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Athlete Identification and Decision-Making in Basketball Players: Age and Gender as Moderators

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Abstract

Aim: We examined the relationship between athlete identification and effective decision-making in basketball players, testing whether age and gender moderate this relationship.

Method: The study employed the Athlete Identification Level Scale (AILS) and the Scale of Effective Decision-Making in Sport (SEDMS) within a quantitative framework. Data were analyzed via correlation, multiple linear regression, and moderation tests.

Results: Athletic identity significantly and positively predicted internal decision-making. For external decision-making, image and career maturity was a significant negative predictor, whereas athletic identity was a significant positive predictor. Age and gender significantly moderated the relationship between athlete identification and effective decision-making. Specifically, higher athlete identification was associated with lower effective decision-making among older and female basketball players.

Conclusion: The findings indicate that the relationship between athlete identification and effective decision-making varies according to age and gender. These results highlight the importance of considering demographic differences when addressing decision-making processes in basketball players.

Keywords: *Age, Athletic Identity, Basketball, Decision-Making, Gender, Moderation.*

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INTRODUCTION

Decision-making is a cognitive process that enables individuals to interpret environmental demands and select appropriate behavioral responses, particularly under time pressure and performance expectations. Daily life requires numerous instantaneous decisions shaped by social interactions, physical requirements, and rapidly changing stimuli. The accelerating tempo of contemporary life, with its intense information flow and cognitive demands, affects how people assess situations and respond behaviorally. An individual's decision-making tendency is not a simple choice between options but reflects the interplay of cognitive processing, emotional evaluation, social interaction, and self-regulation (Reyna & Brainerd, 2011). Dual-process models describe decision-making as operating through both intuitive (automatic) and analytical (conscious) systems (Kahneman, 2011). These processes become especially demanding in sport, where athletes must engage cognitive resources under time pressure, competition, and performance expectations. Cognitive and emotional attributes tied to decision-making have been reported to become more pronounced during developmental processes in young individuals. The transition from adolescence to adulthood represents a period when identity formation, cognitive maturation, social pressures, and environmental expectations intensify, and thus decision-making skills develop rapidly. This developmental process acquires additional complexity in young individuals actively participating in sport; competitive pressure, performance expectations, and rapidly changing game conditions further complicate decision-making (Çetin & Kara, 2024). It has been suggested that decision-making in young athletes functions not only as a cognitive faculty but also as a performance indicator at the center of psychosocial adaptation and athletic performance (Byrnes, 2013).

In sporting activities, decision-making exhibits a complex structure with high cognitive demands due to the speed of environmental variables, the nature of competition, stress levels, and intense performance pressure. Effective decision-making in sport has been characterized as a cognitive skill that determines performance continuity, error minimization, and in-game adaptation, rather than being limited to making the correct choice (Kahneman, 2011). This process represents a cognitive control mechanism requiring the athlete to process information rapidly, prioritize appropriate options, and implement decisions in a

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timely manner (Çetin & Kara, 2024). Basketball is among the sports where effective decision-making is most intensely exhibited, given its high-tempo structure, constantly changing game dynamics, and reliance on open skills (Travassos et al., 2012). Players must choose between passing, shooting, dribbling, or defensive moves within seconds; the accuracy and timing of these decisions directly determine performance outcomes (Raab & Gigerenzer, 2015). Understanding which psychosocial and identity-based factors relate to effective decision-making in basketball players and thus requires investigation of the cognitive mechanisms supporting performance. While many cognitive and psychosocial factors affect effective decision-making in sport, athlete identification has received increasing attention in the literature. Identification refers to the process by which an individual perceives themselves as belonging to a specific social role or group, adopts the values related to this role, and makes this identity a central part of their self-perception (Tajfel & Turner, 2004). When adapted to sport, athlete identification describes the athlete defining themselves through the athletic role, making a psychological investment in sporting success, and viewing athletic identity as a fundamental component of personal identity. The concept derives its foundations from Social Identity Theory, which explains how individuals structure self-worth, sense of belonging, and behavioral consistency through social roles (Tajfel & Turner, 2004). Strong athlete identification has been reported to function as a psychosocial mechanism affecting motivation, performance perceptions, emotional reactions, and cognitive processes including decision-making (Horton & Mack, 2000). Addressing athlete identification through its various psychosocial components rather than as a unidimensional structure allows for a more detailed understanding of its relationship with decision-making.

Athlete identification is conceptualized as a multidimensional structure that explains an individual's commitment to the sporting role not merely through a singular identity perception, but through the interaction of cognitive, emotional, and social components. Kara et al. (2024) examined this construct through several distinct dimensions. Athletic identity expresses the degree to which athletes primarily define themselves through sport and has been associated with self-confidence, determination, and task consciousness in decision-making processes (Brewer et al., 1993). Image and career maturity reflects the athlete's long-term goals, professional awareness, and career planning capacity, and thus may strengthen strategic thinking and forward-looking decision-making. Social values encompass team responsibility, ethical behavior, cooperation, and compliance with group norms; this component offers a framework affecting social adaptation and team behaviors during decision-making. Communication skills are particularly relevant in team sports for information flow, tactical adaptation, in-game coordination, and social interaction (Kara et al., 2024). Strong communication skills have been reported to increase decision-making speed and prevent erroneous decisions (Turman, 2005). Collectively, these subdimensions suggest that athlete identification can influence decision-making through diverse mechanisms. Within this theoretical and empirical framework, effective decision-making in basketball players should be addressed not only through cognitive faculties but also through how athletes internalize the athletic role and related psychosocial structures. Although previous research has addressed athletic identity and decision-making separately, limited attention has been given to how athlete identification is associated with effective decision-making in basketball players and whether this relationship varies across demographic characteristics. In particular, the moderating roles of age and gender in this relationship remain insufficiently examined. Addressing this gap, the present study integrates athlete identification and effective decision-making within a single framework and examines age and gender as moderators, thereby providing a more context-sensitive understanding of decision-making processes in basketball players.

The primary reason for addressing age as a moderator is the qualitative shift in decision-making processes that accompanies developmental cognitive maturation and experience acquisition. Age serves as a developmental contextual variable capable of altering the direction and intensity of the relationship between athlete identification and decision-making. The 12-18 age range has been identified as a period where cognitive flexibility, attention control, risk perception, and executive functions develop rapidly; the 19–35 range marks the peak of sporting expertise and strategic thinking; and ages 36 and above represent a period where experience-based decision-making tendencies become more distinct (Best & Miller, 2010; Erickson et al., 2015). In high-tempo sports like basketball, these age-related cognitive differences can directly affect game reading, reaction time, tactical choices, and performance under

pressure. Therefore, examining age groups in separate categories is important for revealing how the relationship between athlete identification and decision-making changes developmentally.

The moderating role of gender stems from athletes structuring their sporting identities differently within distinct social norms, role expectations, and socialization processes. Social gender norms have been shown to shape forms of sports participation, understanding of competition, self-confidence, and self-presentation (Eccles & Harold, 1991). Female athletes often establish sporting identities through social support, team commitment, and self-efficacy, whereas male athletes tend to emphasize competition, success, and performance-oriented elements (Koivula, 1999). Research also suggests that gender may influence cognitive decision-making styles; female athletes may tend toward more analytical and cautious decision-making, while male athletes may be more prone to rapid and risk-oriented choices (Byrnes et al., 1999). Whether the relationship between athlete identification and decision-making varies by gender thus holds theoretical significance. The primary aim of this research is to examine the relationships between athlete identification and effective decision-making in basketball players and to test the moderating roles of age and gender.

Correlation analyses were first conducted to determine the relationships between variables; subsequently, multiple regression analyses were applied to reveal whether athlete identification components predict effective decision-making. In the final stage, the moderating roles of age and gender were tested via interaction terms. The following hypotheses were formulated:

H_1:Athlete identification correlates significantly with effective decision-making in sport.

H_2: Subdimensions of athlete identification significantly predict effective decision-making in basketball players.

H_3: Age moderates the relationship between athlete identification and effective decision-making.

H_4: Gender moderates the relationship between athlete identification and effective decision-making.

METHOD

Research model

We employed a quantitative, relational, and predictive research design to examine relationships between athlete identification and effective decision-making in basketball players, while testing the moderating roles of age and gender. Athlete identification served as the independent variable and effective decision-making as the dependent variable; age and gender were included as contextual moderator variables. Correlation and multiple linear regression analyses were employed to determine direct relationships between variables, while moderation analyses based on interaction terms tested the roles of age and gender. The study aims not only to reveal the direction of relationships between variables but also to examine how these relationships differ based on demographic factors.

Data were collected from male and female basketball players across different cities in Turkey between 20 December and 30 December 2025. Considering field conditions and access constraints, we chose convenience sampling, which is widely used when the probability of selecting individuals from the population cannot be determined equally and when time, cost, and access constraints exist (Tyrer & Heyman, 2016). In sports science field research, this method is frequently adopted due to structural limitations such as club and training schedules (Robbins et al., 2021). Athlete accessibility in basketball field studies varies due to club structures, school schedules, and training intensities, and thus convenience sampling offers a practical and time-efficient data collection process. The method has been reported to enable researchers to reach large samples in sports environments within shorter timeframes (Etikan et al., 2016).

Population and sample

The study group consisted of 437 volunteer basketball players. The sample comprised 163 female (37.3%) and 274 male (62.7%) athletes. To analyze developmental differences in decision-making and identification processes, participants were stratified into three age categories: 12–18 years (n = 252, 57.7%), 19–35 years (n = 136, 31.1%), and 36 years and older (n = 49, 11.2%). Regarding competitive

status, the sample included both amateur and professional basketball players. All participants were licensed and actively involved in basketball at the time of data collection.

Sports experience varied across the sample: 18.1% had less than one year (n = 79), 28.6% had 1–3 years (n = 125), 23.1% had 4–6 years (n = 101), 13.5% had 7–9 years (n = 59), and 16.7% had 10 years or more (n = 73). Socioeconomic status was assessed via self-report, with participants identifying their status as very good (n = 17, 3.9%), good (n = 145, 33.2%), medium (n = 252, 57.7%), or poor (n = 23, 5.3%).

Data collection tools

The Scale of Effective Decision-Making in Sport (SEDMS): Developed by Çetin and Kara (2024), the SEDMS evaluates decision-making processes in athletes. It consists of 15 items across two subdimensions: Internal Decision-Making (items 1–7) and External Decision-Making (items 8–15). The scale uses a 5-point Likert format ranging from 1 (strongly disagree) to 5 (strongly agree). Items in the internal dimension are directly coded, while those in the external dimension are reverse coded. Cronbach's alpha coefficients were 0.85 for Internal Decision-Making and 0.87 for External Decision-Making.

Athlete Identification Level Scale (AILS): AILS was developed by Kara et al. (2024) to measure the psychological bond athletes establish with other athletes. It comprises 26 items across four subdimensions: Athletic Identity (12 items), which evaluates identification with an idol's physical, technical, and mental characteristics; Image and Career Maturity (6 items), measuring perceptions of the role model's image and career development; Social Values (4 items), assessing the bond with the idol's cultural and ethical attributes; and Communication Skills (4 items), measuring the importance attributed to the idol's communicative traits. The scale uses a 5-point Likert format ranging from 1 (not important at all) to 5 (very important). Cronbach's alpha coefficients were 0.94 for Athletic Identity, 0.82 for Image and Career Maturity, 0.85 for Social Values, 0.70 for Communication Skills, and 0.90 for the total scale.

Data analysis

Data were collected via an online survey administered to basketball players. The raw dataset was screened for missing values, outliers, and compliance with basic statistical assumptions. No missing data were encountered among the 506 initial participants. Following preliminary checks, the final sample size was established as 437.

Normality was assessed by comparing mode, median, and arithmetic mean values; the proximity of these central tendency measures suggested a normal distribution. In the first stage of outlier detection, 24 observations identified as extreme values were removed, reducing the sample to 482. Subsequent examination using z-scores resulted in the removal of one additional observation exceeding the ±3 standard deviation limit. Z-scores for the remaining 481 observations ranged from −2.92 to 2.87.

Multivariate outliers were identified by Mahalanobis distance with a critical value of $\chi^2(41; .001) = 73.402$. Forty-four observations exceeding this threshold were excluded, which reduced the initial dataset of 506 participants to 437 valid observations. Box-plots and scatterplots were inspected to detect potential single outliers; based on the ±3 z-score limits suggested by Tabachnick and Fidell (2013), no problematic outliers remained in the dataset.

The independence of error terms was assessed separately for each regression model using the Durbin–Watson statistic. The Durbin–Watson values were 1.507 for the internal decision-making model and 1.500 for the external decision-making model, both of which were within the acceptable range of 1.5–2.5 (Kalaycı, 2010). Multicollinearity was assessed using Variance Inflation Factor (VIF) and tolerance values. VIF values ranged from 1.333 to 3.525, and tolerance values ranged from 0.265 to 0.750. These figures (tolerance > 0.20, VIF < 5) confirm the absence of multicollinearity (Raheem et al., 2019; Makrakis et al., 2024). All assumption checks and analyses were performed on Jamovi 2.6.2. Moderation analyses were conducted to examine whether age and gender altered the relationship between athlete identification and effective decision-making. Age was entered into the moderation model as a continuous variable, and significant interactions involving age were probed at one standard deviation below the mean (−1 SD), at the mean, and one standard deviation above the mean (+1 SD). Gender was

included as a categorical moderator. Interaction terms between athlete identification and each moderator (athlete identification × age and athlete identification × gender) were included in the respective models. The significance of the interaction terms was used to determine the presence of moderation, and significant interactions were further examined using simple slope analyses. Model fit for the confirmatory factor analyses was evaluated using χ^2/df, Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Standardized Root Mean Square Residual (SRMR), and Root Mean Square Error of Approximation (RMSEA).

Table 1. Normality analysis results for scale subdimensions

Variables	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	p	Statistic	df	p
Communication Skills	0.126	437	< 0.001	0.950	437	< 0.001
Social Values	0.159	437	< 0.001	0.904	437	< 0.001
Image and Career Maturity	0.097	437	< 0.001	0.980	437	< 0.001
Athletic Identity	0.117	437	< 0.001	0.923	437	< 0.001
Internal Decision-Making	0.123	437	< 0.001	0.968	437	< 0.001
External Decision-Making	0.100	437	< 0.001	0.968	437	< 0.001

df = degrees of freedom

We assessed the normality of score distributions for each subdimension using Kolmogorov-Smirnov (K-S) and Shapiro-Wilk (S-W) tests (Table 1). The results indicated statistically significant deviations from a normal distribution across all variables ($p < 0.001$). However, literature highlights that formal normality tests are highly sensitive to sample size; in large samples ($n > 300$), even negligible deviations can yield significant results (Tabachnick & Fidell, 2013; Field, 2024). Relying solely on these tests is often considered inappropriate for large datasets.

Table 2. Descriptive statistics, normality, and reliability results

Variables	n	M	Skewness	Kurtosis	SE	α
Communication Skills	437	4.12	-0.244	0.324	0.117	0.73
Social Values	437	4.32	-0.437	-0.479	0.117	0.82
Image and Career Maturity	437	3.30	0.198	-0.340	0.117	0.84
Athletic Identity	437	4.51	-0.636	-0.076	0.117	0.89
Internal Decision-Making	437	4.12	0.028	-0.320	0.117	0.76
External Decision-Making	437	3.28	-0.407	-0.240	0.117	0.93

M = Mean; SE = Standard Error; α = Cronbach's alpha coefficient

In an attempt to perform a more accurate assessment of structural normality, we examined skewness and kurtosis values (Table 2). As suggested by Kim (2013), values falling within the ±1 range indicate that the distribution is acceptable for parametric analysis. Skewness values ranged from –0.636 to 0.198, and kurtosis values ranged from –0.479 to 0.324. The results confirmed that the distributions were symmetric and structurally normal. Table 2 also presents the internal consistency coefficients. Cronbach's alpha values ranged from 0.73 to 0.93. Since all values exceeded the 0.70 threshold, the measurement tools were considered to show sufficient reliability (Field, 2024).

Table 3. Confirmatory factor analysis results

Variables	CMIN/DF (x^2/df)	CFI	TLI	SRMR	RMSEA
SEDMS	351/89 = 3.94	0.92	0.91	0.05	0.07
AILS	991/293 = 3.38	0.91	0.90	0.07	0.06

SEDMS = Scale of Effective Decision-Making in Sport; AILS = Athlete Identification Level Scale; df = Degrees of Freedom; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; SRMR = Standardized Root Mean Square Residual; RMSEA = Root Mean Square Error of Approximation.

We conducted confirmatory factor analysis (CFA) to verify the construct validity of the scales. As shown in Table 3, the fit indices for both the SEDMS and AILS were within acceptable limits. The CMIN/DF ratios were below 5, and the CFI and TLI values met or exceeded the 0.90 threshold. RMSEA and SRMR values were within the 0.05–0.08 range, indicating good model fit. Based on established criteria (Hu & Bentler, 1999; Kline, 2023), the measurement models were confirmed as valid.

RESULTS

Table 4 presents descriptive statistics and Pearson correlation coefficients for the study variables.

Table 4. Correlation analysis results for factors

Variables	M	1	2	3	4	5	6
1. External Decision-Making	3.28	—					
2. Internal Decision-Making	4.12	0.026	—				
3. Communication Skills	4.12	−0.163**	0.305**	—			
4. Social Values	4.32	−0.114**	0.318**	0.562**	—		
5. Image and Career Maturity	3.30	−0.394**	0.258**	0.527**	0.378**	—	
6. Athletic Identity	4.51	−0.033	0.387**	0.510**	0.574**	0.347**	—

*N = 437. **p < 0.01.*

Significant negative relationships were observed between external decision-making and several subdimensions of athlete identification: communication skills ($r = -0.163$, $p < 0.01$), social values ($r = -0.114$, $p < 0.01$), and image and career maturity ($r = -0.394$, $p < 0.01$). Based on Cohen's (2013) criteria, associations with communication skills and social values were low, whereas the relationship with image and career maturity was moderate.

Internal decision-making demonstrated significant positive relationships with all athlete identification subdimensions: communication skills ($r = 0.305$, $p < 0.01$), social values ($r = 0.318$, $p < 0.01$), image and career maturity ($r = 0.258$, $p < 0.01$), and athletic identity ($r = 0.387$, $p < 0.01$). Following Hinkle et al.'s (2003) guidelines, correlations between internal decision-making and communication skills, social values, and athletic identity indicated moderate relationships.

Strong intercorrelations were observed among athlete identification subdimensions. High positive relationships were found between communication skills and social values ($r = 0.562$, $p < 0.01$), image and career maturity ($r = 0.527$, $p < 0.01$), and athletic identity ($r = 0.510$, $p < 0.01$), as well as between social values and athletic identity ($r = 0.574$, $p < 0.01$). The coefficients indicate strong relationships (Hinkle et al., 2003). Significant relationships existed between athlete identification sub-dimensions and decision-making types, and showed the positive link between internal decision-making and identification components. Thus, Hypothesis 1 (H1) was supported.

Following the correlation analysis, multiple linear regression involving two distinct models (Table 5) was performed to determine the predictive effect of athlete identification subdimensions on internal and external decision-making.

Table 5. Multiple linear regression analysis results predicting decision-making

Model	B	SE	β	t	p	VIF
Model 1: Internal Decision-Making						
Constant	1.876	0.245	—	7.649	< 0.001	—
Communication Skills	0.059	0.053	0.067	1.128	0.260	1.856
Social Values	0.077	0.050	0.090	1.549	0.122	1.760
Image and Career Maturity	0.059	0.032	0.096	1.862	0.063	1.409
Athletic Identity	0.326	0.068	0.268	4.820	< 0.001**	1.622
Model Statistics						
$F(4, 432) = 23.307$, $p < 0.001$; $R = 0.421$, $R^2 = 0.177$, Adj. $R^2 = 0.170$; D-W = 1.507						
Model 2: External Decision-Making						
Constant	3.766	0.494	—	7.618	< 0.001	—
Communication Skills	0.038	0.106	0.021	0.355	0.723	1.856
Social Values	-0.058	0.100	-0.034	-0.582	0.561	1.760
Image and Career Maturity	-0.537	0.064	-0.436	-8.377	< 0.001**	1.409
Athletic Identity	0.309	0.136	0.127	2.269	0.024*	1.622
Model Statistics						
$F(4, 432) = 21.822$, $p < 0.001$; $R = 0.410$, $R^2 = 0.168$, Adj. $R^2 = 0.160$; D-W = 1.500						

*N = 437. B = Unstandardized coefficient; SE = Standard Error; β = Standardized coefficient; VIF = Variance Inflation Factor; D-W = Durbin-Watson statistic. * p < 0.05. ** p < 0.01.*

As presented in Table 5, the first model predicting internal decision-making was statistically significant ($F(4, 432) = 23.307$, $p < 0.001$) and explained approximately 17% of the variance ($R^2 = 0.177$; Adj. $R^2 = 0.170$). Among the independent variables, only athletic identity emerged as a significant positive predictor ($\beta = 0.268$, $p < 0.01$). Communication skills ($\beta = 0.067$, $p > 0.05$), social values ($\beta = 0.090$, $p > 0.05$), and image and career maturity ($\beta = 0.096$, $p > 0.05$) were not significant predictors (George &

Mallery, 2024). These results suggest that a strong perception of the athletic role primarily supports the athlete in making internal, controlled, and focused choices during decision processes.

The second regression model, established for external decision-making, was also significant ($F(4, 432) = 21.822$, $p < 0.001$) and explained approximately 17% of the variance ($R^2 = 0.168$; Adj. $R^2 = 0.160$). Regarding coefficients, image and career maturity significantly and negatively predicted external decision-making ($\beta = –0.436$, $p < 0.01$). Conversely, athletic identity served as a positive and significant predictor ($\beta = 0.127$, $p < 0.05$). The remaining variables (communication skills and social values) did not exhibit significant effects ($p > 0.05$). These findings indicate that as professional career awareness increases, the tendency toward external decision-making decreases; conversely, a stronger athletic identity appears to increase external decision-making behaviors to some extent.

Assumption checks confirmed the validity of the models. Variance Inflation Factor (VIF) values ranged from 1.33 to 3.52, and tolerance coefficients exceeded 0.20, indicating no multicollinearity problems among independent variables (Raheem et al., 2019; Makrakis et al., 2024). Additionally, Durbin-Watson coefficients fell within acceptable limits (1.500–1.507), confirming the absence of autocorrelation (Kalaycı, 2010). Collectively, the analyses indicated that athlete identification subdimensions created significant effects on decision-making types. Specifically, athletic identity and image and career maturity play critical, albeit distinct, roles in both internal and external decision-making processes. Therefore, Hypothesis 2 (H2) was partially supported, as only some subdimensions of athlete identification significantly predicted internal and external decision-making. Table 6 shows the effect of the predictor Athlete Identification on the dependent variable Effective Decision-Making at different levels of the moderator Age.

Table 6. The moderating role of age in the relationship between athlete identification and effective decision-making

Effect	Estimate	SE	95% CI Lower	95% CI Upper	Z	p
Athlete Identification (ID)	-0.090	0.065	-0.216	0.037	-1.385	0.166
Age	0.035	0.040	-0.044	0.113	0.865	0.387
Athlete ID × Age	-0.235	0.101	-0.433	-0.037	-2.321	0.020
Simple Slope Analysis						
Low Age (-1 SD)	0.072	0.093	-0.111	0.254	0.772	0.440
Average Age	-0.090	0.065	-0.217	0.038	-1.375	0.169
High Age (+1 SD)	-0.251	0.098	-0.442	-0.059	-2.568	0.010

Estimate = Unstandardized coefficient; SE = Standard Error; CI = Confidence Interval.

As indicated in Table 6, neither athlete identification (Estimate = –0.090, p = 0.166) nor age (Estimate = 0.035, p = 0.387) exerted a significant independent effect on effective decision-making. However, the significant interaction term (Estimate = –0.235, p = 0.020) confirmed that age acts as a moderator in this relationship (Hayes, 2018).

Simple slope analyses clarified the nature of this interaction. For basketball players in the high age group (+1 SD), athlete identification had a significant negative effect on effective decision-making (Estimate = –0.251, p = 0.010). No significant relationship was observed for players in the low age group (–1 SD) (Estimate = 0.072, p = 0.440) or at the average age level (Estimate = –0.090, p = 0.169). These findings demonstrate that the negative impact of athlete identification on decision-making is specific to older basketball players. The pattern is consistent with literature suggesting that age-related changes in cognitive flexibility, reaction time, and executive functions can differentiate decision-making processes (Best & Miller, 2010; Erickson et al., 2015). In this context, age serves as a contextual variable that alters both the direction and intensity of the relationship between identification and performance. Given the significance of the interaction term and the distinct relationship observed in the high age group, Hypothesis 3 (H3) was supported. Table 7 displays the effect of the predictor athlete identification on the dependent variable effective decision-making across different levels of the moderator gender.

Table 7. The moderating role of gender in the relationship between athlete identification and effective decision-making

Effect	Estimate	SE	95% CI Lower	95% CI Upper	Z	p
Athlete Identification (ID)	-0.0730	0.0638	-0.1981	0.0520	-1.15	0.252
Gender	0.2031	0.0561	0.0930	0.3131	3.62	<0.001
Athlete ID × Gender	0.2801	0.1328	0.0199	0.5404	2.11	0.035
Simple Slope Analysis						
Female	-0.2085	0.0919	-0.3890	-0.0284	-2.269	0.023
Average	-0.0730	0.0641	-0.1990	0.0526	-1.139	0.255
Male	0.0624	0.0898	-0.1140	0.2684	0.695	0.487

Estimate = unstandardized regression coefficient; SE = standard error; CI = confidence interval. Gender was coded as 0 = female and 1 = male. In the simple slope analysis, the "Average" row represents the estimated slope at the mean level of the coded gender variable and does not constitute an additional gender category.

As presented in Table 7, athlete identification alone did not exert a significant effect on effective decision-making (Estimate = –0.0730, p = .252). However, the independent effect of the gender variable was statistically significant (Estimate = 0.2031, p < .001), indicating that effective decision-making levels differ significantly between female and male basketball players. The athlete identification × gender interaction term was significant (Estimate = 0.2801, p = .035), confirming that gender assumes a moderating role in this relationship (Hayes, 2018). Simple slope analyses clarified the direction of this interaction. The effect of athlete identification on effective decision-making was significant and negative for female athletes (Estimate = –0.2085, p = .023), but it was not significant for male athletes (Estimate = 0.0624, p = .487). A distinct pattern was observed where athlete identification negatively predicts decision-making performance in female basketball players, whereas no such effect exists for males. The distinction aligns with literature suggesting that social gender norms can generate divergent patterns regarding athlete identity, motivation, and decision-making processes (Eccles & Harold, 1991; Koivula, 1999; Byrnes et al., 1999). Given the significant interaction term and the specific variance observed in the female group, Hypothesis 4 (H4) was supported.

DISCUSSION

While athlete identification is linked to decision-making, this relationship changes meaningfully across demographic contexts rather than operating in a uniform manner. Communication skills, social values, image and career maturity, and athletic identity were positively associated with internal decision-making. This finding is consistent with previous research suggesting that stronger athletic identity is associated with greater focus, motivation, and task engagement (Brewer et al., 1993; Horton & Mack, 2000). It is proposed by Social Identity Theory that strong identification with a role promotes consistent role-congruent thinking and behavior (Tajfel & Turner, 2004). In a fast-paced sport such as basketball, where tactical demands shift rapidly, communication skills and image and career maturity may be regarded as especially relevant, as they assist players in processing complex, time-sensitive information and coordinating effectively with teammates (Raab & Gigerenzer, 2015; Turman, 2005).

However, a more selective pattern was revealed by the regression analyses. Among the identification sub-dimensions, it was determined that only athletic identity significantly predicted internal decision-making, which suggests that seeing oneself strongly and consistently as an athlete may foster decisions that are more deliberate, controlled, and performance-focused. Our finding is consistent with decision-making frameworks that emphasize the interaction between intuitive and analytical processes, such as dual-process models (Kahneman, 2011) and the Fuzzy-Trace Model (Reyna & Brainerd, 2011). These models imply that stable identity structures shape the manner in which individuals integrate intuition and analysis under pressure. In contrast, external decision-making was predicted by both athletic identity and image and career maturity, with image and career maturity showing a negative association, and it indicates that a reliance on external cues is less prevalent in athletes with greater professional awareness, a tendency commonly observed in athletes who are more experienced and strategically oriented (Teixeira et al., 2022).

The variable of age was a particularly important moderator. The relationship between athlete identification and effective decision-making was observed to be negative and significant among older players, whereas it was non-significant among younger players. Developmental research helps explain this pattern. Executive functions develop rapidly during youth, yet adulthood is characterized by a

greater reliance on experience-based, intuitive strategies (Best & Miller, 2010). At the same time, age-related declines in reaction time, attention, and cognitive flexibility may occur later in adulthood (Erickson et al., 2015). In a high-speed sport like basketball, strong identification with the athlete role in older players may serve to increase cognitive load and pressure, particularly when coupled with high performance expectations. Such added strain may hinder, rather than support, decision-making. Age therefore appears to alter both the direction and strength of the identification–decision-making relationship.

The mentioned relationship was also moderated by gender. Athlete identification was found to be negatively associated with effective decision-making only among female athletes, which is consistent with research showing that gendered socialization processes influence how athletes experience identity and cognition. It has been noted that female athletes' motivation and self-efficacy are often more closely tied to social feedback and approval (Eccles & Harold, 1991), and their sporting identities may be more sensitive to self-presentation concerns and social norms (Koivula, 1999). Under these conditions, strong athlete identification may introduce additional cognitive pressure, rendering decision-making more vulnerable. Evidence that risk-taking and decision tendencies differ by gender (Byrnes et al., 1999) further supports this interpretation. The absence of a significant relationship in male athletes may reflect an experience of athletic identity that is more stable and less context-sensitive.

Overall, our findings indicate that the role of athlete identification in decision-making is neither simple nor uniform. Its effects have been shown to vary depending on age and gender, highlighting the importance of context in understanding cognitive performance in basketball. Given the sport's demands for rapid information processing and immediate tactical judgment, these moderating factors become especially salient. By examining athlete identity and decision-making together, this study can add a more nuanced perspective to the literature. Practically, the results suggest that coaches and sport psychologists should account for identification levels, age-related cognitive characteristics, and gendered social experiences when designing interventions aimed at improving decision-making performance.

CONCLUSION

The findings of this study indicate that athlete identification is meaningfully associated with effective decision-making in basketball players; however, this relationship is not uniform across all dimensions or demographic characteristics. Different dimensions of athlete identification were associated with internal and external decision-making in distinct ways, suggesting that identification should be considered as a multidimensional factor in decision-making processes.

Age and gender further shaped this relationship, highlighting the importance of considering developmental characteristics and gender-related experiences when interpreting decision-making in basketball players. These findings suggest that the relationship between athlete identification and decision-making should be evaluated within the broader demographic and psychological context of athletes.

Overall, the study contributes to the literature by examining athlete identification, effective decision-making, age, and gender within an integrated framework. From an applied perspective, coaches and sport psychologists may benefit from considering identification characteristics alongside age- and gender-related differences when developing strategies to support effective decision-making in basketball. Future research should examine these relationships across different competitive levels and sport contexts.

SUGGESTIONS

Based on the findings, coaches and sport psychologists should consider athletes' identification characteristics when designing strategies to support effective decision-making in basketball. Because the relationship between athlete identification and decision-making varied according to age, decision-making practices may be adapted to athletes' age-related characteristics, particularly by supporting cognitive flexibility and self-regulation.

The observed gender differences also suggest that decision-making interventions should be sensitive to the different psychosocial experiences of female and male athletes. Accordingly, supportive training environments that reduce excessive performance pressure and promote effective decision-making may be beneficial. Future studies should examine these relationships across different competitive levels, age groups, and sport branches to determine the generalizability of the present findings.

LIMITATIONS

The study was conducted solely on basketball players. Testing similar moderation models in different team sports (football, volleyball, handball) or individual sports would benefit generalizability. Longitudinal research could more clearly reveal the development of decision-making processes over time and the long-term effects of athlete identification. Experimental designs could examine how athlete identification affects cognitive decision performance under more controlled conditions

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Ethics Committee: Mersin University Sports Sciences Ethics Committee
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REFERENCES

Best, J. R., & Miller, P. H. (2010). A developmental perspective on executive function. *Child Development, 81*(6), 1641–1660. https://doi.org/10.1111/j.1467-8624.2010.01499.x

Brewer, B. W., Van Raalte, J. L., & Linder, D. E. (1993). Athletic identity: Hercules' muscles or Achilles heel?. International journal of sport psychology, *24*(2), 237–254.

Byrnes, J. P. (2013). The nature and development of decision-making: A self-regulation model. Psychology Press. https://doi.org/10.4324/9780203726495

Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological Bulletin, 125*(3), 367–383. https://doi.org/10.1037/0033-2909.125.3.367

Çetin, M. Ç., & Kara, M. (2024). Sporda etkili karar verme ölçeği (SEKVÖ): Geçerlik ve güvenirlik çalışması. *Gazi Journal of Physical Education and Sport Sciences, 29*(1), 40–52. https://doi.org/10.53434/gbesbd.1377855

Cohen, J. (2013). *Statistical power analysis for the behavioral sciences* (2nd ed.). Routledge. https://doi.org/10.4324/9780203771587

Eccles, J. S., & Harold, R. D. (1991). Gender differences in sport involvement: Applying the Eccles' expectancy-value model. *Journal of Applied Sport Psychology, 3*(1), 7–35. https://doi.org/10.1080/10413209108406432

Erickson, K. I., Hillman, C. H., & Kramer, A. F. (2015). Physical activity, brain, and cognition. *Current Opinion in Behavioral Sciences, 4*, 27–32. https://doi.org/10.1016/j.cobeha.2015.01.005

Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics, 5*(1), 1–4. https://doi.org/10.11648/j.ajtas.20160501.11

Field, A. (2024). *Discovering statistics using IBM SPSS statistics*. Sage publications limited.

George, D., & Mallery, P. (2024). *IBM SPSS statistics 29 step by step: A simple guide and reference* (18th ed.). Routledge. https://doi.org/10.4324/9781032622156

Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). The Guilford Press.

Hinkle, D. E., Wiersma, W., & Jurs, S. G. (2003). *Applied statistics for the behavioral sciences* (5th ed.). Houghton Mifflin.

Horton, R. S., & Mack, D. E. (2000). Athletic identity in marathon runners: Functional focus or dysfunctional commitment? *Journal of Sport Behavior, 23*(2), 101–119.

Hu, L.-T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal, 6*(1), 1–55. https://doi.org/10.1080/10705519909540118

Kahneman, D. (2011). *Thinking, fast and slow.* Farrar, Straus and Giroux.

Kalaycı, Ş. (Ed.). (2010). *SPSS uygulamalı çok değişkenli istatistik teknikleri* (5. bs.). Asil Yayın Dağıtım.

Kara, M., Genç, M., & Çetin, M. Ç. (2024). Athlete identification level scale (AILS): Validity and reliability study. *International Journal of Recreation and Sports Science, 8*(1), 34–45. https://doi.org/10.46463/ijrss.1479136

Kim, H.-Y. (2013). Statistical notes for clinical researchers: Assessing normal distribution (2) using skewness and kurtosis. *Restorative Dentistry & Endodontics, 38*(1), 52–54. https://doi.org/10.5395/rde.2013.38.1.52

Kline, R. B. (2023). *Principles and practice of structural equation modeling* (5th ed.). The Guilford Press.

Koivula, N. (1999). Gender stereotyping in televised media sport coverage. *Sex Roles, 41*(7–8), 589–604. https://doi.org/10.1023/A:1018899522353

Makrakis, V., Biasutti, M., Kostoulas-Makrakis, N., Ghazali, M., Othman, W., Ali, M., Fitriyanto, N. A., & Mavrantonaki, K. (2024). ICT-enabled education for sustainability justice in South East Asian universities. *Sustainability, 16*(10), 4049. https://doi.org/10.3390/su16104049

Raab, M., & Gigerenzer, G. (2015). The power of simplicity: A fast-and-frugal heuristics approach to performance science. *Frontiers in Psychology, 6*, 1672. https://doi.org/10.3389/fpsyg.2015.01672

Raheem, M. A., Udoh, N. S., & Gbolahan, A. T. (2019). Choosing appropriate regression model in the presence of multicolinearity. *Open Journal of Statistics, 9*(2), 159–168. https://doi.org/10.4236/ojs.2019.92012

Reyna, V. F., & Brainerd, C. J. (2011). Dual processes in decision making and developmental neuroscience: A fuzzy-trace model. *Developmental Review, 31*(2–3), 180–206. https://doi.org/10.1016/j.dr.2011.07.004

Robbins, M. W., Ghosh-Dastidar, B., & Ramchand, R. (2021). Blending probability and nonprobability samples with applications to a survey of military caregivers. *Journal of Survey Statistics and Methodology, 9*(5), 1114–1145. https://doi.org/10.1093/jssam/smaa037

Tabachnick, B. G., & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

Tajfel, H., & Turner, J. C. (2004). The social identity theory of intergroup behavior. In J. T. Jost & J. Sidanius (Eds.), *Political psychology: Key readings* (pp. 276–293). Psychology Press. https://doi.org/10.4324/9780203505984-16

Teixeira, D. S., Rodrigues, F., Monteiro, D., & Cid, L. (2022). The Behavioral Regulation in Exercise Questionnaire (BREQ-4): Psychometric evidence of introjected approach regulation in Portuguese health club exercisers. *Psychology of Sport and Exercise, 63*, 102286. https://doi.org/10.1016/j.psychsport.2022.102286

Travassos, B., Araújo, D., Davids, K., Vilar, L., Esteves, P., & Vanda, C. (2012). Informational constraints shape emergent functional behaviours during performance of interceptive actions in team sports. *Psychology of Sport and Exercise, 13*(2), 216–223. https://doi.org/10.1016/j.psychsport.2011.11.009

Turman, P. D. (2005). Coaches' use of anticipatory and counterfactual regret messages during competition. *Journal of Applied Communication Research, 33*(2), 116–138. https://doi.org/10.1080/00909880500045072

Tyrer, S., & Heyman, B. (2016). Sampling in epidemiological research: Issues, hazards and pitfalls. *BJPsych Bulletin, 40*(2), 57–60. https://doi.org/10.1192/pb.bp.114.050203