

An Investigation of the Relationship Between Individual Creativity and General Attitude Toward Artificial Intelligence

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Conflicts of Interest: The author(s) has no conflict of interest to declare.

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Ethical Statement: It is declared that scientific and ethical principles have been followed while carrying out and writing this study and that all the sources used have been properly cited.

(Date Of Received): 21.08.2025 (Date of Acceptance): 14.01.2026 (Date of Publication): 30.04.2026

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Abstract

The purpose of this study is to examine the predictive effect of individual creativity levels of sports sciences students on their general attitudes toward artificial intelligence (AI). The study group was composed of 459 students of 197 female (42.9%), 262 male (57.1%) from the Faculty of Sports Sciences at Bolu Abant İzzet Baysal University (BAİBU). Data collection instrument included the "Individual Creativity" and "General Attitude Towards Artificial Intelligence" scales, along with a demographic information form developed by the authors. Initially, confirmatory factor analysis along with validity and reliability analyses was conducted on the obtained data, followed by multiple linear regression analysis. Findings; revealed that scales preserved its psychometric properties and ensured the reliability and validity criterion. Findings revealed that the scales preserved their psychometric properties and met the reliability and validity criteria." might be more accurate.. Moreover, the model accounted for 57.1% of the variance, indicating that individual creativity is both a significant and strong predictor of the general attitude towards artificial intelligence ($\beta=0,756$, $p<,001$). The study suggests that, in the field of sports sciences, there is a need to enhance educational environments that foster individual creativity and to develop competencies such as artificial intelligence literacy.

Keywords: Artificial intelligence, individual creativity, sports sciences.

Bireysel Yaratıcılık ile Yapay Zekâya Yönelik Genel Tutum Arasındaki İlişkinin İncelenmesi

Özet

Bu çalışmanın amacı spor bilimleri fakültesi öğrencilerinin bireysel yaratıcılık düzeylerinin yapay zekâya (YZ) yönelik genel tutumları üzerindeki yordayıcı etkisini incelemektir. Çalışmanın örneklemi Bolu Abant İzzet Baysal Üniversitesi (BAİBÜ) Spor Bilimleri Fakültesi öğrenim gören 197 kadın (%42,9), 262 erkek (%57,1) toplam 459 öğrenciden oluşmuştur. Veri toplama aracı olarak; "Bireysel Yaratıcılık" ve "Yapay Zekaya Yönelik Genel Tutum" ölçekleri ve araştırmacılar tarafından oluşturulan demografik bilgiler formu kullanılmıştır. Elde edilen verilere öncelikle, doğrulayıcı faktör analizi, geçerlik ve güvenirlik analizleri uygulanmış daha sonra çoklu doğrusal regresyon analizi uygulanmıştır. Bulgular; ölçeklerin psikometrik özelliklerini koruduğunu ve geçerlik, güvenirlik kriterlerini sağladığını göstermiştir. Ayrıca oluşturulan model varyansın %57,1'ini açıklayarak, bireysel yaratıcılığın yapay zekâya

yönelik genel tutum üzerinde anlamlı ve güçlü bir yordayıcı olduğunu ortaya çıkarmıştır ($\beta=0,756$, $p<,001$), Sonuç olarak, bireysel yaratıcılığa sahip öğrencilerin yapay zekâ teknolojilerine karşı daha olumlu yaklaşıtları ve bu teknolojileri daha erken benimsedikleri ortaya çıkmıştır. Çalışma, spor bilimleri alanında bireysel yaratıcılığı destekleyici eğitim ortamlarının artırılması ve yapay zekâ okuryazarlığı gibi özelliklerin geliştirilmesi gerektiğini önermektedir.

Anahtar Kelimeler: Yapay zekâ, bireysel yaratıcılık, spor bilimleri.

INTRODUCTION

Technological transformation affects many areas from individuals' daily lives to their business practices. Especially new generation technologies such as artificial intelligence are at the center of this transformation (1). Today, artificial intelligence applications are not only limited to the fields of engineering or software, but are also used effectively in multidisciplinary fields such as education, health, arts and sports (2; 3; 4). This transformation reshapes individuals' attitudes towards technological developments and brings individual characteristics to the forefront in the adoption of these technologies (1).

In this context, individual creativity stands out as a critical feature in understanding attitudes towards technological innovations. Creativity is associated with an individual's capacity to produce original, flexible and innovative thoughts (5). Empirical evidence indicates that individual creativity plays a significant role in the acceptance of emerging technologies. Chae et al. claim that individuals with higher levels of creativity exhibit more positive attitudes toward emerging information technologies and show a greater willingness to adopt them. As well as creativity has been associated with cognitive flexibility and proactive problem solving behaviors, which facilitate adaptation of individuals to novel and uncertain technological environments (6).

The theoretical basis of this study is based on Rogers' (7) Diffusion of Innovations Theory. Within Rogers' Diffusion of Innovations Theory, individual differences in the adoption of new technologies are conceptualized through the notion of innovativeness, defined as the degree to which an individual is relatively earlier in adopting an innovation than others in a social system. Innovativeness is influenced by personal characteristics such as openness to experience, tolerance for ambiguity and cognitive flexibility. In this line, individual creativity can be regarded as an important antecedent of innovativeness, as creative individuals are more likely to experiment with novel ideas and technologies. Consistent with this view recent empirical findings suggest that creativity enhances individuals' acceptance of emerging information technologies, positioning highly creative individuals more frequently within the innovator and early adopter categories (7). According to Rogers, the process of individuals adopting a new technology differs according to their personality traits and individual tendencies (5). In this process, creative individuals tend to develop more positive attitudes towards technological innovations and adopt these innovations earlier (8).

AI applications have started to be used in the field of sports sciences as in other fields. Usage areas and applications are also increasing. Artificial intelligence applications are being developed and used in almost all areas of sports sciences such as training analysis, performance tracking, management applications, sports marketing and fan interaction (9; 10; 11). In order to use these technologies effectively, the attitudes of sport science faculty students, who are among the biggest stakeholders of sport and the future sport scientists, towards artificial intelligence are very important. However, the issue of which individual characteristics determine these attitudes in students has not been fully elucidated. From a theoretical perspective, individual creativity provides an important framework for understanding attitudes toward artificial intelligence. Creative individuals tend to demonstrate higher cognitive flexibility and greater openness to novelty (12). They also exhibit a higher tolerance for uncertainty, which is particularly important when engaging with complex and rapidly evolving technologies such as AI (13). Accordingly, students with higher levels of creativity are more likely to perceive artificial intelligence as an opportunity rather than a threat (4). This perception, in turn, contributes to more favorable attitudes toward the use of AI in sport sciences (14).

The aim of this study is to examine the predictive level of sport sciences students' individual creativity levels on their attitudes towards artificial intelligence. In the study, valid and reliable scales were used to measure students' individual creativity and general attitudes towards artificial intelligence, and the validity and reliability of the measurement models were reinforced as a result of confirmatory factor analyses

conducted specifically for the study. Finally, the data obtained were evaluated with multiple regression analysis.

In this respect, the study contributes to explain how attitudes towards artificial intelligence technology are shaped on the basis of individual creativity at the theoretical level, and sheds light on educational and managerial strategies for understanding the interaction of sport sciences students, and therefore future sport scientists, with artificial intelligence.

METHOD

Research Model

This study was designed according to the relational research model a quantitative research approach that aims to examine the relationships between two or more variables and to describe the current state of these relationships (15). In this direction, the predictive role of individual creativity levels of sport sciences students on their attitudes towards AI was examined in the study.

Research Group

The study group of the research was determined according to the criterion sampling method, one of the purposive sampling methods. As a criterion, students' use of artificial intelligence was taken into consideration. In this context, the study group consists of 459 students studying at BAIBU, Faculty of Sports Sciences in the spring semester of the 2024-2025 academic year.

When the demographic information of the study group was analyzed:

It was determined that the ages of the participants ranged between 17 and 28, the mean age was $\bar{X} = 21.27$, 197 were female (42.9%) and 262 were male (57.1%).

When the frequency of the participants' use of digital tools such as phones and computers in their daily lives was examined, it was determined that 22 participants (4.8%) never used these tools, 83 participants (18.1%) sometimes used them and 354 participants (77.1%) mostly used such digital materials.

In addition, when the distribution of the participants according to the number of artificial intelligence applications they use was analyzed, it was determined that 24 participants (5.2%) did not use any artificial intelligence application, 398 participants (86.7%) used between 1 and 3 artificial intelligence applications and 37 participants (8.1%) used 4 or more applications.

Demographic Variable	Subgroup	Frequency	Percentage (%)
Age	17- 28	459 ($\bar{x}=21,27$)	100,0
Gender	Female	197	42,9
	Male	262	57,1
Frequency of Utilization of Bil.	Nothing.	22	4,8
Frequency of Utilization of Tel.	Sometimes	83	18,1
etc.	Mostly	354	77,1
Artificial Intelligence Application. Number of	Nothing.	24	5,2
	1-3	398	86,7
	4 and above	37	8,1
p<0.05			

Data Collection Instruments

An online questionnaire form consisting of three sections was used to collect data in the study:

Personal Information Form: It includes the demographic information of the participants such as gender, age, frequency of using artificial intelligence and the number of AI applications they use.

Individual Creativity Scale: To evaluate individual creativity, an 11-item unidimensional instrument was employed, originally created by Zhou and George (6) and subsequently validated for the Turkish context by Yıldız et al. (16). The internal consistency coefficient of the scale in this study was $\alpha = .919$.

General Attitudes toward AI Scale: Developed by Schepman and Rodway (17) and adapted into Turkish culture by Kaya et al. (12), this 20-item scale consists of two dimensions: positive attitudes (12 items) and negative attitudes (8 items) toward AI. The internal consistency coefficient for positive attitudes is ($\alpha=.88$) and for negative attitudes is ($\alpha=.83$). In this study, the scale was evaluated on a single overall attitude score as stated by Schepman and Rodway.

Data Analysis

Jamovi 2.4.8 statistical analysis program was used to analyze the data obtained. Initially, missing and extreme values were examined in accordance with the assumptions of the analysis to be applied. After the examination, it was determined that there were no missing and extreme values and the demographic characteristics of the participants and their responses to the items of the scale were analyzed through descriptive statistics (frequency, percentage, arithmetic mean, standard deviation). In addition, the normality assumption, which is one of the prerequisites of parametric tests, was examined. Skewness- Kurtosis and Q-Q plot graphs were taken into consideration in the evaluation of normality. As a result of the examination, Skewness and Kurtosis values of the data were found to vary between -1.25 and 0.684. It was determined that these values are within the criterion value range of ± 1.96 , which is the criterion value range in the literature, that is, the data are normally distributed (18; 19).

Subsequently, confirmatory factor analyses (CFA) were performed to assess the construct validity of the scales. Model fit was evaluated using widely accepted indices such as chi-square/degrees of freedom (χ^2/df), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Standardized Root Mean Square Residual (SRMR) (19). Following the CFA, convergent validity was assessed through composite reliability (CR) and average variance extracted (AVE), while discriminant validity was evaluated using maximum shared variance (MSV) and average shared variance (ASV) (19). Reliability was further assessed through Cronbach's alpha and Omega coefficients (18).

Finally, a multiple linear regression was performed to investigate how individual creativity predicts sports sciences students' overall attitudes toward AI. Prior to conducted the analysis, assumptions related to normality, multicollinearity, and potential outliers were examined.

Ethical approval and institutional permission

Permissions for the use of measurement tools were obtained from Nuh Osman YILDIZ, who adapted the Individual Creativity Scale to Turkish culture, and Feridun KAYA, who adapted the scale to Turkish culture, for the General Attitude Towards AI Scale. In order to ensure the ethical compliance of the study, an application was made to BAIBU Human Research Ethics Committee and an ethics committee approval report was obtained (Protocol No: 2025/265). In addition, the participants were informed about the study, they were assured that the information obtained would not be shared with anyone, and they were informed that they could leave the study at any time without any excuse.

FINDINGS

Below are the findings and tables that emerged as a result of the analyzes conducted for the purpose of the research.

The model and model fit indices (Figure 1, Table 2, Table 3) obtained as a result of CFA for the Individual Creativity Scale are given below.

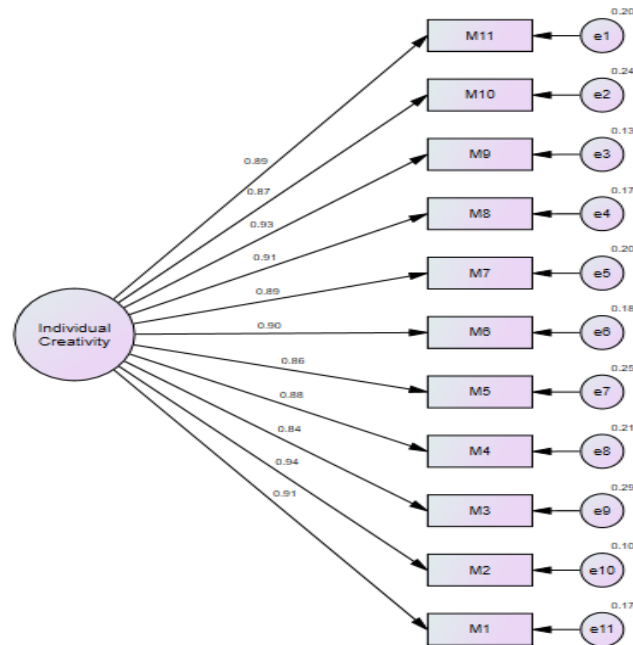


Figure 1. Individual Creativity Scale CFA Model

Table 2. CFA Goodness of Fit Indices for Individual Creativity Scale

Scale Name	Number of Articles	χ^2/df	p	RMSEA	CFI	TLI	SRMR
Individual Creativity Scale	11	3.43	0.001	0.073	0.999	0.999	0.022

Table 2 shows that the one-factor structure of the scale was confirmed. Considering the values related to model fit; $\chi^2/df = 3.43$, RMSEA = 0.073, CFI = 0.99, TLI 0.999 and SRMR = 0.022. These values show that the model fits within the scope of the criterion values in the literature.

Table 3. Item Analysis and Reliability Results for The Individual Creativity Scale

Scale	Number of Items	Factor Loading	T Value	R ²	Omega	CR	AVE	Cronbach's Alpha
Individual Creativity Scale	11	0.86- 0.93	66.3-100.2	0.846-1.081	0.965	0.991	0.864	0.978

As shown in Table 3, it was found that the factor loadings for the items were between 0.86 and 0.93, the R² value was between 0.846 and 1.081, and all items had a strong relationship with the factor. In addition, the internal consistency coefficients of the scale were determined as Cronbach's Alpha coefficient 0.978, Omega coefficient 0.965 and AVE value 0.864. These findings show that both the construct validity and internal consistency of the scale are high (18; 19).

The model and model fit indices (Figure 2, Table 4, Table 5) obtained as a result of CFA for the general attitude towards AI scale are given below.

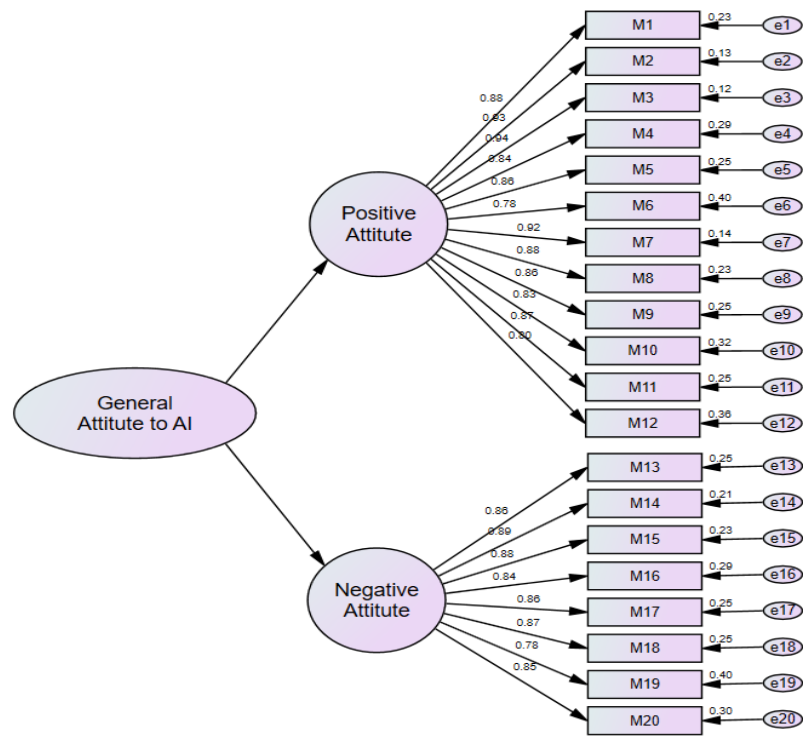


Figure 2. CFA Model of General Attitude Towards AI Scale

Table 4. CFA goodness of fit indices for the general attitude towards AI scale

Scale	Number of Items	χ^2/df	p	RMSEA	CFI	TLI	SRMR
General Attitude Towards AI Scale	20	3.85	0.001	0.079	0.997	0.997	0.041

Table 4 shows that the two-factor structure of the scale was confirmed. Considering the values related to model fit; $\chi^2/df = 3.85$, RMSEA = 0.079, CFI = 0.997, TLI 0.997 and SRMR = 0.041. These values show that the model fits within the scope of the criterion values (18).

Table 5. Item Analysis And Reliability Results For The General Attitude Towards AI Scale

Dimensions	Number of Items	Factor Loadings	T Value	R ²	CR	AVE	MSV	ASV	Omega	Cronbach's Alpha
Positive Attitudes	12	0.78-0.94	48.92-95.83	0.608-0.883	0.974	0.777	0.199	0.199	0.906	0.965
Negative Attitudes	8	0.78-0.89	30.24-	0.462-0.792	0.944	0.688	0.199	0.199	0.902	0.952

As shown in Table 5, it is seen that the factor loadings for the items are between 0.78 and 0.94, the R² value is between 0.462 and 0.883, and all items have a strong relationship with the factor. In addition, the internal consistency coefficients of the scale were determined as Cronbach's Alpha coefficient between 0.965 and 0.952, Omega coefficient between 0.906 and 0.902, CR values between 0.974 and 0.944 (CR $\geq$.70), AVE between 0.777 and 0.688 (AVE $\geq$.50, CR>AVE). In addition, the values for the discriminant validity of the scale were determined as MSV 0.199 and ASV 0.199. These findings show that both the construct validity and internal consistency of the scale are high (18; 19).

The results of the regression analysis applied to test the predictive power of the individual creativity variable towards the general attitude towards AI are given below (Table 6).

Table 6. Regression analysis results of the effect of individual creativity variable on general attitude towards AI

Variable	B	Standard Error β	β	T	p	95% CI Lower	95% CI Upper
Fixed	0.920	0.099	-	9.30	<.001	0.726	1.115
Individual Creativity	0.648	0.026	0.756	24.64	<.001	0.596	0.699
R= 0,756							
F= (1,456), 607							
R ² = 0.571							
P<.001							

When Table 6 is examined, according to the linear regression analysis conducted to examine the predictive effect of individual creativity variable on the general attitude towards artificial intelligence model was found significant ($F(1, 456) = 607, p < .001$). The regression model explains 57.1% of the variance in attitude towards artificial intelligence scores ($R^2 = .571$).

In the model, individual creativity was found to be a significant predictor of individuals' general attitudes towards AI ($\beta = 0.756, t = 24.64, p < .001$). Accordingly, it was determined that individuals with creative characteristics had more positive attitudes towards artificial intelligence.

DISCUSSION AND CONCLUSION

This study was designed to examine the extent to which the individual creativity levels of sports sciences students predict their general attitudes toward AI. The analyses revealed that students' individual creativity levels significantly and strongly predicted their attitudes toward AI. The variance explained by the regression model (57.1%) supports the notion that creative tendencies are an important determinant in approaching AI technologies. This finding indicates that creative individuals are more likely to adopt innovative technologies more quickly and at earlier stages. While this result is supported by the studies in the literature (2; 4; 5; 8; 14; 20), it is also consistent with the Diffusion of Innovations Theory (7), the theory on which the study is based.

Runco and Jaeger (5), who define creativity as the ability to generate original and appropriate ideas, state that creative individuals not only generate new ideas, but also make these ideas functional with the means at hand. This feature found in creative individuals indicates that they are more advantageous in terms of their ability to interact with technological tools.

Rogers' (7) Diffusion of Innovations Theory, which serves as the theoretical framework of this study, outlines five stages and five personality types in the adoption and diffusion process of innovations. Within this framework, creative individuals are regarded as having an innovation-oriented profile and are typically positioned among the early adopters. Accordingly, the finding that individuals with higher creativity play a key role in fostering positive attitudes toward innovations and new technologies, such as artificial intelligence, is consistent with this theoretical perspective.

In the study conducted by Chae et al. (14), it was revealed that individual creativity plays a determining role in the perception and acceptance of new information technologies. The study was based on the creativity components model. As a result, it was found that individual creativity significantly predicted attitudes towards technology. Researchers stated that individuals can adopt new technologies more quickly and use them better due to reasons such as being open to new ideas, curiosity about new technologies, and having strong intrinsic motivation.

In a systematic review conducted by Li et al. (20), it was found that new and advanced technologies used in educational environments increase students' creativity capacities through interactive learning processes. The researchers stated that this result is due to the holistic effect of active learning, problem solving opportunities, multi-sensory experience and collaborative environments.

In the systematic review conducted by Greenhalgh et al. (8), it was emphasized that individual factors are an important determinant in the adoption of technological innovations. In the study, it is said that individuals with innovativeness adopt technology more easily both individually and organizationally and are quite willing to do so. In this context, it is stated that creative individuals have the potential to develop more flexible and positive attitudes towards technologies that contain uncertainty and complexity.

In a study conducted by Güler and Atasayar (2) on nursing students, it was found that students with creative personalities were more interested, less anxious and developed a more positive attitude towards artificial intelligence technologies. The researchers stated that this result was related to the tendency of creative individuals to take risks and be open to new experiences.

Xing and Qi (4) examined interactive technologies (zoom application) and creative thinking skills in a study on physical education teachers. As a result, it was revealed that there was a relationship between technology-oriented approaches and creative thinking.

Although the present study demonstrates that individual creativity is a strong predictor of attitudes toward artificial intelligence, some studies in the literature report different or more nuanced findings. Previous research has suggested that attitudes toward artificial intelligence may be shaped more strongly by factors such as technological anxiety, perceived risk, or lack of domain-specific knowledge rather than individual creative characteristics (21; 22). In particular, Schepman and Rodway (2020) found that negative emotional responses and fear of job replacement were significant determinants of attitudes toward AI, whereas personal traits such as creativity played a limited role. Similarly, studies grounded in technology acceptance models emphasize perceived usefulness and ease of use as primary predictors of attitudes toward AI-related technologies, sometimes outweighing individual difference variables (23). These discrepancies suggest that the influence of creativity on attitudes toward artificial intelligence may vary depending on contextual, educational, and technological factors, highlighting the need for further research across different populations and disciplines.

As a result of the validity and reliability analysis applied to the scales used in the study, it was concluded that the construct validity of the scales was high and they were highly reliable. It is seen that the single-factor structure and high internal consistency values of the Individual Creativity Scale meet the fit criteria in the literature. Similarly, the General Attitude Towards AI Scale met the fit criteria with high factor loadings and discriminant validity levels in both positive and negative dimensions. These levels of the scales provided a strong basis for the measurement validity of the study and supported the reliability of the findings (18; 19).

The findings of the study also brought along various suggestions regarding the content of sport sciences education programs. In particular, developing learning environments that support individual creativity, increasing courses on artificial intelligence literacy and technology use can strengthen students' positive attitudes towards technology. It may also enable them to adapt to current technology applications such as artificial intelligence applications more quickly. In the literature, it has been reported that creative pedagogical approaches increase students' interest in innovative technologies and increase their level of engagement (4; 24; 25).

On the other hand, this study has some limitations that should not be ignored. Since the data were collected only from the students of the Faculty of Sport Sciences at BAIBU, the level of generalizability was limited. In addition, the change and causality processes between individual creativity and attitudes could not be monitored over time due to the use of a cross-sectional design. In future research, collecting longitudinal data with large and diversified samples from different universities will increase generalizability. In addition, qualitative data collection methods such as in-depth interviews can be used to examine in more detail how individuals' creativity experiences are reflected in their attitudes towards AI.

In conclusion, this study revealed that sport science students' individual creativity levels are significant and strong predictors of their general attitudes towards AI. Moreover, the study provided an important perspective in understanding the individual creativity levels of sport science students' general attitudes towards artificial intelligence. From a theoretical perspective, it provides a contribution consistent with the literature on the predisposition of creative individuals to the acceptance of innovations such as artificial intelligence, and from a practical perspective, it provides a suggestion for integrating educational programs into the pedagogical curriculum in a way that encourages creativity. It is thought that this research, which is thought to contribute to the theoretical knowledge and practices in the field, will form the basis for new studies on sustainable education policies and technology adaptation processes in the field of sports sciences. In this context, sports sciences curricula may benefit from the inclusion of AI related modules and creativity focused learning activities that promote problem solving, data literacy and interdisciplinary thinking. Such curriculum

enhancements may help prepare future sport professionals to engage more effectively with artificial intelligence technologies in both educational and professional settings.

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