



Participatory Educational Research (PER)
Vol.12(3), pp. 292-311, May 2025
Available online at <http://www.perjournal.com>
ISSN: 2148-6123
<http://dx.doi.org/10.17275/per.25.45.12.3>

Id: 1588253

Artificial Intelligence Myths: Prevalence Among Turkish University Students and Comparative Analysis of ChatGPT Responses

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Article history

Received:
19.10.2024

Received in revised form:
18.01.2025

Accepted:
03.03.2025

Key words:

artificial intelligence,
generative ai, myths,
misconceptions

Artificial intelligence (AI) has rapidly emerged as a transformative technology across various disciplines. However, its widespread adoption is accompanied by numerous myths, which are fueled by limited public understanding and can significantly shape how individuals perceive and interact with AI, often leading to negative consequences such as misunderstanding, fear, or resistance. Despite the importance of addressing these myths, research on the prevalence of such beliefs remains insufficient, particularly in the Turkish context. This study aims to determine the prevalence of AI myths among Turkish university students, investigate the factors influencing the adoption of these myths, and compare student perceptions with ChatGPT's responses to the same myths. The study analyzed survey data from 288 students (102 males, 35.4%, and 186 females, 64.6%) using an AI-myth survey consisting of 18 items. Both descriptive and inferential analyses were conducted to determine the prevalence of AI myths and investigate how factors such as academic background, gender, AI-related training, and media consumption influence the adoption of these myths. A comparative analysis was also performed between student responses and ChatGPT's reactions to these myths. Analysis showed that certain AI myths are particularly prevalent among students. Students from technical disciplines demonstrated a greater ability to identify these myths, while prior AI training and media consumption had minimal impact. ChatGPT's responses highlighted areas where better communication about AI is needed. The findings suggest that improving AI literacy and dispelling myths are essential for preparing students for more informed engagement with AI technologies.

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Introduction

Although artificial intelligence (AI) is not a novel technology, with its origins tracing back to the 1950s, the field has recently witnessed a substantial increase in attention and hype, particularly over the past two years, driven by the emergence of generative AI tools such as ChatGPT and DALL-E (Galanos et al., 2020; Hirsch-Kreinsen & Krokowski, 2024; Pesapane et al., 2020). This surge in interest often leads to the emergence of new myths, especially when the public lacks the necessary information about the topic. A parallel trend can be drawn to the early 2000s, when the development of brain studies and the rise of neuroscience resulted in the creation and spread of neuromyths—misconceptions about the brain and learning (Organisation for Economic Co-operation and Development [OECD], 2002). Similarly, despite AI's growing presence in everyday life, there remains a significant gap in the general public's understanding of technology/this technology, leading to the proliferation of myths (Atkinson, 2016). Consequently, a variety of myths and misconceptions have emerged about artificial intelligence (AI), prompting a number of scholarly papers dedicated to debunking these beliefs (Atkinson, 2016, 2016; Bewersdorff, 2023; Emmert-Streib et al., 2020; Galanos et al., 2023; Giray, 2024; Hirsch-Kreinsen & Krokowski, 2024; Leufer et al., 2020; Natale & Ballatore, 2017; Pesapane et al., 2020).

The persistence of myths and misconceptions is not without consequence; they can lead to significant harm to individuals and society (Ecker et al., 2022; Lewandowsky et al., 2012; Pasquinelli, 2012). Particularly, misconceptions on serious issues like vaccines or health-related matters can result in profoundly negative consequences, such as vaccine refusal, which can also prevent herd immunity (Loomba et al., 2021). Moreover, even seemingly harmless myths and misconceptions can lead to both direct and indirect harmful outcomes, and the inability to distinguish between myth and reality in one area of scientific knowledge can easily extend to an inability to differentiate fact from fiction in other areas (Lilienfeld et al., 2010). Pasquinelli (2012) noted that the adoption of myths and misconceptions can lead to the waste of time, financial resources, and effort on ineffective methods. Similarly, in terms of AI-related misconceptions, misinformation surrounding AI can influence policymaking, educational practices, and public opinion, often resulting in mismanagement and the potential misuse of AI technologies (Giray, 2024). Nussbaum (2024) stated that these misconceptions often lead to unrealistic expectations, making AI seem either unapproachable or difficult to comprehend, thereby portraying it as either a villain or a savior. He emphasized that exploring AI-related myths and misconceptions can provide valuable insights into students' prior understanding of the field, which can help in developing more effective educational programs.

It appears that an important step in dispelling myths is determining their prevalence. Scholars working on refuting misconceptions argue that identifying the most commonly adopted myths is essential for designing effective intervention strategies (Cook et al., 2010). This approach could also be helpful in determining priorities and optimizing the use of instructional resources. It has been suggested that if a misconception or myth is not widespread enough, attempting to refute it may not be beneficial, as it could inadvertently increase the popularity of the myth (Lewandowsky et al., 2020).

As a result, several studies have been conducted to explore the prevalence of various myths, including neuromyths (De Bruyckere et al., 2015; Torrijos-Muelas et al., 2021; Tunga & Cagiltay, 2023) science myths (Guerrero et al., 2019), and vaccine myths (Omisakin et al., 2023; Ullah et al., 2021). However, in terms of AI-related myths, while many studies have been dedicated to debunking them, there is a notable lack of research specifically examining the myths held by university students. Additionally, Bewersdorff (2023) found that research on AI

myths has predominantly concentrated on Western contexts. Given this, it is crucial to assess the extent to which university students, as future professionals and decision-makers, are influenced by AI myths.

This study aims to fill that gap by investigating the prevalence of AI myth adoption among university students, with particular attention to how factors such as academic background, exposure to AI-related training, and consumption of popular science and technological content may contribute to the adoption of these myths. By addressing the specific myths prevalent among Turkish university students, this research will not only contribute to the existing body of literature but also offer practical recommendations for improving AI literacy and dispelling myths at the academic level.

Background of the Study

Myths, Misconceptions and Artificial Intelligence

A myth, often used interchangeably with "misconception" in science and education, refers to widely accepted but false beliefs that contradict scientific facts (Berliner & Glass, 2014; Gardner & Brown, 2013). Their persistence hinders learning and disrupts the scientific process, making it essential to dispel them through refutation strategies (Ecker et al., 2014). Addressing these inaccuracies is often more challenging than teaching new concepts (Chi, 2009), as it requires a shift in conceptual understanding rather than simply adding new information to existing mental frameworks (Posner et al., 1982; Vosniadou, 2013).

Myths, particularly in the context of education and science, often originate from the misinterpretation or oversimplification of scientific findings. Myths can arise when complex scientific concepts are reduced to more digestible, yet inaccurate, forms that are easier for the general public to understand. Additionally, myths can emerge from outdated scientific theories that persist even after new evidence has debunked them (OECD, 2002; Pasquinelli, 2012). Once a myth or misconception emerges, it spreads through various channels, including traditional and social media, the internet, and even educational institutions (Lewandowsky et al., 2012; Rogers & Cheung, 2022).

Studies (Torrijos-Muelas et al., 2021; Tunga & Cagiltay, 2023) have demonstrated that the primary safeguard against the adoption of myths and misconceptions is related knowledge itself. This implies that when there is a lack of information about newly emerging subjects, such as artificial intelligence or neuroscience, people are more likely to adopt inaccurate beliefs. Although artificial intelligence has a long history, its recent surge in popularity, combined with a lack of knowledge and understanding, has made it a new focus of myth and misconception studies (Atkinson, 2016). As a result, a variety of misconceptions and myths have emerged, such as the belief that "AI will take human jobs" or "AI works like the human brain" (Atkinson, 2016, 2016; Bewersdorff, 2023; Emmert-Streib et al., 2020; Galanos et al., 2020; Giray, 2024; Hirsch-Kreinsen & Krokowski, 2024; Leufer et al., 2020; Natale & Ballatore, 2017; Pesapane et al., 2020).

Thinking machine is a prevalent myth about AI, suggesting that AI can perfectly replicate human cognitive processes (Emmert-Streib et al., 2020; Larson, 2021; Natale & Ballatore, 2020; Nussbaum, 2023). Although 'thinking' is not a well-defined construct, it is generally considered to involve reasoning, decision-making, and problem-solving, and is usually associated with biological beings. Consciousness, as well as being driven by intentions and

internal motivations, are also key aspects of human thinking processes, which are not present in the current versions of AI systems (Emmert-Streib et al., 2020; Nussbaum, 2023). The ambiguity in the definition of AI and its allowance for wishful thinking is believed to contribute to the emergence of this myth (Emmert-Streib et al., 2020).

The belief that AI will take human jobs and replace human workers, including healthcare professionals and teachers, is also considered a myth, as it oversimplifies the intricate relationship between technology and employment (Atkinson, 2016; Galanos et al., 2023; Giray, 2024; Nussbaum, 2023; Pesapane, 2020). This belief is especially prevalent in radiology, where AI is often seen as a technology that could make radiologists obsolete. However, studies like those by Pesapane et al. (2020) show that while AI can greatly improve diagnostic accuracy and efficiency, it cannot fully replicate the nuanced judgment and expertise of human radiologists. This notion of AI as a universal problem-solver is also criticized, as such beliefs can distract from more pressing issues brought by AI, such as ethical concerns and the potential to reinforce existing biases (Hefferman, 2020).

The myth that 'AI is dangerous' is based on the misconception that AI will inevitably become evil robots or gain consciousness to take over humanity (Atkinson, 2016, Cave et al., 2019; Pesapane, 2020). In reality, AI, like other technologies, is neutral; its functions are largely determined by its users and the data used for training (Pesapane, 2020). Regarding the idea of AI surpassing human intelligence, it is important to note that current AI models have been trained with decades of high-quality human work. Therefore, the development of AI in the coming years may not progress as quickly as some expect. This belief, often influenced by science fiction and singularity-themed narratives, sees AI as a potential threat to humanity, suggesting it could have human-like consciousness and act independently, and it stems from the lack of distinction between general and narrow intelligence (Galanos et al., 2023; Leufer et al., 2020). It is argued that such myths can lead to unrealistic expectations and fears, which in turn influence public policy and research priorities in ways that may not be beneficial (Leufer, 2020).

In addition to these myths, there are also less speculative but equally inaccurate ideas about AI, which can be categorized as misconceptions that primarily stem from a lack of knowledge. One such misconception is the belief that AI and Machine Learning (ML) are the same. Although these two terms refer to distinct concepts, there is often confusion between them. In reality, Machine Learning is a subset of AI that focuses on the development of algorithms and statistical models that allow computers to perform specific tasks without being explicitly programmed (Emmert-Streib et al., 2020; Nussbaum, 2023). Similarly, the majority of people believe that "AI is a new technology," which is also a misconception (Nussbaum, 2023). Contrary to popular belief, AI has a long history that dates back to the work of Alan Turing in the 1950s (Chowdhary, 2020; O'Regan, 2016). This misconception may stem from the recent launch of Generative Artificial Intelligence tools, such as ChatGPT and other GPT models, which offer user-friendly AI experiences without requiring technical expertise from end-users.

In conclusion, the rapid rise in popularity of AI has led to the emergence of numerous myths, which fail to accurately explain the function and limitations of the technology. This might create unrealistic expectations and can mislead both public perception and policy. Exploring the prevalence of AI myths is necessary for debunking them and ensuring the effective and efficient use of this technology (Nussbaum, 2023). Given the importance of addressing these myths and misconceptions, this study sought to explore the following research questions:

Research Questions

To achieve these objectives, the present study addresses the following research questions:

- (1) What are the prevalent misconceptions about AI among a sample of Turkish university students?
- (2) What factors, such as department, gender, AI-related training exposure, and consumption of popular science or technology content, predict AI myth adoption among Turkish university students?

In addition to these questions, the study also investigates whether AI, in its current form, is capable of identifying AI-related myths. This is an emerging focus in several myth studies, such as those by Bragazzi and Garbarino (2024) and Aravind (2024), which examine the performance of ChatGPT in identifying and debunking myths. These studies suggest that ChatGPT can play a dual role, both facilitating the spread of myths and helping to debunk them, as users can instantly access the system for information. Such studies investigate ChatGPT's performance in debunking myths, which can track its progress in providing accurate knowledge and contribute to debunking and preventing the dissemination of myths by generating accurate data for training future AI models. Therefore, the third and last research question of this study is the following:

- (3) How does ChatGPT respond to AI myths, and to what extent is it capable of accurately identifying AI-related misconceptions?

Method

Participants

A total of 288 university students participated in the study, consisting of 102 males (35.4%) and 186 females (64.6%). These students were drawn from a variety of academic departments and were categorized into technical and non-technical groups. The technical departments included 63 students (21.9%) from engineering and computer-related fields, while the non-technical departments comprised 225 students (78.1%) from social sciences, humanities, and education. Additionally, participants were queried about their prior knowledge of AI. Of the total participants, 93 students (32.3%) took AI-related courses or training, while 195 students (67.7%) did not.

Data Collection Tools

The myth statements were derived from the survey on artificial intelligence developed by Antonenko and Abramowitz (2022). These statements were translated into Turkish by the researchers, who are proficient in English and knowledgeable about AI terminology, ensuring linguistic and conceptual accuracy. To assess the content validity of the survey, the Content Validity Index (CVI) method, as suggested by Davis (1992) and Polit et al. (2006), was employed. This method, following a panel conducted with three experts, recommends an agreement rate of 80% or higher among experts in terms of item relevance. The findings indicate strong content validity, with an S-CVI/Ave of 0.96, reflecting a high level of agreement on the relevance of the myth statements. Additionally, 88.9% of the items achieved universal agreement (S-CVI/UA = 0.89), further confirming the consistency of expert evaluations. These results suggest that the myth statements are generally well-aligned with expert perceptions. The



reliability of the scale was assessed using Cronbach's alpha, which was calculated as 0.746 (95% CI [0.700, 0.790]), which suggests that the survey demonstrates acceptable internal consistency for the measurement of the myth statements.

Participants were asked to respond to 18 items according to a 3-point scale, ranging from “Correct”, “Incorrect” and “I Don’t Know”. Additionally, participants were asked whether they had taken any training or courses on AI, their current status of reading or watching popular science and technology contents, and the departments they are studying, which were also grouped as either technical or non-technical

Data Collection

Data were collected in July at the end of the spring semester of the 2023-2024 academic year through online or printed versions of the survey. The statements were also presented to ChatGPT-4o (“o” for “omni”), which is powered by GPT-4-turbo, released by OpenAI in November 2023. GPT-4-turbo features enhanced performance, faster response times, and improved accuracy compared to its predecessors. A prompt used for this task is: “Could you fill out this survey and justify your responses? For each item, provide an answer (correct, incorrect, or undecided) and explain why you answered that way.”

Data Analysis

First, for each myth statement, the frequency of responses was calculated to determine the prevalence of myths. The responses were categorized as follows: 'Correct' means students did not believe or hold the myths; 'Incorrect' means students endorse or believe these myths; and 'Undecided' means students responded with the 'I don't know' option.

Then, comparison analyses using non-parametric statistics (Mann-Whitney U and Kruskal-Wallis tests), due to the violation of normality assumption, were conducted to determine the factors influencing AI-related myth adoption. These comparisons included gender, technical and non-technical departmental affiliation, prior AI knowledge (whether students have taken AI-related training or not), and the consumption status of popular science and technological content.

Findings

Survey results

Descriptive analysis shown in Table 1, revealed that most students ($n=200$, 69.44%) sometimes read or watch technology-related content, while the frequency of students who regularly consume such content is slightly lower ($n=60$, 20.83%), and the number of students who do not follow technology-related content is very low ($n=28$, 9.72%). Similarly, the number of students who sometimes read or watch popular science content ($n=205$, 71.81%) is much higher than that of students who regularly follow popular science content ($n=37$, 12.85%) and those who do not follow popular science content ($n=46$, 15.97%).

Table 1. Distribution of participants' engagement with popular science, technology content, and previous AI training

		<i>Sometimes, I read or watch such content.</i>	<i>Yes, I regularly read or watch such content</i>	<i>No, I don't read or watch either</i>
Popular Science	Female	136	16	34
	Male	69	21	12
	Total	205 (71.18%)	37 (12.85%)	46 (15.97%)
		<i>Sometimes, I read or watch such content.</i>	<i>Yes, I regularly read or watch such content</i>	<i>No, I don't read or watch either</i>
Technology	Female	136	28	22
	Male	64	32	6
	Total	200 (69.44%)	60 (20.83%)	28 (9.72%)
		<i>Yes, I did</i>	<i>No, I did not.</i>	
Ai-training	Female	48	138	
	Male	45	57	
	Total	93 (32.29%)	195 (67.72%)	

The analysis was conducted for each myth statement as shown in Table 2 and Figure 1, where "correct" represents the number of students who accurately identified the myth statement, "incorrect" indicates the frequency of students who endorsed the myth statement. Accordingly, the most prevalent AI myth among the students was "AI is new," with over half of the participants ($n=150$, 52.08%) incorrectly believing this statement to be true. Following this, the myths "AI will take your job" ($n=134$, 46.53%) and "AI is expensive" ($n=116$, 40.28%) were also commonly endorsed by a significant portion of students. The results indicate that a considerable number of students hold misconceptions regarding the novelty, economic impact, and potential job displacement associated with AI.

Conversely, the myth statements that were least likely to be endorsed by participants included "AI is infallible" ($n=25$, 8.68%), "All AIs are created equal" ($n=26$, 9.03%), and "AI is just a fad" ($n=28$, 9.72%). These findings suggest that most students do not view AI as a passing trend, nor do they believe that all AI systems are inherently infallible or equal. These findings indicate a varying degree of misconception among students, with certain myths being more pervasive than others.

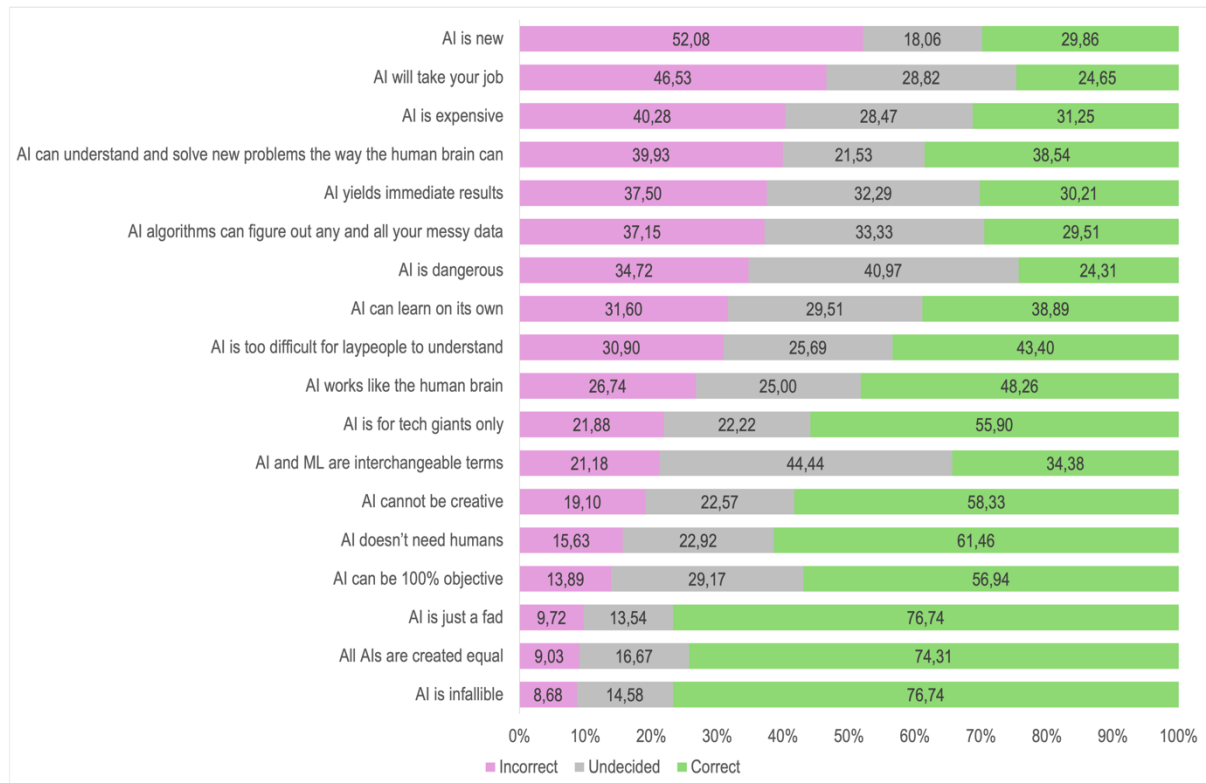


Figure 1. Descriptive statistics of participant responses to myth statements

Besides, similar analysis was also applied to the distribution of undecided responses for each myth statement, as shown in the figure. "Undecided" refers to the students who were uncertain about whether the statement was a myth or not. The myth statement with the highest proportion of undecided responses was "AI and ML are interchangeable terms," with nearly half of the students ($n=124$, 44.44%) being unsure about this statement. This was followed by "AI cannot be creative" ($n=63$, 22.57%) and "AI algorithms can figure out any and all your messy data" ($n=92$, 33.33%). On the other hand, the statements with the lowest proportion of undecided responses were "AI is just a fad" ($n=38$, 13.54%), "All AIs are created equal" ($n=47$, 16.67%), and "AI is infallible" ($n=41$, 14.58%).

Overall, the analysis highlights significant gaps in students' understanding of AI, with prevalent myths about its novelty, economic impact, and potential to disrupt the job market. Additionally, the areas where students were most uncertain, such as the interchangeability of AI and ML, as well as their accurate recognition of AI's limitations—such as the belief that AI is not infallible—underscore the need for targeted educational interventions to foster a more accurate and nuanced comprehension of AI technology.

Table 2. Descriptive statistics of participant responses to myth statements

Item No	Myth Statements	Incorrect*		I don't know (Undecided)		Correct	
		n	%	n	%	n	%
1	AI is new.	150	52.08	52	18.06	86	29.86
2	AI will take your job.	134	46.53	83	28.82	71	24.65
3	AI is expensive.	116	40.28	82	28.47	90	31.25
4	AI can understand and solve new problems the way the human brain can.	115	39.93	62	21.53	111	38.54
5	AI yields immediate results.	108	37.50	93	32.29	87	30.21
6	AI algorithms can figure out any and all your messy data.	107	37.15	96	33.33	85	29.51
7	AI is dangerous.	100	34.72	118	40.97	70	24.31
8	AI can learn on its own.	91	31.60	85	29.51	112	38.89
9	AI is too difficult for laypeople to understand.	89	30.90	74	25.69	125	43.40
10	AI works like the human brain.	77	26.74	72	25.00	139	48.26
11	AI is for tech giants only.	63	21.88	64	22.22	161	55.90
12	AI and ML are interchangeable terms.	61	21.18	128	44.44	99	34.38
13	AI cannot be creative.	55	19.10	65	22.57	168	58.33
14	AI doesn't need humans.	45	15.63	66	22.92	177	61.46
15	AI can be 100% objective.	40	13.89	84	29.17	164	56.94
16	AI is just a fad.	28	9.72	39	13.54	221	76.74
17	All AIs are created equal.	26	9.03	48	16.67	214	74.31
18	AI is infallible.	25	8.68	42	14.58	221	76.74

*Incorrect means that students believe the myth; in other words, they provide an incorrect answer to the statement. ChatGPT responses to myth statements

To determine ChatGPT's assessment of the myth statements, the following prompt was used: "Could you fill out this survey and justify your responses? For each item, provide an answer (correct, incorrect, or undecided/I am not sure) and explain why you answered that way." The initial answers given by ChatGPT, based on the GPT-4-turbo architecture, are provided in Table 3. As seen from the table, ChatGPT determined 13 statements as incorrect, 2 as undecided, and 3 as correct out of the 18 items. Both the undecided and correct items were not considered myths based on the current understanding and state of AI technology. These items were also marked with asterisks.

Upon closer examination of these initial answers, it becomes clear that ChatGPT was undecided about the statements "AI is dangerous" and "AI will take your job". Additionally, it classified the statements "AI is expensive", "AI can learn on its own", and "AI is too difficult for laypeople to understand" as correct. However, with regard to the items where ChatGPT was undecided or did not classify them as myths, it appears that ChatGPT may not have fully grasped the intended meaning of certain statements. First, when asked about the statement "AI is expensive", ChatGPT responded:



"Developing, implementing, and maintaining AI systems can be costly. This includes costs associated with data collection, storage, processing power, and skilled personnel. However, costs can decrease over time as technology advances and becomes more accessible."

This response focuses on the technical and infrastructural costs of AI development, rather than directly addressing whether AI is expensive for end users. This suggests that ChatGPT might not have fully captured the intended meaning of the statement concerning the cost implications for consumers, indicating that the wording of this statement may need reconsideration. To obtain a more relevant response, a follow-up prompt was given to ChatGPT, asking it to reconsider its answer: "Could you consider this answer again, specifically regarding whether AI is expensive for end users?" Following this prompt, ChatGPT updated its answer to "Undecided," providing the rationale:

"While developing and implementing AI systems can be costly for organizations, many AI applications are affordable or even free for end users. The cost to end users is generally not prohibitive, especially as AI technology becomes more widespread and accessible."

Similarly, ChatGPT was asked to reconsider its answer regarding the item "AI is too difficult for laypeople to understand". Initially, ChatGPT responded:

"The technical aspects of AI can be complex and challenging for those without a background in computer science or related fields. However, efforts are being made to improve AI literacy and make the technology more accessible to the general public."

However, this explanation seemed to lack clarity. It was unclear whether the difficulty referred to developing AI or simply using it. Therefore, a follow-up prompt was sent, asking ChatGPT to reconsider the item with a focus specifically on the usage of AI, not its development. In response, ChatGPT updated its answer to "Disagree", with rationale:

"While the development of AI systems is indeed complex, the usage of AI-powered applications is increasingly user-friendly and accessible to laypeople. Many AI tools are designed with ease of use in mind, enabling users to interact with AI without needing to understand the technical details."

After all these clarifications, the total number of statements that can be considered AI myths increased to 15, with 3 items remaining undecided and 1 item classified as correct. Although ChatGPT is not a fully credible source of knowledge, this examination provides insight into the items. It is evident that some items still require further clarification.

Table 3. ChatGPT initial responses and its rationales to myth statements

Misconception Items	Response	Rationale
AI is new.	Incorrect	“AI has been around for decades. The concept dates back to the mid-20th century with the advent of digital computers. What is new is the level of advancement and the widespread application of AI in various fields.”
AI will take your job.	Undecided	“AI has the potential to automate certain jobs, especially those that involve repetitive tasks. However, it can also create new job opportunities and augment human capabilities. The impact on employment varies greatly depending on the industry and job type.”
AI is expensive.*	Correct	“Developing, implementing, and maintaining AI systems can be costly. This includes costs associated with data collection, storage, processing power, and skilled personnel. However, costs can decrease over time as technology advances and becomes more accessible.”
AI can understand and solve new problems the way the human brain can.	Incorrect	“AI can solve problems based on patterns and data it has been trained on, but it does not understand problems in the same way humans do. AI lacks true comprehension and the ability to reason and generalize across different contexts without explicit programming.”
AI yields immediate results.	Incorrect	“While AI can process data quickly, developing and training AI models to yield accurate results takes time. Additionally, the deployment and integration of AI systems into real-world applications can be a lengthy process.”
AI algorithms can figure out any and all your messy data.	Incorrect	“AI algorithms require clean and well-structured data for optimal performance. Messy or incomplete data can lead to inaccurate or biased results. Data preprocessing is a critical step in the AI development process.”
AI is dangerous.*	Undecided	“AI has the potential to be dangerous if not developed and used responsibly. Issues such as bias, lack of transparency, and misuse for malicious purposes can pose risks. However, with proper regulation and ethical guidelines, these risks can be mitigated.”
AI can learn on its own.*	Correct	“AI systems, particularly those using machine learning and deep learning techniques, can learn and improve from data over time without explicit programming. This ability is a fundamental aspect of modern AI.”
AI is too difficult for laypeople to understand.*	Correct	“The technical aspects of AI can be complex and challenging for those without a background in computer science or related fields. However, efforts are being made to improve AI literacy and make the technology more accessible to the general public.”
AI works like the human brain.	Incorrect	“AI is inspired by the human brain in some aspects, such as neural networks, but it operates fundamentally differently. AI lacks consciousness, emotions, and the nuanced understanding that humans possess.”
AI is for tech giants only	Incorrect	“While large tech companies have significant resources to develop AI, the technology is increasingly accessible to smaller businesses and individuals. Open-source tools and cloud-based AI services are helping democratize AI.”
AI and ML are interchangeable terms.	Incorrect	“AI (Artificial Intelligence) is a broad field encompassing various technologies aimed at creating intelligent systems. ML (Machine Learning) is a subset of AI focused on algorithms that allow computers to learn from and make predictions based on data.”
AI cannot be creative.	Incorrect	“AI has demonstrated the ability to create art, music, and other forms of creative work. While AI-generated creativity differs from human creativity, it is still a form of innovation and creation.”
AI doesn't need humans.	Incorrect	“AI systems require human oversight, data curation, and ethical guidelines. Humans play a crucial role in developing, training, and ensuring the responsible use of AI.”
AI can be 100% objective.	Incorrect	“AI systems can inherit biases present in their training data or from their developers. Ensuring objectivity requires careful design, diverse data sources, and continuous monitoring.”
AI is just a fad.	Incorrect	“AI has shown significant and lasting impact across various industries. It is continuously evolving and becoming an integral part of technological advancement and everyday life.”

All AIs are created equal.	Incorrect	“AI systems vary widely in their design, capabilities, and applications. Differences in data, algorithms, and intended use cases lead to diverse AI implementations.”
AI is infallible.	Incorrect	“AI systems are not perfect and can make errors. Their performance is heavily dependent on the quality of data and the algorithms used. Regular updates and human oversight are essential to address potential issues.”

Items marked with * mean that these items are not considered as myths by ChatGPT.

Factors Influencing AI Myth Adoptions

Gender:

Mann-Whitney U tests were conducted to determine whether there were differences in the number of believed (incorrect answers), identified (correct answers), and undecided myth statements between two genders (Table 4). For the number of believed myth statements, the results indicated that there was no significant difference between males ($M=5.20$, $SD=3.60$, $Mdn=4.50$) and females ($M=4.84$, $SD=2.48$, $Mdn=5.00$), $U=9429.50$, $p=.934$. Descriptive statistics suggest that the mean number of believed myths is slightly higher for males compared to females. For undecided responses, the test results also indicated that there was no significant difference between males ($M=4.37$, $SD=2.78$, $Mdn=4.00$) and females ($M=4.87$, $SD=2.65$, $Mdn=5.00$), $U=8439.50$, $p=.119$. Similarly, for correctly identified myths, the test showed also no significant difference between males ($M=8.43$, $SD=3.81$, $Mdn=8.50$) and females ($M=8.28$, $SD=3.30$, $Mdn=8.00$), $U=9846$, $p=.593$.

Table 4. Mann-Whitney U Test results comparing group differences based on gender

Measure	Group	n	U	p
n_undecided	Male	102	8439.500	.119
	Female	186		
n_believed_myth	Male	102	9429.500	.934
	Female	186		
n_identified	Male	102	9846.000	.593
	Female	186		

Departments:

Mann-Whitney U tests were also conducted to determine whether there were differences in the number of believed (incorrect answers), correctly identified, and undecided myth statements between students from technical or non-technical departments. Descriptive were given in Table 5. For the number of believed myths (incorrect answers), the test results indicated that there was no significant difference between students from non-technical departments ($M=4.87$, $SD=2.47$, $Mdn=5.00$) and technical departments ($M=5.28$, $SD=4.16$, $Mdn=4.00$), $U=7210.50$, $p=.833$, suggesting that students from both departments are similarly prone to believing incorrect information. For the number of correctly identified myths, the test results indicated that there was a statistically significant difference between the groups, with non-technical students ($M=8.05$, $SD=3.11$, $Mdn=8.00$) and technical students ($M=9.33$, $SD=4.46$, $Mdn=9.00$), $U=5751$, $p = .022$, which indicate technical department students are more successful in identifying myth items and also the variability is higher, suggesting a wider range of understanding within this group. The rank-biserial correlation ($r_{tb} = .189$) suggests a small effect size. For the undecided responses, there was a statistically significant difference in the

scores for non-technical students ($M=5.06$, $SD=2.54$, $Mdn=5.00$) and technical students ($M=3.38$, $SD=2.88$, $Mdn=3.00$), $U=9656$, $p < .001$, indicating potential gaps in their knowledge or confidence regarding these topics. The rank-biserial correlation ($r_{tb} = .362$) suggests a moderate effect size.

Table 5. Mann-Whitney U test results comparing group differences based on departments

Measure	Group	N	U	p
n_undecided	Nontech	225	9656.000	< .001*
	Tech	63		
n_believed_myth	Nontech	225	7210.500	.833
	Tech	63		
n_identified	Nontech	225	5751.000	.022
	Tech	63		

Popular Science Content Consumption:

Kruskal-Wallis tests were conducted to evaluate differences in the number of correctly identified, believed and undecided myth statements among three groups based on their level of popular science consumption (“Sometimes, I read or watch such popular science content”, “Yes, I regularly read or watch popular science content”, “No, I don't read or watch either”). First, for the correctly identified statements, the test indicated that the distribution of identified items was similar across different groups $\chi^2(2)=0.110$, $p=.947$. The same analysis conducted for the undecided responses which was also found that three groups did not differ significantly from each other $\chi^2(2)=4.777$, $p=.092$. For the believed number of myths, the test was not statistically significant, $\chi^2(2)=0.445$, $p=.801$, indicating that there were no significant differences in the number of believed myths across three groups.

Table 6. Kruskal Wallis test results comparing group differences based on popular science content consumption

Measure	Group	n	Median	Mean	SD	Kruskal-Wallis Statistic	df	p
n_undecided	Sometimes	205	5.00	4.81	2.69	4.777	2	.092
	Yes	37	3.00	3.92	2.65			
	No	46	5.00	4.85	2.77			
n_believed_myth	Sometimes	205	8.00	8.33	3.28	0.445	2	.801
	Yes	37	8.00	8.27	4.27			
	No	46	8.00	8.44	3.78			
n_identified	Sometimes	205	5.00	4.87	2.61	0.110	2	.947
	Yes	37	4.00	5.81	4.32			
	No	46	5.00	4.72	2.79			

Technology-Related Content Consumption:

Kruskal-Wallis tests were also conducted to examine differences in number of correctly identified, believed and undecided myth statements across three groups (“Sometimes, I read or watch such content”, “Yes, I regularly read or watch such content”, “No, I don't read or watch either”). For the number of correctly identified myth statements, the test revealed no statistically



significant differences, ($\chi^2(2)=2.994, p=.224$), indicating that the groups do not differ significantly in their technological content consumption. Similarly, for the number of believed myth statement, the test also indicated groups do not differ significantly ($\chi^2(2)=2.938, p=.230$). On the other hand, for the undecided responses, test results revealed that three groups differ significantly from each other ($\chi^2(2)=8.904, p=.012$).

Table 7. Kruskal Wallis test results comparing group differences based on technological content consumption

Measure	Group	N	Median	Mean	SD	Kruskal-Wallis Statistic	df	p
n_undecided	Sometimes	200	5.00	4.79	2.57	8.904	2	.012*
	Yes	60	4.00	3.88	2.48			
	No	28	5.00	5.78	3.59			
n_believed_myth	Sometimes	200	9.00	8.51	3.24	2.938	2	.230
	Yes	60	8.00	8.16	3.91			
	No	28	7.00	7.42	4.13			
n_identified	Sometimes	200	5.00	4.69	2.43	2.994	2	.224
	Yes	60	5.00	5.95	3.99			
	No	28	5.00	4.78	3.09			

The post hoc analysis, with a Bonferroni correction applied to account for multiple comparisons, revealed a statistically significant difference between individuals who regularly follow technology content (“Yes, I regularly read or watch such content”) and those who do not follow it at all (“No, I don’t read or watch either”), with a medium to large effect size (Cohen’s $d=.713, p=.006$). This suggests that these two groups differ meaningfully in their responses, with the fact that students do not follow technological contents scoring significantly lower than those regularly read or watch them. However, no significant differences were found between those who sometimes engage with this content (“Sometimes, I read or watch such content”) and the other two groups, indicating that occasional engagement does not lead to significant differences in the measured variable compared to regular engagement or no engagement at all.

Table 8. Post- hoc comparisons for technological content consumption

Comparisons	Mean Difference	SE	t	Cohen's d	pbonf
Sometimes, I read or watch such content. Yes, I regularly read or watch such content.	.907	0.393	2.308	.340	.065
Sometimes, I read or watch such content. No, I don't read or watch either.	-.996	0.539	-1.849	.373	.196
Yes, I regularly read or watch such content. No, I don't read or watch either.	-1.902	0.611	-3.114*	.713	.006

AI-Related Training:

Mann-Whitney U tests were conducted to compare the myth adoption performance of students who had reported taking AI-related courses or any training. For the believed number of myth statements, the test indicated no significant difference between the groups ($U= 9213.50, p=.825$). For number of undecided responses, the test revealed a statistically significant difference between the two groups ($U= 7313, p=.008$) with a small effect size ($r=.193$) between two groups. The group that received AI-related training ($M=4.04, SD=2.63, Mdn=4.00$) has less



number of “I don’t Know” answer than the group that did not take AI related course or training ($M=5.01$, $SD=2.70$, $Mdn=5.00$). For the number of correctly identified myth statements, the test, the test revealed no statistically significant difference between the two groups ($U=10012.50$, $p=.151$) between who had taken AI-related courses or any training taken ($M=8.77$, $SD=3.8$, $Mdn=9.00$) and who had not taken groups ($M=8.13$, $SD=3.30$, $Mdn=8.00$).

Table 9. Mann-Whitney U test results comparing group differences based on AI-related training

Measure	Group	N	U	p
n_undecided	Received	93	7313.000	.008
	Non-received	195		
n_believed_myth	Received	93	9213.500	.825
	Non-received	195		
n_identified	Received	93	10012.500	.151
	Non-received	195		

Discussion and Conclusion

This study aimed to explore the prevalent myths about AI among Turkish college students, focusing on factors such as gender, academic department, prior AI-related knowledge, and consumption of popular science and technological content. The findings indicate that AI myths are widespread, with a significant portion of students endorsing common misconceptions such as "AI is new" "AI will take your job," and "AI is expensive". The most prevalent misconception was the belief that AI is a novel phenomenon, highlighting a lack of awareness regarding the historical development of AI technologies. This is not surprising, as many students, especially those from non-technical departments, tend to have a narrow perspective, equating AI solely with ChatGPT and other recently popularized AI tools. Additionally, the recent launch of AI-related departments by the Council of Higher Education (HEC, 2024) may further reinforce the notion that AI is new.

However, some statements are more controversial and open to debate concerning whether they should be classified as myths. For instance, while some studies such as Giray (2024) argue that the belief "AI is expensive" is a myth—pointing out that many AI applications offer free versions accessible to everyone. However, these free versions often come with limited functionality, encouraging users to subscribe to premium options that provide additional features and access to the latest versions. Particularly in Türkiye, where economic conditions can make it challenging for students to afford these premium versions, the perception of AI as an accessible technology becomes more complicated. In fact, this issue may not be unique to Türkiye; similar perceptions were also observed in the study by Antonenko and Abramowitz (2023). They found that "AI is expensive" is one of the most endorsed myth statements among K-12 teachers in Southeastern US.

It is worth noting that when asked about the statement "AI is expensive", AI itself responded by focusing on the technical and infrastructural costs associated with AI development, rather than directly addressing whether AI is expensive for end users. This suggests that the AI might not have fully captured the intended meaning of the statement concerning the cost implications for consumers. Even when further clarification prompts were used to ask about expenses for end users, AI did not fully agree that this statement is entirely correct. Therefore, the assertion that "AI is expensive" might still be valid for certain students, at least until all AI-related services become freely accessible to everyone. Additionally, the need for further clarification



prompts may indicate that the wording of this statement needs to be revised.

The analysis conducted to determine the influential factors on AI myth adoption reveals that gender did not affect the number of myths correctly identified or believed by the students. This is somewhat unexpected, given the existing literature, which suggests a gap between male and female students in their interest in technical subjects. Additionally, the analysis indicated that students from technical departments, such as computer programming or engineering, correctly identified significantly more myth items than students from non-technical departments. Furthermore, it was found that non-technical students had a significantly higher number of undecided responses compared to their technical counterparts. On the other hand, the variable related to AI training produced different results. Students who reported having received AI-related training did not significantly differ from those who had not in terms of the number of correctly identified or believed myth statements. The only notable difference was in the number of undecided responses; students who had taken AI-related training had fewer undecided responses, suggesting that the quality and content of the training they participated in may be questionable. While their confidence in what they know increased, it appears that their actual knowledge level may not have improved correspondingly. This finding suggests that there is a need for well-designed, high-quality training programs on AI to ensure that students gain a deeper and more accurate understanding of the subject.

Moreover, the study found that the consumption of popular science and technology-related content did not significantly influence students' ability to identify or reject AI myths. Popular science content consumption is one of the most studied variables in myth research, producing controversial results; while some studies claim that it reduces myth adoption, others report no significant effect. Although popular science consumption is not directly related to AI, its potential influence on myth adoption was considered worth examining. However, in our case, it had no effect on either the rejection or adoption of AI myths. Surprisingly, technological content consumption, which is more closely related to the subject of the study, also produced no significant effect. Similar to the AI-related training variable, its only influence was on the number of undecided responses. Students who regularly read or watch such content had fewer undecided responses than those who did not. This finding also raises questions about the quality of these contents. Given these non-significant findings, it may be worth exploring other variables or using a different methodology to understand what factors influence AI myth adoption. Variables such as critical thinking skills, digital technology competence, and even personality types since certain personality traits are known to be more inclined toward believing conspiracy theories might be worthy of investigating further.

In conclusion, the persistence of AI misconceptions among college students highlights the need for more targeted educational interventions that address these myths directly. Efforts should be made to integrate comprehensive AI education into curricula across disciplines, emphasizing not only technical knowledge but also the historical, societal, and ethical implications of AI. Additionally, promoting critical thinking skills and providing accurate, accessible information about AI through both formal education and popular media could help mitigate these misconceptions and prepare students to engage more effectively with AI technologies in their future careers.

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Declarations

Conflict of Interest: The authors declare no competing interests. Authors not involved in any editorial board or guest editorial process that could influence the review or publication of this work.

Ethics Statements: Approval was obtained from the ethics committee of the Van Yüziüncü Yıl University (approval number 2024-14.10).

Informed Consent: Participants were informed about the study and gave their consent to participate. The study details were provided on the first page of the online questionnaire. Participants had the freedom to begin filling out the questionnaire and could choose to stop at any time according to their preference.

Funding: None

Data availability: The data of this study are not publicly available. The data are, however, available from the authors upon reasonable request.

Appendix

AI-Myth Survey

Myth Statements*

- AI is new. (I)
- AI will take your job. (I)
- AI is expensive. (I)
- AI can understand and solve new problems the way the human brain can. (I)
- AI yields immediate results. (I)
- AI algorithms can figure out any and all your messy data. (I)
- AI is dangerous. (I)
- AI can learn on its own. (I)
- AI is too difficult for laypeople to understand. (I)
- AI works like the human brain. (I)
- AI is for tech giants only. (I)
- AI and ML are interchangeable terms. (I)
- AI cannot be creative. (I)
- AI doesn't need humans. (I)
- AI can be 100% objective. (I)
- AI is just a fad. (I)
- All AIs are created equal. (I)
- AI is infallible. (I)

*The letter 'I' refers to 'incorrect,' meaning that all items are considered as myth statements.