The Role of Rational and Intuitive Decision-Making Styles in Predicting Academic Achievement of Turkish Pre-Service Physical Education Teachers

RESEARCH ARTICLE

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Abstract

The objective of this study is to determine the extent to which rational and intuitive decision-making styles predict the academic achievement of Turkish pre-service physical education teachers. The study group consisted of 567 students enrolled in physical education teacher education programs at Turkish universities. The data was collected using a personal information questionnaire and a scale on rational and intuitive decision-making styles. The results of the study indicate a positive correlation between the rational and intuitive decision-making styles of pre-service physical education teachers and their academic achievement. The results of the hierarchical regression analysis show that the rational decision-making style explains 43% of the variance in academic achievement, while the combination of this style with the intuitive decision-making style results in an explanation of 51%. The standardized relative importance scores show that the rational decision-making style explains 62% of the variance in academic achievement, while the intuitive decision-making style explains 38%. It can be concluded that both rational and intuitive decision-making styles contribute to the academic achievement of pre-service physical education teachers. Among other factors considered in academic achievement, students' rational and intuitive decision-making styles should not be discarded as potential explanatory variables.

Keywords: *academic achievement, physical education, pre-service teacher, rational decision-making, intuitive decision-making*

Türk Beden Eğitimi Öğretmen Adaylarının Akademik Başarılarını Yordamada Rasyonel ve Sezgisel Karar Verme Stillerinin Rolü

ARAŞTIRMA MAKALESİ

Öz

Bu çalışmanın amacı, rasyonel ve sezgisel karar verme stillerinin Türk beden eğitimi öğretmen adaylarının akademik başarılarını ne ölçüde yordadığını tespit etmektir. Çalışma grubu, Türkiye'deki üniversitelerin beden eğitimi öğretmenliği programlarına kayıtlı 567 öğrenciden oluşmaktadır. Veriler, kişisel bilgi formu, rasyonel ve sezgisel karar verme stilleri ölçekleri ile toplanmıştır. Çalışmanın bulguları, beden eğitimi öğretmen adaylarının rasyonel ve sezgisel karar verme stilleri ile akademik başarıları arasında pozitif bir ilişki olduğunu göstermektedir. Hiyerarşik regresyon analizi sonuçları, rasyonel karar verme stilinin akademik başarıdaki varyansın %43'ünü açıklamaktan sorumlu olduğunu gösterirken, bu stilin sezgisel karar verme stili ile kombinasyonu %51'lik bir açıklama ile sonuçlanmıştır. Standardize edilmiş göreli önem değerleri, rasyonel karar verme stilinin akademik başarıdaki varyansın %62'sini, sezgisel karar verme stilinin ise %38'ini açıkladığını göstermektedir. Hem rasyonel hem de sezgisel karar verme stillerinin beden eğitimi öğretmen adaylarının akademik başarılarına katkıda bulunduğu sonucuna varılabilir. Akademik başarıda dikkate alınan diğer faktörlerin yanı sıra, öğrencilerin rasyonel ve sezgisel karar verme rollerinin potansiyel açıklayıcı değişkenler olarak göz ardı edilmemesi gerektiği düşünülmektedir.

Anahtar Kelimeler: *akademik başarı, beden eğitimi, öğretmen adayı, rasyonel karar verme, sezgisel karar verme*

Introduction

Academic achievement is a multifaceted assessment of student learning and reflects students' ability to achieve educational goals. It is commonly assessed using a variety of methods, with achievement quantified by Grade Point Average (GPA) (Campbell et al., 2024; İlter, 2021; Kassaw & Demareva, 2023; Ruiz & Heras, 2020), which is considered the most important outcome of formal education (Hepworth et al., 2018; Moore, 2019). Academic achievement is associated with variables such as self-efficacy, persistence, learning strategies, social skills and behaviors (Han et al., 2018) and includes achievement of learning goals, skill acquisition, satisfaction, persistence and time after graduation (York et al., 2015). The impact of these variables can be seen in students' decision-making processes in relation to their academic and social commitments. At this point, students make decisions about their academic and social commitments (Çimşir, 2022).

Decision making is about selecting appropriate options to achieve goals, with styles categorized as rational, intuitive, dependent, spontaneous, and avoidant (Loo, 2000; Scott & Bruce, 1995). This study focused on the styles of rational decision making (RDM) and intuitive decision making (IDM).

Decision-making influences academic performance, especially in adolescence (Papachristou et al., 2022). Existing research indicates a significant relationship between the academic achievement of university students and their decision-making skills and styles (Bala et al., 2017; Majeed, 2021; Nehass & Zarhbouch, 2023; Raja & Vellaichamy, 2021; Yambo, 2022). This raises the question of whether academic performance can be predicted based on students' rational or intuitive decision-making style. Studies show a positive correlation between RDM styles and academic achievement (El Othman et al., 2020; Grimm & Richter, 2024; KS et al., 2023; Nehass & Zarhbouch, 2023). The hypothesis is that rational and effective decision making leads to better academic performance. Although IDM is an essential part of the decision-making process (Petrou et al., 2020), it does not consistently predict academic outcomes. Erceg and Galić (2023) found a negative correlation between academic performance and IDM, while Yakıt (2022) found a positive correlation between reasoning styles and ability in both RDM and IDM. According to Epstein (1994) and Huang and Souitaris (2016), RDM and IDM are linked, so this study includes both.

While the existing literature justifies the exploration of decision-making styles and academic achievement, several additional reasons underscore the importance of this study. As universities enroll increasingly diverse student populations, understanding how different decision-making styles affect academic success can help tailor educational strategies to meet diverse needs. In addition, the knowledge gained can inform educational policy and practice, allowing institutions to develop programs that promote decision-making skills and improve academic outcomes. This research can also identify factors that promote students' long-term academic success and career readiness. At the same time, it contributes to the theoretical framework by providing empirical evidence of the interplay between rational and intuitive decision making and enriching the academic discourse in this area.

The applicability of findings relating to the general university student population to pre-service physical education teachers may be limited due to

differences in needs and teaching methods (Koehler & Mishra, 2016; Park & Oliver, 2008; Shulman, 1987). Scientific research has examined the decision-making styles of these educators in relation to personality traits (Bengi, 2023; Eren et al., 2020), career stress (Bozyiğit & Biçer, 2024), time perspective (Yılmaz & Hergüner, 2023), emotional intelligence (Cengiz et al., 2022), self-esteem (Temel & Nas, 2021), and problem-solving skills (Demircan & Ayan, 2022). In addition, research has examined the relationship between RDM and IDM styles and mental preparation (Güler et al., 2022) and the correlation between decision-making patterns of extreme athletes and their fear of sports injuries (Şenel et al., 2023).

The correlation between RDM and IDM styles and academic achievement of pre-service physical education teachers in Türkiye does not seem to have been sufficiently investigated in previous studies. Against this background, this study aims to add to the existing literature on this topic. In addition, investigating the role of RDM and IDM styles in shaping early academic achievements may improve students' understanding of the decision-making processes that lead to either favorable or unfavorable academic outcomes. The purpose of this study was to determine the extent to which RDM and IDM styles influence the academic achievement of Turkish pre-service physical education teachers at the university level. To this end, the decision-making process and the RDM and IDM styles, which are considered as predictor variables in this study, were first described.

Theoretical Background

Decision-Making and Process

Individuals are constantly faced with decisions in various areas, including social, economic, educational, political, and in the fulfillment of everyday necessities (Samancı & Mazlumoğlu, 2023). The process of decision making, a fundamental component of existence, involves identifying and selecting the optimal option to realize goals (Hammond et al., 2015; Scott & Bruce, 1995). Regardless of its nature, the decision-making process always involves the evaluation of alternatives to achieve a specific goal (Güngör & Özcan, 2022). Typically, this process involves the introduction of stimuli that predict outcomes, the evaluation of options, the selection of actions based on these stimuli, and the evaluation of the selected actions (Ernst & Paulus, 2005).

Theories of decision-making include both normative and descriptive approaches. Normative theories, which are based on expected utility theory

(Von Neumann & Morgenstern, 1944), describe ideal decision-making behaviors that have not been empirically tested. Descriptive theories, which are linked to expectancy theory (Kahneman & Tversky, 1979), examine actual decision-making behavior. Prospect-utility theory assumes that individuals make probabilistic considerations in order to optimize their utility (Schoemaker, 1982; Von Neumann & Morgenstern, 1944). Expectancy theory states that decisions are based on the individual's expectations, which are interpreted as losses or gains (Kahneman & Tversky, 1979; Morelli et al., 2022). Expected utility theory explains rational decision making, while expectancy theory explains the prevailing behaviors (Hens & Bachmann, 2008).

The decision-making process is inextricably linked to decision-making, which is a key area of research in disciplines such as psychology, decision science and artificial intelligence (Adam & Dempsey, 2020). It comprises several phases aimed at finding the optimal solution to a problem. These include identifying the problem, enumerating alternatives, defining criteria, evaluating options and selecting the most appropriate choice (Anderson et al., 2003). The complexity of decision making arises from the need to evaluate options and deal with uncertainty (Von Neumann & Morgenstern, 1944).

Decision-Making and Styles

The variability of decision-making styles is attributed to individual reactions to perceptions and tasks. Harren (1979) categorized these styles as rational, intuitive and dependent. Leykin and DeRubeis (2010) distinguished styles such as attentive, intuitive, spontaneous, dependent, anxious, reflective and avoidant. Scott and Bruce (1995) listed them as rational, intuitive, dependent, avoidant or spontaneous. Lewis (2000) emphasizes the importance of decision-making styles in the literature. Scott and Bruce (1995) classify these into rational and intuitive styles. Rational decision making involves logical and analytical processing, while intuitive decision making is characterized by quick and emotion-driven processes. Other styles are described as dependent, i.e. relying on the advice of others, avoidant, i.e. avoiding decisions, and impulsive, i.e. making quick decisions. The variation in decision-making styles depends on the complexity of the problem and the individual attitude (Güngör & Özcan, 2022). Hamilton et al. (2016) emphasize the rational and intuitive dimensions.

Rational and Intuitive Decision-Making Styles

Intuition and rationality are fundamental to understanding decision-making (Adam & Dempsey, 2020). Since the 1990s, the dual-process model has distinguished the cognitive functions of rationality and intuition as discrete processes (Brust-Renck et al., 2021). This theoretical framework divides mental operations such as decision making into automatic and controlled thought processes and recognizes the role of both logic and intuition (Kahneman, 2003; 2013). Rationality entails certain difficulties, while intuition helps to understand behaviors (Adam & Dempsey, 2020). Kahneman and Frederick (2005) emphasize that people often deviate from rational decisions by applying heuristics. RDM and IDM processes contribute to the generation of ideas and the expansion of knowledge, thus emphasizing the differences in decision-making (Eser, 2022; Phillips et al., 2021).

A scientific study of decision making in the educational context highlights the recognition-based decision (RPD) model by G. Klein (1998), which includes both analytical and IDM theories. The analytical approach evaluates criteria to derive optimal solutions, while the intuitive approach is based on the decision maker's experiential knowledge. Intuition is characterized by recognition (experience-based), affect (instinctive feeling) and bias (personal beliefs). These components are emphasized in the work of Epstein (2010), Harteis et al. (2008) and Kahneman (2003) when researching intuition.

The RDM method is characterized by a careful collection of information and a logical evaluation of alternatives, while IDM relies on intuition and emotions to facilitate accelerated decision-making processes. RDM practitioners evaluate numerous variables and collect comprehensive data on alternatives. IDM practitioners, on the other hand, consider a limited number of factors and rely on intuition and experiential knowledge (Dane & Pratt, 2007; Dayan & Elbanna, 2011; Hamilton et al., 2016; Scott & Bruce, 1995; Vanlommel et al., 2016). While intuition and rationality are fundamentally different, they both play an important role in decision-making (Lewis, 2000). The challenge is to recognize the overlap between these approaches (Lieberman, 2007). Intuition is characterized by its holistic and creative nature, while rational thinking provides rigor and precision in information processing (Klein & Weiss, 2007). In the pursuit of strategic goals, decision-making must be guided by the criteria of efficiency, rationality, feasibility

and timeliness (Lezki et al., 2016). Rationality is an essential component of conscious action (Scott & Bruce, 1995).

The rational decision-maker tries to make decisions with a comprehensive understanding of the possible outcomes (Schoenfeld, 2011). Curşeu and Schruijer (2012) found that individuals with high rationality scores have a lower susceptibility to bias, while an intuitive approach is associated with better mental health, suggesting a cooperative interplay between RDM and IDM mechanisms (Bavolar & Orosova, 2015). Rationality and intuition, while distinct, function in complementary ways in the decision-making process (Epstein, 1994; Huang & Souitaris, 2016). There are differences in decision-making styles, with some people taking a detailed deliberative approach and others taking an intuitive approach (İme et al., 2020). A growing body of research emphasizes these differences (KS et al., 2023; Palmiero et al., 2020). Decisions are made through a combination of rational and intuitive processes. In the context of complex education, IDM is beneficial for recognizing critical information; however, a rational approach is generally considered more reliable and is associated with greater achievement (Alaybek et al., 2021; Phillips et al., 2021; Vanlommel et al., 2016).

Rational and Intuitive Decision-making Styles and Academic Achievement

Higher education fosters an environment that is conducive to learning in a variety of fields and the development of global competencies (Kassaw & Demareva, 2023). It is imperative to understand students' personal functioning in higher education as it reflects factors that influence academic achievement. Higher-order thinking involves evaluating outcomes and selecting optimal options (Majeed, 2021). The literature shows thematic similarities in the factors that influence students' academic achievements. Al-Tameemi et al. (2023) identified four main themes: academic, personal, social, and demographic. Koçak et al. (2021) identified psychological, socioeconomic and sociodemographic characteristics alongside learning theories and teaching strategies as crucial variables. Alyahyan and Düştegör (2020) highlighted student demographics, e-learning effectiveness, psychological characteristics and academic environment as predictors. Sarıer (2016) emphasized the importance of socioeconomic status, self-efficacy and motivation. The development of informed decision-making from preschool to university is essential (Demirbaş, 2018; Yağcı, 2022; Yurtseven et al., 2021).

Empirical evidence indicates a significant correlation between university students' academic achievements and their decision-making skills (Majeed, 2021; Yambo, 2022) as well as their decision-making styles (Bala et al., 2017; Nehass & Zarhbouch, 2023; Raja & Vellaichamy, 2021). RDM has been identified as a positive predictor of academic achievement (El Othman et al., 2020; Grass et al., 2017; Grimm & Richter, 2024), while IDM has been associated with a negative correlation (Erceg & Galić, 2023). Furthermore, research suggests that RDM is inversely associated with academic procrastination (Arslankoç & Koçak, 2023; Gültekin & Güney, 2023; İlter, 2021; KS et al., 2023). The existing literature suggests that intuitive decision makers exhibit differences compared to others, although the relationship between personality traits and intuition in decision making remains unclear (Malewska, 2018). The study hypothesizes that both RDM and IDM skills have a positive impact on academic achievements by improving strategic decision making and educational responsibility.

The contemporary literature assumes that individuals typically apply RDM and thus show a preference for this style. Despite dual process theories that emphasize the need for both RDM and IDM, RDM continues to predominate. This study is based on dual process theory and assumes that pre-service physical education teachers use both decision-making styles. The aim is to investigate the correlation between RDM, IDM and students' academic achievement;

RQ-1. Is there a significant relationship between these variables?
RQ-2. To what extent do these variables predict academic achievement?

Methodology

Research Model

This study examines the relationship between RDM and IDM styles and the academic achievement of pre-service physical education teachers using a predictive correlational research design. The changes in the dependent variables are examined as a function of the independent variables (Büyüköztürk et al., 2018; Fraenkel et al., 2023). The independent variables were RDM and IDM styles, while the dependent variable in this study was academic achievement

Participants

The study was conducted with final year students enrolled in physical education and sport education, coach education and sports management at college sports faculties. As it was not possible to reach the entire population,

a non-probability based random sampling method was used, which allows for efficient and cost-effective data collection (George & Mallery, 2010). Tavşancıl (2014) pointed out that a sample size of at least five times the number of scale points is sufficient. Considering that the scale used in this study consists of 10 items, this calculation suggests that a minimum of 50 participants is appropriate for the study. The study included 567 participants who were enrolled in their final year of study in physical education faculties and schools of physical education and sports in different state universities in Turkey. This sample size ensures sufficient power for reliable results. It consisted of 276 males (48.7%) and 291 females (51.3%) aged 21 to 30 years (M = 22.43, SD = 1.02). The participants included 204 (36.0%) from the field of physical education and sports teaching, 179 (31.6%) from coach education and 184 (32.5%) from sports management.

Data Collection Instruments

Two instruments were used to collect data in the study: the personal questionnaire and the RDM and IDM scales. The questionnaire, which was completed by the researcher, included information on the participants' gender, age, department, and weighted grade point average. Academic achievement was measured by grade point average up to and including the research semester. Grade point averages were converted to a 100-point scale using the "Table of Grade Correspondences in the 4-Level System in the 100-Level System" of the Council for Higher Education (YÖK) (https://oyp.yok.gov.tr/Documents/Anasayfa/4lukSistem.pdf).

The scale developed by Hamilton et al. (2016) to measure rational decision-making behavior (RDM) and intuitive decision-making behavior (IDM) consists of two sub-dimensions and comprises a total of 10 items. The first five items relate to RDM, while the following five items relate to IDM. Examples of rational decision making are: "I prefer to gather all necessary information before making a decision"; "I weigh options carefully before making a final decision." Examples of intuitive decision-making, on the other hand, are: "When I make decisions, I mainly rely on my instincts"; "I usually trust my first instinct when making decisions." The items on the scale are rated on a 5-point Likert scale, with 1 indicating strong disagreement and 5 indicating strong agreement. İme et al. (2020) translated the scale into Turkish using a sample of university students. A confirmatory factor analysis (CFA) confirmed the two-dimensional structure of the model and showed fit indices X2/df= 2.57, CFI= .98, TLI= .97, SRMR= .06,

RMSEA= .06. The Cronbach's alpha coefficients for internal consistency were .80 for the total scale, .90 for RDM and .85 for IDM. Deriving an overall score from the 10 items is not possible; however, each sub-dimension can yield scores between 5 and 25, indicating rational or intuitive decision-making abilities (İme et al., 2020). In this study, CFA adjustment indices of X2/df= 3.71, CFI= .94, TLI= .92, SRMR= .04, RMSEA= .08 were obtained, all demonstrating adequate adjustment. The reliability estimates resulted in Cronbach's alpha coefficients of .86 for RDM and .77 for IDM, whereby values above 0.70 are considered satisfactory according to Fraenkel et al. (2023).

The data for the study was collected via an online Google form. The link to this form was distributed to academic advisors, faculty, and students via email, digital channels, and various social media platforms. Before participants completed the demographic questions and scale, they were presented with the details of the study and a consent form. The data collection period was from February 20 to March 10, 2024.

Data Analysis

The data were analyzed with SPSS Statistics 27 and Jamovi 2.5.6. The coefficients of skewness (-.02 to .65) and kurtosis (-.23 to .50) indicate a normal distribution as described by Tabachnick and Fidell (2013). Descriptive statistics, Pearson correlation and hierarchical regression were performed to examine the relationships and influences between the variables. Key assumptions were tested and results include statistical values and graphical representations. Pratt's index (dp) (Wu et al., 2014) was used to assess the significance of the independent variables. Analyzes were performed with a confidence interval of 95 and a significance threshold of $p < 0.05$.

Results

Correlation coefficients and descriptive statistics of decision-making styles and academic achievement

Table 1 shows a Pearson correlation analysis regarding the RDM and IDM styles in relation to the academic achievement of pre-service physical education teachers (n = 567). The mean scores are as follows: academic achievement (M= 71.09, SD = 6.51), RDM style (M= 19.70, SD= 2.23) and IDM style (M= 18.55, SD= 2.24). The results indicate a preference for the RDM style. Significant positive correlations were found between RDM, r(565)= .66, p< .01, IDM,

r(565)= .58, *p*< .01, and academic achievement. A moderate positive correlation was also found between RDM and IDM style, r(565)= .47, *p*< .01.

Table 1

Correlation coefficients between variables and descriptive statistics

Variables	n	M	SD	1	2
1. Academic achievement	567	71.09	6.51	1	
2. RDM style	567	19.70	2.23	.66**	1
3. IDM style	567	18.55	2.24	.58**	.47**

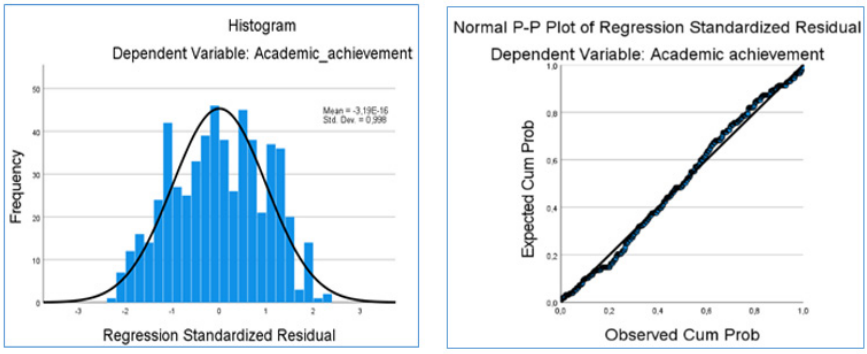
***p < .01*

Hierarchical regression analysis of decision-making styles as predictors of academic achievement

The hierarchical regression analysis conducted aimed to investigate the predictive abilities of RDM and IDM styles on the academic achievements of pre-service physical education teachers. The necessary assumptions were tested, with normality confirmed by skewness and kurtosis values within the range of ±1.5. The normality assumptions were further supported by the distribution patterns depicted in histograms and probability-probability (P-P) plots, which showed the general shape of the data distribution and the fit of the observed data to the expected normal distribution (see Figure 1).

Figure 1

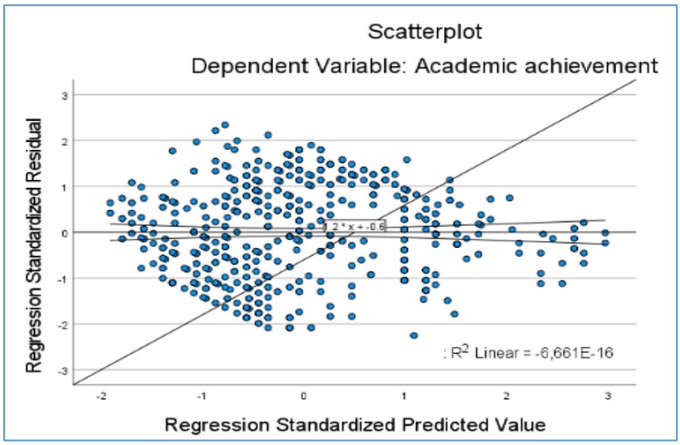
Histograms and probability-probability (P-P) plots depicting the normality of data distribution



visualized using scatter plots, as shown in Figure 2. In addition, the dispersion and relationships within the data were visualized using scatter plots, as shown in Figure 3. No outliers were found in the analysis, as shown by the Mahalanobis and Cook's distances. In particular, the Mahalanobis distance remained below the critical value of 13.81 and the highest Cook's distance was measured at 0.24, which is below the threshold value of 1 as stated in the guidelines of Tabachnick and Fidell (2013).

Figure 2

Scatter plots illustrating the spread and relationships within the data



The assumptions of multicollinearity were evaluated using indices such as the variance inflation factor (VIF), tolerance and the relationships between the variables. The correlation coefficients are below 0.80, as shown in Table 1, while the tolerance values are above 0.10 and the VIF values are below 10. These ratios indicate that there are no problems with multicollinearity as described by Pallant (2020). Consequently, the necessary conditions for a regression analysis are met.

Table 2

Hierarchical regression analysis results for the prediction of academic achievement

Model	Variables	**B**	**SE_B**	β	**t**	***p***	**sr**	**dp**
1	Constant	33.37	1.84		18.12	<0.001		
	RDM style	1.91	03.93	.65	20.61	<0.001	.65	
F(1, 565)=424.84, R = .66, R^2 = .43, adj. R^2 = .43, p < 0.001								
2	Constant	24.07	1.91		12.59	<0.001		
	RDM style	1.44	0.10	.49	14.90	<0.001	.43	.62
	IDM style	1.00	0.09	.34	10.37	<0.001	.30	.38
F(1, 564)=107.57, R = .72, R^2 = .52, adj. R^2 = .51, *p* < 0.001								

sr= semipartial correlation, dp= standardized relative importance analysis value for Pratt.

The hierarchical regression analysis according to the Enter method was carried out in a two-stage procedure. In the first stage, RDM style was found to be a significant predictor of academic achievement, accounting for 43% of the variance (F(1, 565)= 424.84, R2= .43, adj. R2= .43, p<0.001). An increase in RDM by one unit corresponds to a 0.65 unit increase in achievements (β= 0.65, t= 20.61, p<0.001). In the subsequent phase, the inclusion of IDM style improved the model and explained 51% of the variance (F(1, 564)= 107.57, R2= .52, adj. R2= .51, p<0.001), with IDM contributing approximately 9%. IDM also served as a positive predictor of achievements (β= .34, t= 10.37, p<0.001), where a one-unit increase should increase performance by 0.34 units. RDM style retains its status as a strong predictor despite the addition of IDM, albeit with a slight decrease (β= 0.49, t= 14.90, p<0.001). RDM accounts for 62% of the explained variance, while IDM accounts for 38%.

Discussion

RQ-1. Is there a significant relationship between these variables?

The first finding of this research, which analyzed the correlation between the rational and intuitive decision-making styles of pre-service physical education teachers and their academic achievement, suggests that these teachers predominantly use RDM styles, while IDM styles follow (Field, 2024). Academic studies suggest that pre-service physical education instructors mainly use RDM approaches rather than IDM styles.

Discussion of findings related to RQ-1

A review of the existing literature confirms this prevailing tendency both among educators (Pesen & Epçaçan, 2021; Terzi & Uyangör, 2018; Yağcı, 2022; Yakıt, 2022; Yakıt & Uçar, 2023) and learners, including athletes (Ain & Ch, 2022; Başoda et al., 2023; Dostanić et al., 2021; Egbaria & Zaid, 2023; Güler et al., 2022; Soyer et al., 2021). Rational decision making is related to improved cognitive abilities, awareness and prudence (Ding et al., 2020; Farokhi & Hosseinchari, 2020; Hosseini & Hosseini, 2018). Comprehensive considerations promote cognitive and systematic processes, while intuitive decisions are characterized by emotional influence and a lack of structure (İme et al., 2020).

The study underlines a robust positive relationship between RDM and IDM styles and academic achievement (RQ-1). In the university context, decisions should be designed to minimize failure, which is consistent with conventional decision theories and dual process frameworks. The practice of rational information seeking is related to academic achievements, as previous research has shown (Baiocco et al., 2009; Bala et al., 2017; Burgoyne et al., 2021; Grass et al., 2017; Grimm & Richter, 2024; Nehass & Zarhbouch, 2023; Von Stumm & Ackerman, 2013). In these studies, RDM is often contrasted with alternative decision-making styles such as intuitive or dependent. RDM is essential for promoting self-organization and the ability to make decisions in educational contexts (Grimm & Richter, 2024). KS et al.'s (2023) research shows that students who use RDM are more inclined to complete academic tasks. Üngüren (2019) points out that RDM requires considerable information input. Ross (1981) advocates minimizing potential failure by evaluating multiple alternatives, thorough data analysis, and self-assessment. High-quality information is fundamental to the correct decision-making process in RDM (Bag et al., 2021).

Students' intuitive and rational decisions contribute significantly to optimal academic achievement. While rational decision making (RDM) emphasizes logical analysis, which sometimes constrains problem solving, intuitive decision making (IDM) practitioners consider a broader range of alternatives and pay more attention to the precision of high-stakes decisions (Bodin et al., 2016; Chang & Wu, 2012; Scott & Bruce, 1995). Although rational methods generally provide better results than intuition, the role of intuition remains indispensable (Alaybek et al., 2021; Elbanna et al., 2013; Petrou et al., 2020 ; Phillips et al., 2021). Yakıt

(2022) found that reasoning styles have an impact on RDM and IDM skills. Most studies establish a link between RDM and academic achievements, while one study (Erceg & Galić, 2023) found a negative correlation with IDM.

RQ-2. To what extent do these variables predict academic achievement?

The RQ-2 assessment found that the RDM approach contributes 43% to academic achievement, with the IDM approach in combination with RDM contributing a further 51. The IDM approach also has a partial impact on achievements.

Discussion of findings related to RQ-2

The literature postulates that rationality and intuition complement each other (Epstein, 1994; Huang & Souitaris, 2016). Grimm and Richter (2024) found that rational thinking predicts academic achievements beyond intelligence and is facilitated by rational processes. Çelik (2020) found that students' metacognitive strategies are influenced by innovation, the RDM approach, and cognitive maturity. Conscious and rational decision making promotes the use of metacognitive strategies.

Cognitive psychology assumes that rationality and intuition coexist and complement each other, although they differ in their cognitive processes (Calabretta et al., 2017). Thanos (2023) found that their integration leads to efficient strategic decision-making. One study found a correlation of 0.42 between RDM and IDM styles in college students (Ulanday et al., 2024). According to dual process theory, decision making involves a fusion of rational and intuitive methods (Kaufmann et al., 2014, 2017). With regard to the results of this study, both similarities and differences can be identified. This study supports the proposition that rational and intuitive decision-making styles can coexist and impact academic performance. However, while Ulanday et al. (2024) found a correlation of 0.42 between RDM and IDM styles in graduate students, this study may reveal different correlation coefficients or patterns in pre-service physical education teachers. In addition, the integration of rational and intuitive methods emphasized by Thanos (2023) may manifest differently in the context of physical education, suggesting that the specific academic discipline may shape the dynamics of decision-making styles.

Conclusion and Recommendations

The study found that the Rational Decision Making (RDM) and Intuitive Decision Making (IDM) styles served as significant predictors of academic performance of physical education teachers-in-training, explaining 51% of the variance, while the remaining 49% was due to other variables. Academic performance improves when RDM and IDM styles are combined with additional socio-psychological factors. It is expected that these results will contribute to the scientific discourse on the management of decision-making styles in pre-service teachers, with a focus on improving decision-making skills, especially IDM and RDM. Future research should examine the impact of these decision-making processes on pre-service teachers' academic performance.

Limitations and scope of future research

This research represents a groundbreaking analysis of the effects of RDM and IDM styles on the academic performance of prospective physical education teachers. Although the study is not without limitations, it is expected to provide insights that will be useful for future scholarly endeavors in this area. First, the use of cross-sectional data in this study reduces the internal validity of the study compared to experimental studies. It is recommended that experimental methods be used in future studies to determine the causal effects of RDM and IDM styles on academic achievement. Second, the study used self-report instruments to collect data, which may have led to some inaccuracies in the responses. However, since GPA is an objective measure of academic performance with high internal reliability (Bacon & Bean, 2006), it was assumed that the GPAs reported by the students were accurate. Third, the results of the study are limited to those obtained using quantitative methods. Therefore, it is recommended that future research should incorporate mixed methods studies as well as qualitative approaches such as phenomenological group discussions and interviews to validate the findings and gain more comprehensive insights.

Genişletilmiş Özet

Giriş

Öğrencilerin eğitim hedeflerine ulaşma becerilerinin bir ölçüsü olarak akademik başarı, genellikle standart testler, sınavlar, saha çalışmaları, atölye çalışmaları, laboratuvar eğitimi ve diğer değerlendirme biçimleri de dahil olmak üzere bir dizi değerlendirmeye dayalı olarak eğitimciler tarafından notların

verilmesi yoluyla bireysel başarıları ağırlıklı genel not ortalaması (AGNO) ile belirlenir (Campbell vd., 2024; İlter, 2021; Kassaw ve Demareva, 2023; Ruiz ve Heras, 2020). Öğrenme çıktıları olarak da adlandırılan AGNO, eğitimin önemli çıktısını temsil etmektedir (Hepworth vd., 2018; Moore, 2019). Akademik başarı; akademik öz yeterlilik, akademik azim, öğrenme stratejileri, sosyal beceriler ve akademik davranışlar gibi bir dizi bileşenle ilişkilidir. Bu ilişki; öğrenme hedeflerine ulaşma, istenen beceri ve yetkinliklerin kazanılması, memnuniyet, devamlılık ve üniversite sonrası başarıyı belirleyebilmektedir (York vd., 2015). Bu süreçte, üniversite öğrencileri akademik ve sosyal sorumluluklarına ilişkin bir takım kararlar vermektedirler (Çimşir, 2022). Karar verme, bireylerin bir karar verme senaryosuyla karşı karşıya kaldıklarında sergiledikleri öğrenilmiş ve alışılmış bir tepki olarak tanımlanmaktadır (Scott ve Bruce, 1995). Birey bir kararla karşı karşıya kaldığında, öğrenilmiş ya da alışkanlık hâline gelmiş olabilen karar verme stilleri devreye girer. Bu stiller tipik olarak rasyonel, sezgisel, bağımlı, spontane ve kaçıngan olarak sınıflandırılır (Loo, 2000; Scott ve Bruce, 1995). Bu çalışmada rasyonel (RKV) ve sezgisel karar verme (SKV) stillerine odaklanmıştır.

Karar verme süreci, ergenlik döneminde çok çeşitli sonuçlarla ilişkilidir ve bu sonuçlar akademik başarı ile de ilişkilidir (Papachristou vd., 2022). Önceki araştırmalar, üniversite öğrencilerinin akademik başarıları ile karar verme becerileri (Majeed, 2021; Yambo, 2022) ve genel karar verme stilleri (Bala vd., 2017; Nehass ve Zarhbouch, 2023; Raja ve Vellaichamy, 2021) arasında kayda değer bir ilişki olduğunu göstermektedir. Dolayısıyla öğrencilerin akademik başarılarının, ister rasyonel ister sezgisel olsun, karar verme stilleri tarafından tahmin edilip edilemeyeceği sorusu ortaya çıkmaktadır. Türkiye'deki beden eğitimi öğretmen adaylarının RKV ve SKV stilleri ile akademik başarıları arasındaki ilişki mevcut araştırmalar bağlamında henüz incelenmemiştir. Bu bağlamda, bu çalışma bu konudaki mevcut literatüre katkı sağlayacaktır. Ayrıca, RKM ve SKV stillerinin erken akademik başarıyı belirlemedeki rolünün incelenmesi, öğrencilerin olumlu veya olumsuz akademik sonuçlara katkıda bulunan karar verme süreçlerini anlamalarını kolaylaştırabilir. Bu çalışmanın amacı, üniversite düzeyinde öğrenim gören Türk beden eğitimi öğretmen adaylarının akademik başarılarında RKV ve SKV stillerinin ne ölçüde rol oynadığını tespit etmektir. Bu amaç doğrultusunda spesifik olarak iki araştırma sorusu (AS) ortaya atılmıştır:

AS-1. Beden eğitimi öğretmen adaylarının RKV ve SKV stilleri ile akademik başarıları arasında anlamlı bir ilişki varmı dır?

AS-2. Beden eğitimi öğretmen adaylarının RKV ve SKV stilleri akademik başarılarını ne ölçüde yordamaktadır?

Yöntem

Çalışma korelasyonel araştırma desenlerinden yordayıcı araştırma deseni kullanılarak tasarlanmıştır. Araştırmanın Yordayıcı değişkenleri RKV ve SKV stilleri, yordanan değişkeni ise akademik başarıdır. Araştırma, spor bilimleri fakülteleri ile beden eğitimi ve spor yüksekokullarının son sınıflarında öğrenim gören; 276 erkek (%48,7) ve 291 kadın (%51,3) olmak üzere toplam 567 katılımcı ile gerçekleştirilmiştir. Araştırmanın verileri; "Kişisel Bilgi Formu" ve Hamilton vd. (2016) tarafından geliştirilen, İme vd. (2020) tarafından Türkçeye uyarlanan "Rasyonel ve Sezgisel Karar Verme Stilleri Ölçeği" ile toplanmıştır. Ölçek toplam 10 maddeden oluşmaktadır. İlk beş madde RKV ile ilgiliyken, sonraki beş madde SKV'yi ele almaktadır. Ölçek maddeleri 5'li Likert tipinde (1: Hiçbir zaman…5: Her zaman) derecelendirilmiştir. Öğrencilerin akademik başarıları çalışmanın yapıldığı döneme kadar olan AGNO ile ölçülmüştür. Veriler 20 Şubat - 10 Mart 2024 tarihleri arasında web tabanlı Google Form aracılığıyla toplanmıştır. Veriler SPSS Statistics 27 ve Jamovi 2.5.6 yazılım programları kullanılarak analiz edilmiştir. İlk adımda, verilerin normal dağılıp dağılmadığı çarpıklık ve basıklık katsayılarına göre kontrol edilmiştir. Kontrol sonucunda verilerin normal dağılım gösterdiği görülmüştür. Tanımlayıcı istatistiklere ek olarak, değişkenler arasındaki karşılıklı ilişkiyi ve birbirlerini etkileme oranlarını tespit etmek için Pearson korelasyon ve hiyerarşik regresyon analizi kullanılmıştır. Regresyon analizinde bağımsız değişkenlerin göreli önemini belirlemek için Pratt'ın standardize edilmiş önem endeksi (dp) kullanılmıştır (Wu vd., 2014). Analiz sonuçları %95 güven aralığında, $p<0.05$ düzeyinde değerlendirilmiştir.

Bulgular

Çalışmanın ilk bulgularına göre; beden eğitimi öğretmen adaylarının akademik başarı puan ortalamaları ($\bar{X}$= 71.09, SS= 6.51), RKV stili ortalamaları ($\bar{X}$= 19.70, SS= 2.23) ve SKV stili ortalamaları ($\bar{X}$= 18.55, SS= 2.24) olarak gerçekleşmiştir. Ortalama puanlar, beden eğitimi öğretmen adaylarının RKV stilini daha fazla kullandıklarını göstermektedir. Pearson momentler çarpımı

korelasyon katsayıları, RKV (r(565)= .66, p< .01) ve SKV (r(565)= .58, p< .01) stilleri ile akademik başarı puanları arasında güçlü bir pozitif ilişki olduğunu göstermektedir. Hiyerarşik regresyon analizi bulguları ise; RKV stili model içinde bağımsız olarak ele alındığında, akademik başarının pozitif bir yordayıcısı olduğunu (β= 0.65, t= 20.61, p< 0.001) ve akademik başarıdaki varyansın %43'ünü açıkladığı görülmüştür (F(1, 565)= 424.84, R^2= .43, adj. R^2= .43, p< 0.001). İkinci adımda modele dâhil edilen SKV stilinin de akademik başarının pozitif bir yordayıcısı olduğu (β= .34, t= 10.37, p< 0.001). (β= 0.65, t= 20.61, p< 0.001) ve akademik başarıdaki varyansın açıklama gücünü %51'e yükselttiği görülmüştür (F(1, 564)= 107.57, R^2= .52, adj. R^2= .51, p< 0.001). Pratt'ın standardize edilmiş göreli önem analizi değerleri, akademik başarının en önemli yordayıcısının tutarlı bir şekilde RKV stili olduğunu göstermektedir. RKV stili akademik başarıdaki varyansın %62'sini açıklarken, SKV stili %38'ini açıklamaktadır.

Tartışma, Sonuç ve Öneriler

Bu çalışma, RKV ve SKV stilleri ile akademik başarı arasında güçlü bir seviyede pozitif yönde korelasyon olduğunu ortaya koymuştur (Field, 2024). Geleneksel ve ikili süreç teorilerine göre üniversite öğrencileri bağlamında alınan kararların, başarısızlık olasılığını en aza indirecek şekilde yapılandırılması gerektiği, ileri sürülmektedir. Rasyonel bir eğilimle elde edilen bilginin doğal olarak akademik başarıya da yol açacağına inanılmaktadır (Baiocco vd., 2009; Bala vd., 2017; Burgoyne vd., 2021; Grass vd., 2017; Grimm ve Richter, 2024; Nehass ve Zarhbouch, 2023; Von Stumm ve Ackerman, 2013). Üniversite eğitimi bağlamında RKV stilinin önemli bir faktör olduğu görülmektedir (Grimm ve Richter, 2024; KS vd., 2023). RKV stiline ek olarak SKV stili de akademik başarıda kısmi bir rol oynamaktadır. Literatürde, rasyonellik ve sezginin birbirini tamamlayan karar verme süreçleri olduğu öne sürülmektedir (Epstein, 1994; Huang ve Souitaris, 2016).

Sonuç olarak beden eğitimi öğretmen adaylarının akademik başarılarındaki değişimin %51'i RKV ve SKV stilleri tarafından belirlenirken, %49'u çalışmada kontrol edilemeyen diğer faktörler tarafından belirlenmektedir. Bu noktada, RKV ve SKV stillerinin diğer sosyopsikolojik faktörler ile entegrasyonu hâlinde akademik başarıyı arttırcağı düşünülmektedir. Öğrencilerin karar verme becerilerinin geliştirilmesi, SKV ve RKV stillerine birlikte vurgu yapılması önemli görülmektedir. Bu bağlamda, öğretmen adaylarının akademik

başarılarının karar verme süreçlerinden ne ölçüde etkilendiğini tespit etmek için birleşik çalışmalar yapılması önerilmektedir.

Conflict of Interest: The authors declare no conflict of interest.

Ethics Statement: This study was conducted in accordance with the ethical standards set out in the "Guidelines for Scientific Research and Publication Ethics at Universities" To the best of our knowledge, no actions were taken that could be considered "actions contrary to scientific research and publication ethics" Furthermore, all authors contributed to the study, there is no conflict of interest between the authors, and the responsibility for any ethical violations lies with the authors of the article.

Ethics Committee Permission: This study was approved by the Ethics Committee for Scientific Research and Publications of Mardin Artuklu University (date: 14.02.2024, number: E-79906804-020-133097). All participants were informed about the purpose of the study and the procedures involved. They were assured of confidentiality and anonymity before they voluntarily signed the written informed consent form.

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