table 1), revealed that three out of four anxiety dimensions showed significant negative correlations with Artificial Intelligence Attitude: Job replacement ($r=-.178$, $p<.05$), Sociotechnical blindness ($r=-.208$, $p<.01$), and AI configuration ($r=-.166$, $p<.05$). Thus, anxiety related to potential job losses and the replacement of people with automation, the inexplicable and black-box nature of AI, and the presence of humanoid robots resembling real humans contribute to a skeptical and even negative attitude toward AI.

The second hypothesis (Hy2: Neuroticism negatively correlates with Artificial Intelligence Attitude) was supported by the corresponding results (Table 1) that showed a significant negative correlation between Neuroticism and Artificial Intelligence Attitude ($r=-.147$, $p<.05$). This finding indicates that increased levels of Neuroticism are linked with a more skeptical attitude toward AI. The results align with those of Swendsen et al. (2013) who revealed that the behavioral intention to use technology was negatively correlated with neuroticism.

Concerning the third hypothesis (Hy3: Neuroticism positively correlates with Artificial Intelligence Anxiety), the results revealed a strong positive correlation (r=.301, p<.01) between Neuroticism and AI Anxiety (Table 1). This positive correlation can be explained by the characteristics typically associated with neuroticism. As John and Srivastava (1999) mentioned, neuroticism is a personality trait marked by a propensity to experience frequent and intense negative emotions, including anxiety, fear, irritability, and sadness. Individuals with high levels of neuroticism are often more sensitive to stress and more prone to worry. As previously mentioned, numerous factors can trigger anxiety regarding AI technologies, particularly in individuals with high neuroticism. One significant factor is that AI technologies often operate in ways not fully understood by the general public, leading to feelings of uncertainty (Pellegrino, 2015). Moreover, the "black-box" nature of many AI systems—where the decision-making process lacks transparency—can be particularly unsettling for individuals with high levels of neuroticism (Kieslich, Keller, & Starke, 2022; Kolasinka, Lauriola, & Quadrio, 2019). Along with those factors, the fear of job losses due to automation and AI replacing human roles can be particularly distressing, especially in individuals predisposed to worry about financial and professional stability (Nauman, 2017).

The fourth hypothesis (Hy4: Neuroticism mediates the relation between Artificial Intelligence Anxiety and Artificial Intelligence Attitude) was tested using the PROCESS macro developed by Andrew Hayes (Preacher & Hayes, 2004).

The model was conceptualized with Artificial Intelligence Anxiety (AI Anxiet) as the predictor variable, Neuroticism (Neurot) as a mediator, and Artificial Intelligence Attitude (AI Attid) as an outcome variable (Figure 1). The results did not show a significant indirect effect of Neuroticism on the relation between Artificial Intelligence Anxiety and Artificial Intelligence Attitude (Table 2).

Table 2: Regression results for the mediation process

Model	Coeff.	SE	t	p	CI(lower)	CI(upper)
Without mediator						
AI Anxiet -> AI Attid (c)	-.0379	.0178	-2.1331	.0342	29.0545	35.1575
With mediator						
AI Anxiet -> Neurot (a)	.1335	.0303	4.4051	.0000	.0738	.1933
Neurot -> AI attit (b)	-.0630	.0419	-1.5054	.1138	-.1456	.0195
AI Anxiet -> AI Attid (c')	-.0295	.0186	-1.5880	.1139	-.0661	.0071

In the first step of the analysis, the regression of AI Anxiety on AI Attitude, ignoring Neuroticism, is significant, $F(1,195) = 4.55$, $p < .05$, $R2 = .02$, $b = -.03$, $t(195) = -2.13$, $p < .05$. The second step of the mediation model shows that the regression of the AI Anxiety on Neuroticism, is significant, $F(1,195) = 19.40$, $p < .001$, $R2 = .09$, $b = .13$, $t(195) = 4.40$, $p < .01$. The third step of the mediation process shows that Neuroticism, controlling for AI Anxiety is no longer significant, $F(2,194) = 3.42$, $R2 = .03$, $p < .05$, $b = -.06$, $t(194) = -1.50$, $p > .05$. The last step reveals that controlling for Neuroticism, AI

Anxiety is also no longer significant predictor of AI Attitude, b = ,01, t(194) =-1.58, p > .05.

5. Discussion

The first hypothesis was confirmed by the results both for composite scores and for three out of four AI Anxiety subdimensions. Job replacement anxiety stems from the fear that AI and automation will replace human jobs, leading to unemployment and economic instability (Bernazzani, 2017). As AI systems become more capable, there is a real concern that many jobs, particularly those involving repetitive tasks, will be automated. This anxiety is particularly pronounced in industries where AI has already started to displace human workers, ultimately leading to a loss of meaning in their work (Nauman, 2017). The uncertainty about which jobs will be affected and the potential scale of the impact contributes to this anxiety.

Furthermore, sociotechnical blindness refers to the anxiety related to the potential for AI systems to be developed and deployed without sufficient consideration of the broader social, ethical, and technical impacts. This can include concerns about bias in AI algorithms, privacy violations, and the lack of transparency in AI decision-making processes (Johnson & Verdicchio, 2017). Sociotechnical blindness is a fear that society might blindly trust AI systems without fully understanding or addressing the negative consequences that could arise from their use. This dimension of AI anxiety highlights the worry that the social and ethical implications of AI are being overlooked or inadequately managed. This lack of transparency made it difficult to understand how these models reached their conclusions, which in turn limited their broader applicability, especially in areas that require clear and explicit reasoning (Castelvecchi, 2016).

Lastly, AI configuration revolves around concerns about how AI systems are designed, configured, and controlled. Similar to robot anxiety (Wang & Wang, 2019), and uncanny valley, the discomfort people feel when robots or other artificial beings appear almost, but not quite, human (Ho & MacDorman, 2010) showed a significant correlation with the AI attitude. This near-human appearance can create a sense of unease, as the robot seems familiar yet eerily different, triggering feelings of robot anxiety.

The Learning dimension of AI Anxiety, linked to the fear or discomfort people may feel about needing to acquire new skills and knowledge required to effectively work alongside AI systems (Piniel & Csizér, 2013) did not correlate with the AI Attitude. AI will continue to evolve and this will require a growing need for individuals to continually update their skills to stay relevant in the job market. Although this can be overwhelming for many, especially those who feel they lack the necessary technical expertise or resources to learn new technologies, it seems that it won't have a relevant impact on the positive or negative attitude toward AI.

Similarly, the results also confirmed the second hypothesis, indicating that individuals with high levels of neuroticism are more likely to view AI and automation as threats to their job security, privacy, and social roles. Their general tendency toward worry and fear can amplify concerns about AI replacing human jobs, making mistakes, or causing harm (Sindermann et al., 2021). Moreover, the rapid and unpredictable advancement of

AI technologies can provoke a negative reaction in those high in neuroticism, as they may feel overwhelmed by the pace of change and uncertain about their ability to adapt.

Furthermore, previous studies showed that high scores in Neuroticism describe individuals who are prone to anxiety, frequent worry, and a tendency toward depressive behaviors (Costa & McCrae, 1992; Rammstedt & Danner, 2017). Following the same personality dimension of the Big Five, Szalma and Taylor (2011) found that Neuroticism was positively correlated to negative attitudes toward robots. The same results were identified also between Neuroticism and agreement with the automated advice (Szalma & Taylor, 2011).

Therefore, starting from the wider acknowledgment that AI applications can have intended and unintended negative consequences if not implemented carefully, scholars and government representatives such as UNI Global Union (2017) or The Institute for Ethical AI & Machine Learning (2020) have begun to work on a series of AI ethical principles. Those initiatives can help individuals reduce anxiety and have a more realistic attitude toward AI. One recent example is represented by the Algorithmic Accountability Act which emphasize the importance of transparency and fairness in AI systems (Kim et al., 2023).

Moreover, AI is already embedded in a large number of products, starting from smartphones to self-driving cars, and it will become "a driver of the economy" (Montag et al., 2024, p.1). Therefore, those having a positive attitude toward AI may profit from it by an early adaptation of AI-based technologies.

As observed in previous studies (Sindermann et al. 2022), Neuroticism is positively related to negative attitudes toward artificial intelligence. But, as mentioned by Marengo et al. (2021), the neuroanatomically bottom-up drivers of neuroticism are represented by fear, sadness, and anger. Starting from this observation and Panksepp's Affective Neuroscience Theory (Montag & Panksepp 2016; Panksepp 2011), Montag and colleagues (2024) have tried to identify the possible associations between these primary emotional systems and attitudes toward artificial intelligence. Their findings revealed positive correlations between all negative primary emotional systems, namely fear, sadness, and anger, and negative attitudes toward artificial intelligence (Montag et al., 2024).

Therefore, mitigating those emotions through different types of regulations regarding AI development and the pace of AI implementation has become a necessity. One way of doing this is by "instituting regulations that control the development speed of AI" (Kim et al., 2023, p.20). This "could provide the public with a necessary adaptation period, diminishing anxiety and bolstering resilience" (Kim et al., 2023, p.20).

6. Conclusion

The current study sought to examine the impact of AI anxiety and neuroticism on attitudes toward Artificial Intelligence (AI) through a quantitative approach. Furthermore, the mediation role of Neuroticism in the relation between AI anxiety and AI Attitude was investigated. The findings showed significant negative correlations between Artificial Intelligence Anxiety and Artificial Intelligence Attitude, as well as between Neuroticism and Artificial Intelligence Attitude, consistent with previous findings (Barnett et al., 2015; Qu, Sun, & Ge, 2021; Swendsen et al., 2013). Moreover, the results revealed that

Neuroticism positively correlates with Artificial Intelligence Anxiety, suggesting that people exhibiting increased levels of neuroticism are more prone to experience anxiety related to the development and implementation of AI technologies ((Kieslich, Keller, & Starke, 2022; Kolasinka, Lauriola, & Quadrio, 2019; Nauman, 2017).

Despite the notable findings of this study, there are several limitations. One major weakness is the use of a cross-sectional design, which prevents the assessment of cause-and-effect relationships, although the mediation analysis performed (regression table) points toward this type of causal explanation. Furthermore, the small sample size makes it difficult to generalize the results beyond the investigated population. Additionally, as is typical in many studies, the reliance on self-reported questionnaires often emphasizes attitudes rather than actual behaviors. Future studies should investigate the role of core self-evaluation (neuroticism, self-esteem, self-efficacy, and locus of control) in the attitude toward AI, and the mediating role of some individual variables such as magical thinking (Musa, 2020), illusory beliefs (Kingdon, Egan, & Rees, 2012) or thought control (Szczepanowski et al., 2021).

One important distinction is the different types of AI anxiety (Spielberger, 1966). Future studies should distinguish between "state anxiety," which is a temporary reaction to adverse events, and "trait anxiety," a more stable personality characteristic that reflects a persistent tendency to respond to various situations with concerns, troubles, and worries (Saviola et al., 2020).

Furthermore, the growing capability of generative AI to produce written content, images, and music, tasks once thought to be beyond the reach of AI, amplifies the concern about being replaced by these technologies. As mentioned by (Kim et al., 2023, p.7), "the advent of generative AI models has rapidly dissolved the previously assumed boundaries delineating AI's capabilities, challenging both societal expectations and academic predictions regarding the scope of AI over the ensuing decade". As AI continues to be implemented in more and more areas, the incapacity to properly use AI may trigger a fear of becoming technologically obsolete (Schwab & Samans, 2016).

References

Alsheibani, S. A., Cheung, Y. P., & Messom, C. H. (2018). Artificial Intelligence Adoption: AI-readiness at Firm-Level, in Motonari Tanabu, Dai Senoo (Eds.), PACIS 2018 Proceedings., 37. https://aisel.aisnet.org/pacis2018/37

Araujo, T., Helberger, N., Kruikemeier, S., & De Vreese, C. H. (2020). In AI we trust? Perceptions about automated decision-making by artificial intelligence. *AI & Society, 35*, 611–623. https://doi.org/10.1007/s00146-019-00931-w

Barlow, D. H., Sauer-Zavala, S., Carl, J. R., Bullis, J. R., & Ellard, K. K. (2014). The nature, diagnosis, and treatment of neuroticism: Back to the future. *Clinical Psychological Science, 2*(3), 344–365. https://doi.org/10.1177/2167702613505532

Bauer, M. W. (1995). *Resistance to new technology: nuclear power, information technology, and biotechnology*. Cambridge: Cambridge University Press.

Bernazzani, S. (2017, June 1). 10 jobs artificial intelligence will replace (and 10 that are safe). Available at: https://blog.hubspot.com/marketing/jobs-artificial-intelligence-will-replace

Bourne, C. D. (2019). AI cheerleaders: Public relations, neoliberalism and artificial intelligence. *Public Relations Inquiry, 8*, 109 – 125. https://doi.org/10.1177/2046147X19835250

Brennen, J. S., Howard, P. N., & Nielsen, R. K. (2018). *An industry-led debate: How UK media cover artificial intelligence.* University of Oxford. https://reutersinstitute.politics.ox.ac.uk/our-research/

industry-led-debate-how-uk-media-cover-artificial-intelligence

Brosnan, M., & Lee, W. (1998). A cross-cultural comparison of gender differences in computer attitudes and anxieties: The United Kingdom and Hong Kong. *Computers in Human Behavior, 14*(4), 559–577. https://doi.org/10.1016/S0747-5632(98)00024-7

Brownsword, R., & Harel, A. (2019). Law, liberty and technology: Criminal justice in the context of smart machines. *International Journal of Law in Context, 15*(2), 107–125. https://doi.org/10.1017/S1744552319000065

Castelvecchi, D. (2016). Can we open the black box of AI?, *Nature News, 538*(7623), 20-23. https://doi.org/10.1038/538020a

Chen, Y. N. K., & Wen, C. H. R. (2021). Impacts of attitudes toward government and corporations on public trust in artificial intelligence. *Communication Studies, 72*(1), 115–131. https://doi.org/10.1080/10510974.2020.1807380

Costa, P. T., & McCrae, R. R. (1992). Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) professional manual. Odessa, Fl: Psychological Assessment Resources.

Eitel-Porter, R. (2021). Beyond the promise: implementing ethical AI. *AI and Ethics, 1*, 73–80. https://doi.org/10.1007/s43681-020-00011-6

Eysenck, S. B., & Eysenck, H. J. (1968). The measurement of psychoticism: A study of factor stability and reliability. *British Journal of Social & Clinical Psychology, 7*(4), 286–294.

Fast, E., & Horvitz, E. (2017). *Long-term trends in the public perception of artificial intelligence.* In Proceedings of the AAAI Conference on Artificial Intelligence, 31. https://doi.org/10.1609/aaai.v31i1.10635

Ho, C.-C., & MacDorman, K. F. (2010). Revisiting the uncanny valley theory: Developing and validating an alternative to the Godspeed indices. *Computers in Human Behavior, 26*(6), 1508–1518. https://doi.org/10.1016/j.chb.2010.05.015

John, O. P., & Srivastava, S. (1999). The Big Five Trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp. 102–138). Guilford Press.

Johnson, D. G., & Verdicchio, M. (2017). AI anxiety. *Journal of the Association for Information Science and Technology, 68*(9), 2267–2270. https://doi.org/10.1002/asi.23867

Jones, M. L., Kaufman, E., & Edenberg, E. (2018). AI and the ethics of automating consent. *IEEE Security & Privacy, 16*(3), 64–72. https://doi.org/10.1109/MSP.2018.2701155

Kelley, P. G., Yang, Y., Heldreth, C., Moessner, C., Sedley, A., Kramm, A., Newman, D. & Woodruff, A. (2019). Happy and assured that life will be easy 10 years from now: perceptions of artificial intelligence in 8 countries. Available at: https://arxiv.org/abs/2001.00081, https://doi.org/10.1145/3461702.3462605

Kieslich, K., Keller, B., & Starke, C. (2022). Artificial intelligence ethics by design. Evaluating public perception on the importance of ethical design principles of artificial intelligence. *Big Data & Society, 9*(1). https://doi.org/10.1177/20539517221092956

Kieslich, K., Lünich, M., & Marcinkowski, F. (2021). The Threats of Artificial Intelligence Scale (TAI). Development, Measurement and Test Over Three Application Domains, *International Journal of Social Robotics, 13*, 1563–1577. https://doi.org/10.1007/s12369-020-00734-w

Kim, J., Kadkol, S., Solomon, I., Yeh, H., Soh, J. Y., Nguyen, T. M., Choi, J. Y., Lee, S., Srivatsa, A. V., Nahass, G. R., & Ajilore, O. A. (2023). AI Anxiety: A Comprehensive Analysis of Psychological Factors and Interventions. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4573394

Kingdon, B.L., Egan, S.J., & Rees, C. S. (2012). The Illusory Beliefs Inventory: A New Measure of Magical Thinking and its Relationship with Obsessive Compulsive Disorder, *Behavioural and Cognitive Psychotherapy, 40*(1), 39-53. https://doi.org/10.1017/S1352465811000245

Kolasinska, A., Lauriola, I., & Quadrio, G. (2019, September). Do people believe in Artificial Intelligence? A cross-topic multicultural study. In *Proceedings of the 5th EAI International Conference on Smart Objects and Technologies for Social Good* (pp. 31–36). https://doi.org/10.1145/3342428.3342667

Lahey, B. B. (2009). Public health significance of neuroticism. *American Psychologist, 64*(4), 241–256. https://doi.org/10.1037/a0015309

Loh, H. W., Ooi, C. P., Seoni, S., Barua, P. D., Molinari, F., & Acharya, U. R. (2022). Application of explainable artificial intelligence for healthcare: a systematic review of the last decade (2011–2022). *Computer Methods and Programs in Biomedicine, 226*, 107161. https://doi.org/10.1016/j.cmpb.2022.107161

Makridakis, S. (2017). The forthcoming Artificial Intelligence (AI) revolution: Its impact on society and firms. *Futures, 90*, 46–60. https://doi.org/10.1016/j.futures.2017.03.006

Manyika, J., Lund, S., Chui, M., Bughin, J., Woetzel, J., Batra, P., Ko, R., & Sanghvi, S. (2017). Jobs lost, jobs gained: Workforce transitions in a time of automation. San Francisco, CA: McKinsey Global Institute.

Marengo, D., Davis, K. L., Gradwohl, G. Ö., & Montag, C. (2021). A meta-analysis on individual differences in primary emotional systems and Big Five personality traits. *Scientific reports, 11*(1), 7453. https://doi.org/10.1038/s41598-021-84366-8

Matytsin, D. E., Dzedik, V., Markeeva, G. A., & Boldyreva, S. B. (2023). "Smart" outsourcing in support of the humanization of entrepreneurship in the artificial intelligence economy. *Humanities & Social Sciences Communications, 10*., 1–8. https://doi.org/10.1057/s41599-022-01493-x

McCrae, R. R., & Costa, P. T. (2003). *Personality in adulthood: A five-factor theory perspective*. NY: Guilford Press. https://psycnet.apa.org/doi/10.4324/9780203428412

McManus, I., Keeling, A., & Paice, E. (2004). Stress, burnout and doctors' attitudes to work are determined by personality and learning style: A twelve-year longitudinal study of UK medical graduates. *BMC Medicine, 2*, 29. https://doi.org/10.1186/1741-7015-2-29

Milfont, T. L., & Sibley, C. G. (2012). The big five personality traits and environmental engagement: Associations at the individual and societal level. Journal of Environmental Psychology, 32(2), 187–195. https://doi.org/10.1016/j.jenvp.2011.12.006

Montag, C., Ali, R., & Davis, K. L. (2024). Affective neuroscience theory and attitudes towards artificial intelligence. *AI & SOCIETY*. https://doi.org/10.1007/s00146-023-01841-8

Montag, C., & Panksepp, J. (2016). Primal emotional-affective expressive foundations of human facial expression. *Motivation and Emotion, 40*(5), 760– 766. https://doi.org/10.1007/s11031-016-9570-x

Musa, G. R. (2020). Echoes of myth and magic in the language of Artificial Intelligence. *AI & Society, 35*, 1009–1024. https://doi.org/10.1007/s00146-020-00966-4

Nadimpalli, M. K. (2017). Artificial Intelligence Risks and Benefits. *International Journal of Innovative Research in Science, Engineering and Technology, 6*(6).

Nauman, Z. (2017, February 17). AI will make life meaningless, Elon Musk warns. Available at: https://nypost.com/2017/02/17/elon-musk-thinks-artificial-intelligence-will-destroy-the meaning-of-life/?utm_campaign=SocialFlow&utm_source=NYPFacebook&utm_medium =SocialFlow&sr_share=facebook

O'Shaughnessy, M. R., Schiff, D. S., Varshney, L. R., Rozell, C. J., & Davenport, M. A. (2022). What governs attitudes toward artificial intelligence adoption and governance? *Science and Public Policy, 50*(2), 161–176. https://doi.org/10.1093/scipol/scac056

Olhede, S. C., & Wolfe, P. J. (2018). The growing ubiquity of algorithms in society: Implications, impacts and innovations. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 376*(2128), 20170364. https://doi.org/10.1098/rsta.2017.0364

Panksepp, J. (2011). Cross-species affective neuroscience decoding of the primal affective experiences of humans and related animals. *PLoS ONE, 6*(9), e21236. https://doi.org/10.1371/journal.pone.0021236

Pellegrino, G. (2015). Obsolescence, presentification, revolution: Sociotechnical discourse as site for in fieri futures. *Current Sociology, 63*, 216 - 227. https://doi.org/10.1177/0011392114556584

Piniel, K., & Csizér, K. (2013). L2 motivation, anxiety and self-efficacy: The interrelationship of individual variables in the secondary school context. *Studies in Second Language Learning and Teaching, 3*, 523-550. https://doi.org/10.14746/SSLLT.2013.3.4.5

Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments and Computers, 36(*4), 717–731. https://doi.org/10.3758/BF03206553

Qu, W., Sun, H., & Ge, Y. (2021). The effects of trait anxiety and the big five personality traits on self-driving car acceptance. *Transportation, 48*, 2663–2679. https://doi.org/10.1007/s11116-020-10143-7

Rammstedt, B., & Danner, D. (2017). Die Facettenstruktur des Big Five Inventory (BFI). *Diagnostica, 63*, 70–84. https://doi.org/10.1026/0012-1924/a000161

Rogers, E. M. (2003). *Diffusion of Innovations, 5th Edition*, Simon and Schuster.

Rosen, L. D., & Weil, M. M. (1990). Computers, classroom instruction and the computerphobic university student. *Collegiate Microcomputer, 8*(4), 257–283.

Saviola, F., Pappaianni, E., Monti, A., Grecucci, A., Jovicich, J., & De Pisapia, N. (2020). Trait and state anxiety are mapped differently in the human brain. *Scientific reports*, *10*(1), 11112. https://doi.org/10.1038/s41598-020-68008-z

Schepman, A., & Rodway, P. (2022). 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*, 2724 - 2741. https://doi.org/10.1080/10447318.2022.2085400

Schwab, K., & Samans, R. (2016). *The future of jobs: Employment, skills and workforce strategy for the fourth industrial revolution*. World Economic Forum. 1–32.

Sindermann, C., Sha, P., Zhou, M., Wernicke, J., Schmitt, H. S., Li, M., Sariyska, R., Stavrou, M., Becker, B., & Montag, C. (2021), Assessing the attitude towards artificial intelligence: introduction of a short measure in German, Chinese, and English Language. *KI Künstliche Intelligenz, 35*(1), 109–118. https://doi.org/10.1007/s13218-020-00689-0

Sindermann, C., Yang, H., Elhai, J.D., Yang, S., Quan, L., Li, M., & Montag, C. (2021). Acceptance and Fear of Artificial Intelligence: associations with personality in a German and a Chinese sample. *Discover Psychology, 2*, 8. https://doi.org/10.1007/s44202-022-00020-y

Spielberger, C. D. (1966). Theory and research on anxiety. In C. D. Spielberger (Ed.), *Anxiety and behaviour* (pp. 3–20). New York: Academic Press.

Svendsen, G. B., Johnsen, J. A. K., Almås-Sørensen, L., & Vittersø, J. (2013). Personality and technology acceptance: The influence of personality factors on the core constructs of the Technology Acceptance Model. *Behaviour & Information Technology, 32*(4), 323–334. https://doi.org/10.1080/0144929X.2011.553740

Szalma, J. L, & Taylor, G. S. (2011). Individual differences in response to automation: the five factor model of personality. *Journal of Experimental Psychology. Applied*, *17*(2), 71–96. https://doi.org/10.1037/a0024170.

Szczepanowski, R., Cichoń, E., Niemiec, T., Andrzejewska, B. E., & Wójta-Kempa, M. (2021). Measurement of Unwanted Thought Suppression Strategies with the Thought Control Questionnaire in the General Polish Population: A Confirmatory Factor Analysis and Validation. *Psychology research and behavior management*, *14*, 137–148. https://doi.org/10.2147/PRBM.S286245]

The Institute for Ethical AI & Machine Learning: The responsible machine learning principles. https://www.ethical.institute/principles.html. Accessed 16 August 2024

UNI Global Union: Top 10 principles for ethical artificial intelligence. https://www.thefutureworldofwork.org/media/35420/uni_ethical_ai.pdf (2017). Accessed 16 August 2024

Vesnic-Alujevic, L., Nascimento, S., & Polvora, A. (2020). Societal and ethical impacts of artificial intelligence: Critical notes on European policy frameworks. *Telecommunications Policy, 44*(6), 101961. https://doi.org/10.1016/j.telpol.2020.101961

von Eschenbach W. J. (2021). Transparency and the black box problem: Why we do not trust AI. *Philosophy & Technology, 34*(4), 1607–1622. https://link.springer.com/article/10.1007%2Fs13347-021-00477-0

Wang, Y. S. (2007). Development and validation of a mobile computer anxiety scale. *British Journal of Educational Technology, 38*(6), 990–1009. https://doi.org/10.1111/j.1467-8535.2006.00687.x

Wang, Y. Y., & Wang, Y. S. (2019). Development and validation of an artificial intelligence anxiety scale: an initial application in predicting motivated learning behavior. *Interactive Learning Environments, 30*(4), 619–634. https://doi.org/10.1080/10494820.2019.1674887

Xia, Q., Chiu, T. K., Lee, M., Sanusi, I. T., Dai, Y., & Chai, C. S. (2022). A self-determination theory (SDT) design approach for inclusive and diverse artificial intelligence (AI) education. *Computers and Education, 189*, 104582. https://doi.org/10.1016/j.compedu.2022.104582

Yang, W. (2022). Artificial intelligence education for young children: why, what, and how in curriculum design and implementation. *Computers and Education: Artificial Intelligence*, 3, 100061. https://doi.org/10.1016/j.caeai.2022.100061