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Match or Mismatch? The Influence of Athletes' Leadership Style Preferences on Perceived Coaching Effectiveness in Sports

Research Article

Chin-Wei Lin[1], Bo-Hao Lai[2], Su-Shiang Lee[2], I-Yu Tsai[1], Yu-Sheng Lin[3]*

[1] *Department of Business Administration, Chaoyang University of Technology, Taichung, Taiwan*
[2] *Department of Leisure Services Management, Chaoyang University of Technology, Taichung, Taiwan*
[3] *General Education Center, Chaoyang University of Technology, Taichung, Taiwan*

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Abstract: This study examines how athletes' preferred coaching leadership styles relate to and influence the coach–athlete relationship and leadership effectiveness. A total of 90 collegiate badminton players from Taiwan's general division were recruited using purposive sampling. The researcher personally administered the implicit association test and conducted a survey questionnaire with each participant using a two-stage data collection process. Data were analyzed using descriptive statistics, difference analysis, correlation analysis, and multiple regression to test the proposed hypotheses. Findings show that coaches who adopt a democratic leadership style positively influence the coach–athlete relationship and leadership effectiveness. Athletes who prefer democratic leadership significantly moderated the association between coaching leadership behavior and leadership effectiveness. When coaches adopted a democratic style, coaching effectiveness increased significantly. Differences between the coach's displayed style and athletes' preferences did not produce a significant effect on the coach–athlete relationship; however, when coaches employed an autocratic approach while athletes preferred a democratic style, athletes' evaluations of coaching effectiveness declined significantly. Overall, collegiate badminton players generally preferred coaches who demonstrate a democratic leadership style, which helps create a harmonious training climate and fosters team cohesion. This contributes to enhancing the effectiveness of coaching leadership.

Keywords: *Democratic leadership • Autocratic leadership • Coach leadership behavior • Coach–athlete relationship • Implicit associative attitude*

1. Introduction

1. Research Background

Badminton has a sizable participant base in Taiwan and has gradually evolved from a recreational activity into a competitive sport. Since becoming an official Olympic event in 1992, badminton has been designated one of Taiwan's key athletic development programs. Recently, Taiwanese players have achieved outstanding success on the international stage. Notably, men's doubles players Wang Chi-lin and Lee Yang won Taiwan's first Olympic gold medal in badminton at the 2020 Tokyo Olympics. They secured a second gold at the 2024 Paris Olympics – marking the first-ever, back-to-back Olympic badminton titles in Taiwan's history. In addition, world-renowned player Tai Tzu-ying won a silver medal in women's singles and reached No. 1 in the world rankings, sparking a nationwide badminton craze (Badminton World Federation, n.d.). Badminton has gained widespread popularity in Taiwan.

In recent years, schools at all levels have established varsity teams and clubs, while secondary schools have launched grassroots training programs. Participation in national and regional tournaments has consistently reached record highs, indicating that badminton has become one of the most favored sports and recreational activities among the general public. In Taiwan, elite badminton athletes typically begin professional training at a young age, enroll in specialized badminton schools, and refine their skills and match experience through intensive practice to represent their schools and achieve competitive success. In contrast,

* *E-mail: lin3117@cyut.edu.tw*

general division athletes often train out of personal interest, striving to improve their abilities through self-directed effort in pursuing personal achievement and athletic growth. These athletes frequently participate in collegiate-level badminton tournaments to acquire competition experience. However, the past research on coaching leadership in university badminton has mainly focused on elite athletes, with limited scholarly attention to those in the general division. Therefore, this study focuses on the general division of collegiate badminton players as the research subjects.

In competitive sports, athletes must undergo rigorous daily training. While innate talent is essential, the coach plays an even more critical role. Although athletes are the central figures during competitions, their success is often supported by dedicated coaches who not only take responsibility for the performance outcomes but also manage the team and cultivate a positive environment. On sports teams, the coach's role is highly multifaceted and complex. Coaches are not merely responsible for technical training but also serve as teachers, parental figures, psychological supporters, friends, and even as mediators among athletes and role models for behavior (Sawiuk & Groom, 2019; White et al., 2017). A coach's influence on a team extends beyond technical instruction to include psychological development, emotional support, and shaping the team atmosphere, making them an essential pillar in an athlete's developmental journey. Therefore, a deeper understanding of coaches' actual leadership behaviors in team settings is critical to strengthening athletic performance, team effectiveness, and the coach–athlete relationship.

Prior research shows that coaches' leadership styles substantially influence athletic performance and the coach–athlete interaction. However, few studies have examined how coaching behaviors affect leadership effectiveness when they match or diverge from athletes' preferred leadership styles. Drawing on Person–environment fit theory, when environmental features (e.g., coaching behaviors) fit individuals' needs or preferences, participation, satisfaction, and performance tend to improve (Kristof-Brown et al., 2005). Clarifying whether, in sport settings, coaches' enacted behaviors fit athletes' preferred leadership styles – and how such fit shapes athletes' perceptions of relationship quality and coaching effectiveness – would offer concrete guidance for training and instructional practice.

Among coaching leadership behaviors, democratic and autocratic decision-making styles are among the most frequently discussed, as they reflect how coaches exercise judgment and authority. Coaches who adopt a democratic leadership style encourage athletes to participate in decision-making processes, such as setting team goals or selecting training methods. This approach helps foster a sense of autonomy and ownership over training and performance. In contrast, coaches with an autocratic leadership style tend to make unilateral decisions and emphasize discipline and control (Domingues et al., 2024). The past research on sports coaching indicates that collegiate-level athletes are more likely to prefer coaches with a democratic leadership style; this allows them to take part in decision-making and provides them with autonomy, enhancing their motivation and engagement. However, under high-intensity, highly structured training conditions, an autocratic leadership style can also effectively improve training outcomes, particularly in contexts that demand strict discipline and organized routines (Abayari et al., 2024). Therefore, coaching leadership plays a crucial role on sports teams. Furthermore, determining whether to adopt a democratic or autocratic leadership style to enhance athletic performance and team effectiveness is a key decision that coaches must make.

In sports teams, the coach plays a critical leadership role, and their relationship with athletes is essential, reflecting mutual dependence and shared development. This close coach–athlete relationship is regarded as a cornerstone of athletic success, contributing to an environment of trust, communication, and mutual respect. Jowett and Cockerill (2003) stated that the emotions, thoughts, and behaviors between coaches and athletes are causally linked, while their mutual cognition, affect, and behavior evolve. On the basis of the concept of Jowett and Ntoumanis (2004), we have retained the dimensions of closeness and complementarity and added commitment as a third dimension to develop the Coach–Athlete Relationship Questionnaire.

In closeness refers to trust, communication, and understanding, while playing a prominent role in shaping coaching strategies and athletic performance. When athletes develop trust in their coaches and receive emotional support, it enhances their level of engagement significantly (Lee et al., 2023). Commitment refers to a coach's dedication to the athletes. When athletes perceive a stronger sense of commitment from their coach, they are more likely to demonstrate productivity while fulfilling their performance responsibilities (Nikbin et al., 2014). Complementarity emphasizes harmonious interaction between a coach and athletes. To maximize performance, coaches must adapt their training methods to meet each athlete's specific needs (Liu et al., 2024). These three dimensions interact to collectively shape an effective coach–athlete relationship.

Jawoosh et al. (2022) suggest that when coaches demonstrate more democratic leadership behaviors,

they help improve the quality of the coach–athlete relationship and promote mutual trust and communication. However, an autocratic leadership style may undermine the mutual trust between coaches and athletes, hindering the development of a strong relationship. When athletes perceive a higher level of autocracy from their coach, they rate the sense of closeness lower, negatively impacting emotional connection and interaction quality. Karayel et al. (2024) indicate that commitment within the coach–athlete relationship is closely associated with the coach's transformational leadership qualities, significantly influencing team resilience. Coaches with transformational leadership qualities can inspire and motivate athletes, improve team adaptability and stress tolerance, and foster a more resilient training and competitive environment, enabling athletes to sustain consistent performance and growth even under pressure and adversity. Thus, coaches and athletes mutually influence each other, while open communication and positive interaction serve as a vital bridge for building trust in their relationship.

Leadership effectiveness refers to the integrated manifestation of a leader's motivation, behavior, and reflective capacity, collectively influencing the achievement of organizational goals (Vilkinas et al., 2020). Hudson (2013) suggests that leadership effectiveness can inspire others to pursue organizational goals and vision. When mentees are inspired by exemplary mentors, they can expand their personal attributes and practical skills. Many previous studies have shown that effective leaders possess qualities related to organizational goals (e.g., vision, goal orientation, innovation, and the ability to inspire others), professional skills (e.g., extensive knowledge, strong communication abilities, and appreciation of others' achievements), as well as personal attributes (e.g., integrity, active listening, respect, enthusiasm, and approachability). Team cohesion is often used as a key indicator for evaluating coaching leadership effectiveness. Moreover, organizational goals are closely associated with team cohesion. Greene (1989) found that when leaders possess clearly defined organizational goals, they are more likely to strengthen unity and collaboration among team members, enhancing internal cohesion. Personal attributes are associated with the satisfaction dimension of leadership effectiveness; leaders with positive personality traits can build greater trust and identification among team members, increasing job satisfaction (Zulham et al., 2024). Regarding performance, Zhou and Rhene (2024) found that leaders with strong professional expertise are more effective in guiding team members, thereby improving team performance and goal attainment.

Leaders profoundly influence organizations, directly affecting employees' satisfaction, job performance, morale, and attitudes toward both the leader and the organization. Leaders with strong moral character can significantly enhance organizational performance and improve employee well-being (Haile, 2023). Therefore, although scholars define leadership effectiveness using various evaluation indicators based on the specific purposes and characteristics of their studies, the core objective remains the assessment of team performance and member satisfaction. Hampson and Jowett (2014) found that the leadership behavior of sports coaches significantly predicts team effectiveness and substantially impacts overall team performance. Research indicates that positive coaching behaviors – such as training and instruction, democratic leadership, social support, and positive feedback – can enhance athletes' perceptions of team effectiveness and promote team cohesion and athletic performance. In contrast, autocratic leadership behaviors may negatively impact collective efficacy, reducing athletes' confidence and willingness to engage in team collaboration. Therefore, when coaches demonstrate effective leadership behaviors, they not only strengthen athletes' confidence in their own abilities but also enhance team collaboration and athletic performance. Therefore, identifying which leadership style is most effective in enhancing team performance is a critical issue that warrants further attention and investigation.

In psychology, researchers have long sought methods to assess individuals' genuine internal attitudes. Compared to explicit measures, implicit tests are designed so that participants are unaware that their attitudes are being evaluated. This can reduce the likelihood of response bias caused by guessing the research purpose or external influences. The implicit association test (IAT) is one of the most commonly used methods for measuring implicit attitudes. Developed by Greenwald, McGhee, and Schwartz in 1998, the test requires computer-based administration. The underlying principle of the IAT is that when concept words and attribute words align with a participant's internal cognitive associations, response times in classification tasks are shorter. Conversely, when the associations conflict with the participant's implicit cognition, they must suppress their natural response tendencies, resulting in longer response times. Researchers have applied the IAT to various topics. They conducted a comparative study on implicit and explicit sexual attitudes across genders and sexual orientations. They found that bisexual men had an implicit preference for heterosexual individuals, whereas bisexual women exhibited an explicit preference for homosexual individuals over heterosexual individuals. Devos, Blanco et al. (2008) investigated whether college students held gender-based stereotypes regarding family and educational attainment. They found that, in

explicit questionnaires, both male and female participants prioritized education over family. However, results from the IAT revealed that men placed greater importance on higher education than women; women viewed family and education as equally important. Based on the aforementioned arguments, the IAT uses an experimental design to capture individuals' reaction times. This measurement approach reduces the influence of social desirability and other external factors, allowing respondents to express their internal attitudes more authentically. In this study, the IAT was used to assess collegiate badminton athletes' implicit attitudes, namely, their preferences for coaching leadership styles. These preferences were treated as a moderating variable to examine how coaching leadership behaviors relate to the coach–athlete relationship and leadership effectiveness. Accordingly, this study first examines the effects of coaching leadership behaviors on the coach–athlete relationship and leadership effectiveness. It then investigates whether athletes' leadership style preferences moderate the relationship between coaches' enacted behaviors and leadership effectiveness. In doing so, the study addresses a gap in the literature concerning leadership-style fit effects (match/mismatch between preference and behavior).

Numerous studies exploring coaching leadership behaviors among athletes have adopted the Multidimensional Model of Sport Leadership developed by Chelladurai and Saleh (1980). The model posits that when athletes' preferred leadership styles, coaches' enacted behaviors, and the behaviors expected within the sporting context exhibit a higher degree of correspondence, athletes' performance, and satisfaction are more likely to improve. To assess these leadership dimensions, researchers developed the Leadership Scale for Sports (LSS) as a core measurement instrument, which is typically administered via questionnaires. However, in practical settings, questionnaires are often distributed by coaches or completed on-site during competitions. This makes it challenging for researchers to guide and determine the participants' attitudes and engagement during the response process. As a result, responses may be subject to social desirability bias or environmental factors, particularly in the presence of coaches. In contrast, the IAT, developed by Greenwald et al. (1998), is a computerized categorization task that measures the strength of associations between concepts based on reaction time differences. It indirectly reflects individuals' implicit psychological tendencies, aiming to uncover unconscious self-related attitudes. Compared to self-report measures, IAT assesses participants' internal attitudes indirectly, thereby minimizing bias caused by attempts to guess the questionnaire's purpose or respond in socially desirable ways. As mentioned earlier, the present study employs the IAT to measure athletes' preferences for democratic versus autocratic leadership styles. It explores how these preferences, along with the coaches' actual leadership behaviors, influence the coach–athlete relationship and leadership effectiveness (Figure 1).

2. Research Objectives

(1) To explore the influence of coaching leadership behavior on the coach–athlete relationship and to analyze the moderating effect of athletes' preferences on this relationship.
(2) To explore the influence of coaching leadership behavior on leadership effectiveness and to analyze the moderating effect of athletes' preferences on this relationship.

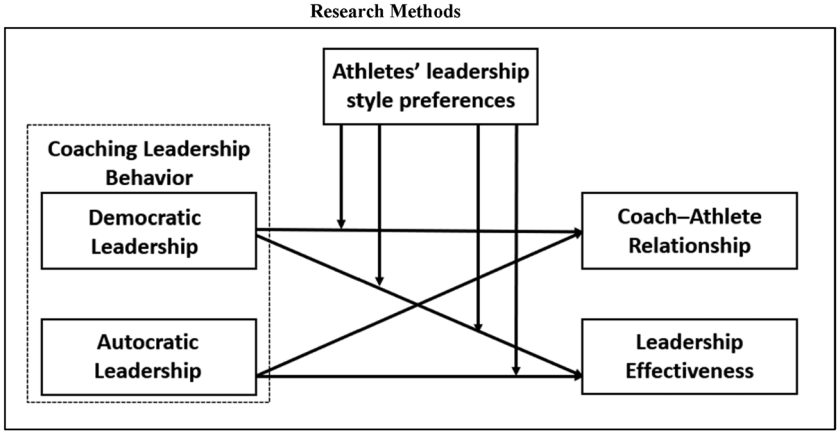

Figure 1. Research framework diagram.
Source: Author's contribution.

3. Research Methods

3.1 Participants

This study recruited general-division collegiate badminton players from universities and colleges in Taiwan. Participants were recruited using purposive sampling from school teams that had advanced to the National Intercollegiate Athletic Games finals in 2019–2024 years. We distributed 90 questionnaires and collected 86 valid responses, resulting in a valid return rate of 95.5%.

3.2 Research Instruments

3.2.1 Coaching Leadership Behavior Scale

This scale was adapted and revised based on the Leadership Scale for Sports developed by Chelladurai and Saleh (1980). It comprises 14 items and uses a 5-point Likert scale for scoring. After collecting valid questionnaires, we conducted item analysis to screen the scale items. Two items were removed due to nonsignificant critical ratios or total score correlations below 0.3. Bartlett's test of sphericity ($p < 0.05$) and a Kaiser–Meyer–Olkin (KMO) value of 0.787 indicates suitability for factor analysis. Principal component analysis with varimax rotation was employed, extracting two factors with eigenvalues greater than 1: "democratic behavior" and "autocratic behavior." These two dimensions explained a cumulative variance of 54.10%. Cronbach's α coefficients for the two subscales were 0.83 and 0.79, indicating good reliability and validity of the coaching Leadership Behavior Scale.

3.2.2 Coach–Athlete Relationship Scale

This scale was adapted and revised from the Coach–Athlete Relationship Questionnaire developed by Jowett and Ntoumanis (2004). It comprises 14 items, and responses are scored using a 5-point Likert scale. After collecting valid questionnaires, we conducted item analysis to screen the scale items. No items were removed, as they all met the significance criteria and had total score correlations above 0.3. Bartlett's test of sphericity ($p < 0.05$) and the KMO value (0.884) indicate that the data are suitable for factor analysis. Using principal component analysis with varimax rotation, three factors with eigenvalues greater than 1 were extracted: "closeness," "commitment," and "complementarity." These factors accounted for a cumulative variance of 72.40%. The Cronbach's α coefficients for the three subscales were 0.86, 0.81, and 0.77, respectively. This indicates good reliability and validity of the Coach–Athlete Relationship scale.

3.2.3 Leadership Effectiveness Scale

This scale was adapted and revised based on satisfaction indicators proposed by Ihsan et al. (2024) and team cohesion and team performance indicators from Tsai and Chang (2023). It comprises 13 items and uses a 5-point Likert scale for scoring. After collecting valid questionnaires, item analysis was conducted to screen the scale items. No items were removed as they all met the criteria of significant critical ratios and total score correlations above 0.3. Bartlett's test of sphericity ($p < 0.05$) and the KMO value (0.767) indicate that the data are suitable for factor analysis. Using principal component analysis with varimax rotation, three factors with eigenvalues greater than 1 were extracted: "satisfaction," "cohesion," and "performance." These three dimensions accounted for a cumulative variance of 65.95%. The Cronbach's α coefficients for the subscales were 0.80, 0.82, and 0.73, respectively. The results indicate that the Leadership Effectiveness Scale has good reliability and validity.

3.2.4 Measurement of Athletes' Leadership Style Preferences

To obtain an authentic assessment of athletes' leadership preferences, this study employed the IAT to classify athletes, based on their implicit preferences, as favoring either democratic or autocratic leadership styles. The assessment was developed from the IAT proposed by Greenwald et al. (1998) and, in this study, was titled the "Implicit Attitude Test on Democratic and Autocratic Training Styles." The test evaluated athletes' preferences for democratic versus autocratic coaching styles and used a staged procedure for data collection and analysis.

3.2.4.1 Preparing Target Vocabulary for the Democratic and Autocratic Implicit Association Test

To design the IAT for "democratic training" and "autocratic training," this study developed and selected appropriate vocabulary materials through a three-stage process. In the first stage, we used a 3 × 3 grid association task to collect positive and negative words related to democratic and autocratic training from collegiate badminton players across Taiwan, yielding 90 responses. In the second stage, preliminary word screening and expansion were conducted, resulting in 34 positive and 34 negative words. In the third stage, we used a questionnaire to evaluate the

emotional valence of these words using a 5-point Likert scale, ranging from −2 ("very negative") to 2 ("very positive"). Based on statistical analysis, 20 positive and 20 negative words were selected as target vocabulary for the IAT. The complete list of categorized vocabulary and corresponding concepts is presented in Table 1 and has been programmed into the FreeIAT platform for official testing.

3.2.4.2 Implicit Attitude Test

The IAT test consists of five procedures (Table 2). The researcher designed the experiment based on modified online materials from the Greenwald et al. (2003) research team. In each step, participants were instructed to respond to vocabulary words presented on a computer screen using the "E" and "I" keys on the keyboard, as detailed below.

Step 1: Target concept discrimination. Participants were required to use the "E" and "I" keys on the keyboard to quickly categorize randomly presented words on the screen as either "democratic" or "autocratic."

Step 2: Attribute discrimination. Participants were required to use the "E" and "I" keys to quickly determine whether the randomly displayed word on the screen is "positive" or "negative."

Step 3: Initial combined task. Words related to "democratic/autocratic" and "positive/negative" concepts appear randomly on the screen. Participants would press the "E" key for "democratic or positive" and the "I" key for "autocratic or negative."

Step 4: Reverse concept discrimination. The screen randomly displayed five "democratic" or "autocratic" words. Participants must respond quickly by pressing the "E" key for "autocratic" and the "I" key for "democratic."

Step 5: Reversed combined task. When a word related to "autocratic" or "positive" appeared on the screen, participants press the "E" key; when a word related to "democratic" or "negative" appears, they press the "I" key.

3.2.4.3 Scoring Procedure for the Implicit Association Test

Following the experimental procedure of Greenwald et al. (1998), this study administered the IAT and used response-time differences to estimate implicit attitudes toward democratic versus autocratic leadership styles. The scoring procedure involved screening latencies (removing trials with latencies >10,000 ms or <300 ms and excluding individuals with error rates >10%), and, in line with recommended steps, computing the standard deviation of latencies, mean latencies, and mean differences. The *D*-score (IAT effect size) was then used as the quantitative index of athletes' implicit attitudes. The *D*-score indexes athletes' latent preference for democratic versus autocratic leadership styles. A positive *D* indicates a preference for democratic leadership, whereas a negative *D* indicates a preference for autocratic leadership. In terms of magnitude, $|D| \geq 0.65$ denotes a strong association, 0.35–0.65 a moderate association, 0.15–0.35 a slight association, and values < 0.15 indicate a negligible or no association.

4. Results

4.1 Participant Demographic Distribution

The sample distribution of the participants is presented in Table 3. Among team members, 67 were male (77.9%) and 19 were female (21.1%); 73 participants (84.9%) had participate in the National Intercollegiate Athletic Games, while 13 (15.1%) had not; 37 participants (43%) had entered the National Intercollegiate Athletic Games finals, and 49 (57%) had not. The participants' mean *D*-score was 0.49 (SD = 0.39), indicating a preference for democratic leadership among collegiate badminton athletes, with a moderate level of implicit association. Given that most participants exhibited a stronger preference for democratic leadership, the study further focused on athletes who preferred a democratic style to examine their responses and outcomes under different leadership contexts. The study examines whether these athletes display higher relationship quality and leadership effectiveness when interacting with coaches who adopt a democratic style; conversely, it investigates whether a nonmatching leadership context may lead to adverse outcomes.

4.2 Correlation Analysis

The results indicate that most variables related to coach leadership behavior, the coach–athlete relationship, and leadership effectiveness had statistically significant correlations. Pearson's correlation coefficients ranged from 0.141 to 0.898, indicating moderate relationships (Table 4). Notably, democratic behavior was positively correlated with the overall coach–athlete relationship, with the strongest correlation observed with the "closeness" dimension. This finding suggests that coaches who adopt a more democratic leadership style are more likely to strengthen emotional bonds with their athletes. Autocratic behavior was negatively correlated with the coach–athlete relationship, with the strongest negative association observed with the

Democratic leadership behavior				Autocratic leadership behavior			
Primary positive concept	Examples of secondary positive concepts	Primary negative concept	Examples of secondary negative concepts	Primary positive concept	Examples of secondary positive concepts	Primary negative concept	Examples of secondary negative concepts
Freedom	**Open-minded**	Conflict	**Divergence** Opposition	Autocratic	Concentrated	Dislike	Annoyed
	Flexible		**Argument**		Unified		Rebellious
							Restrained Traditional
Unity	**Strong cohesion**	Stress	**Tedious**	Fast decision-making	High performance	Painful	**Wronged**
					Efficiency		
	Cooperation		**Time-consuming**		**Proactive**		**Sad**
			Restriction				
			Sense of oppression				**Repressed**
Joy	**Happy**	Indulgent	Undisciplined	Restrained	Rigorous	Closed-off	Uncommunicative
	Likable		Boisterous **Slack**		Cautious		Outdated
	Interesting Lively				**Clear goals**		**Rigid**
							Old-fashioned
Equality	Fair	Bad attitude	Arrogant	System	Organized	Corporal	Scolding
	Respect		Irresponsible **Indifferen**		**High cohesion**	punishment	Rough
Responsibility	Strong self-control	Confused	**Aimless**	Focused	Serious	Arbitrary	**Hegemony**
	Autonomy **Healthy**		Unregulated **Disorderly**		Dedicated		Indecisive
	competition						**Stubborn**
							Passive
Harmony	**Kind**			Conservative	Unchanging **Well-**		
	Trusting				**organized management**		
	Friendly						
Positive	Opinion flow						
Communication	Opinion acceptance						
	Encourage						

Note: Bolded words indicate the final selected vocabulary.
Table 1. Primary and secondary vocabulary concepts for democratic and autocratic leadership behaviors.
Source: Author's contribution.

		Task stage	E key	I key
IAT implementation steps	Step 1	Initial concept discrimination task	Democratic words	Autocratic words
	Step 2	Attribute discrimination task	Positive words	Negative words
	Step 3	Initial combined task	Democratic/positive	Autocratic/negative
	Step 4	Reversed concept discrimination task	Autocratic words	Democratic words
	Step 5	Reversed combined task	Autocratic/positive	Democratic/negative

Table 2. Democratic and autocratic implicit association test.
Source: Author's contribution.

Background variables	Item	Number of participants	%
Gender	Male	67	77.9
	Female	19	21.1
Participation in the national intercollegiate athletic games	Yes	73	84.9
	No	13	15.1
Advancement to the finals of the national intercollegiate athletic games	Yes	37	43.0
	No	49	57.0

Table 3. Descriptive statistics of participant demographics.
Source: Author's contribution.

"complementarity" dimension. This finding suggests that when athletes perceive a higher level of autocratic behavior from their coach, it may increase pressure and negatively affect their collaborative relationship. Regarding leadership effectiveness, "cohesion" exhibited the highest positive correlation with democratic behavior. This finding indicates that when coaches engage athletes in team-related discussions through democratic leadership, it can strengthen team cohesion. Moreover, autocratic behavior was most negatively correlated with "satisfaction." This finding suggests that a more autocratic coaching style reduces athletes' satisfaction with their training experiences.

4.3 Analysis of the Impact of Coach Leadership Behavior on the Coach–Athlete Relationship and Leadership Effectiveness

4.3.1 Multiple Regression Analysis of Coach Leadership Behavior on the Coach–Athlete Relationship

This study conducted a multiple regression analysis to examine the impact of coach leadership behavior and athletes' implicit attitudes on the coach–athlete relationship. Democratic leadership behavior, autocratic leadership behavior, athletes' preferences (implicit attitudes), and

	1	2	3	4	5	6	7	8	9
2	−0.277*								
3	0.684*	−0.342*							
4	0.629*	−0.258*	0.898*						
5	0.515*	−0.310*	0.803*	0.582*					
6	0.576*	−0.310*	0.824*	0.609*	0.511*				
7	0.607*	−0.216*	0.654*	0.534*	0.548*	0.590*			
8	0.509*	−0.403*	0.658*	0.527*	0.650*	0.513*	0.780*		
9	0.545*	−0.145	0.414*	0.313*	0.340*	0.413*	0.779*	0.484*	
10	0.289*	0.008	0.433*	0.392*	0.294*	0.405*	0.661*	0.363*	0.141*

Note: 1, democratic behavior; 2, autocratic behavior; 3, coach–athlete relationship; 4, closeness; 5, commitment; 6, complementarity; 7, leadership effectiveness; 8, satisfaction; 9, cohesion; 10, performance..
*$p < 0.05$.
Table 4. Summary of correlation analysis among coach leadership behavior, coach–athlete relationship, and leadership effectiveness.
Source: Author's contribution.

their interaction terms served as the independent variables; the coach–athlete relationship was the dependent variable. The results indicate that the overall model reached significance ($F = 15.654$, $p < 0.05$), with an explanatory power of $R^2 = 0.463$. Among the independent variables, democratic leadership behavior was a significant positive predictor of the coach–athlete relationship ($t = 2.384$). The detailed results are presented in Table 5.

4.3.2 Multiple Regression Analysis of Coach Leadership Behavior on Leadership Effectiveness

This study used democratic leadership behavior, autocratic leadership behavior, athlete preference (implicit attitude), and their interaction terms as independent variables; leadership effectiveness was the dependent variable in the multiple regression analysis. The results indicate that the model reached statistical significance ($F = 12.901$, $p < 0.05$), with an explanatory power of $R^2 = 0.412$. Among the independent variables, democratic leadership behavior was a significant positive predictor of leadership effectiveness ($t = 2.800$). The interaction term "athlete preference × autocratic leadership behavior" also reached significance ($t = -0.214$). This result indicates that the combination of implicit preference and autocratic behavior negatively affected leadership effectiveness (Table 6). Therefore, following Hayes (2018), this study plotted an interaction graph (Figure 2) to illustrate the moderating effect of implicit attitude on the relationship between leadership behavior and leadership effectiveness. The results show that implicit attitude moderates the relationship between autocratic behavior and leadership effectiveness. The slope analysis indicates that college badminton players who prefer democratic leadership experience a sharper decline in perceived leadership effectiveness as the level of autocratic behavior increases. In contrast, those who prefer autocratic leadership exhibit a flatter slope, indicating a smaller decline. In other words, for athletes who favor democratic styles, higher levels of perceived autocratic behavior by the coach are associated

Dependent variable	Independent variables	Raw score regression coefficient	Standardized regression coefficient	*t*	*p*
Coach–athlete relationship	Democratic leadership behavior	0.361	0.152	2.384*	0.020
	Autocratic leadership behavior	−0.028	0.140	−0.200	0.842
	Athlete preference (implicit attitude)	0.004	0.041	0.097	0.923
	Athlete preference × democratic leadership behavior (interaction)	−0.019	0.089	−0.216	0.829
	Athlete preference × autocratic leadership behavior (interaction)	−0.037	0.086	−0.427	0.671

Note: *$p < 0.05$.
Table 5. Summary of multiple regression analysis of coach leadership behavior on the coach–athlete relationship.
Source: Author's contribution.

Dependent variable	Independent variables	Raw score unstandardized regression coefficient	Standardized regression coefficient	*t*	*p*
Leadership effectiveness	Democratic leadership behavior	0.356	0.862	2.800*	0.006
	Autocratic leadership behavior	0.221	0.535	1.887	0.063
	Athlete preference (implicit attitude)	−0.090	−0.218	−2.598*	0.011
	Athlete preference × democratic leadership behavior (interaction)	−0.059	−0.240	−0.794	0.430
	Athlete preference × autocratic leadership behavior (interaction)	−0.155	−0.594	−2.143*	0.035

Note: *$p < 0.05$.
Table 6. Summary of multiple regression analysis of coach leadership behavior on leadership effectiveness.
Source: Author's contribution.

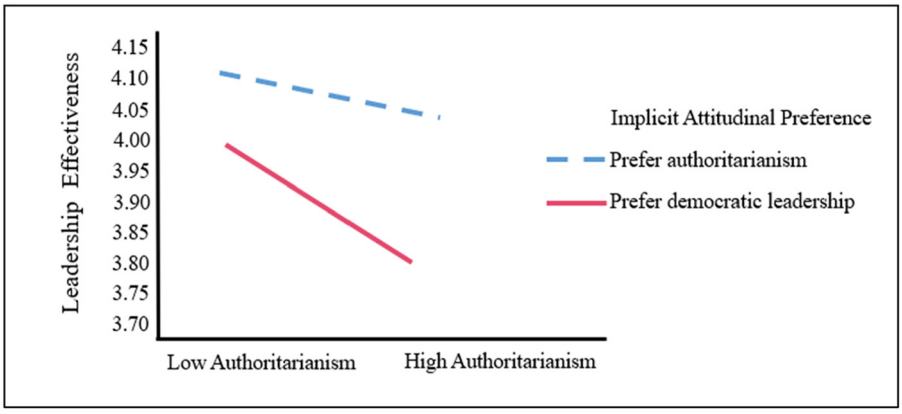

Figure 2. Interaction between implicit attitude and autocratic behavior on leadership effectiveness.
Source: Author's contribution.

with significantly lower leadership effectiveness. In contrast, those who favor autocratic styles show relatively stable evaluations.

To further clarify the impact of coaches' autocratic leadership behavior on athletes who prefer democratic leadership, this study selected samples of athletes with implicit attitudes favoring democratic behavior. This study analyzes the differences in leadership effectiveness by comparing high and low levels of autocratic leadership behavior. The results are presented in Table 7. Differences in the intensity of coaches' autocratic leadership behavior were found to be significant only in the "satisfaction" dimension. This result indicates that when athletes' preferences are inconsistent with their coach's leadership style, their satisfaction levels tend to decrease. Particularly, athletes who prefer democratic leadership reported lower satisfaction when their coach displayed stronger autocratic behavior. However, no significant differences were observed in the dimensions of "cohesion" and "performance." This result suggests that for college badminton players who prefer democratic leadership, variations in the intensity of autocratic behavior did not significantly affect team cohesion or performance outcomes.

5. Discussion

5.1 Research Findings

5.1.1 Effects of Coach Leadership Behavior and Athlete Preferences on the Coach–Athlete Relationship

This study found that athletes reported a higher perception of democratic behavior exhibited by their coaches, while their perception of autocratic behavior was comparatively lower. This result is consistent with the findings of Jawoosh et al. (2022). This finding indicates that coaches teach athletic skills and guide athletes in setting performance goals. By listening to athletes' opinions and providing timely feedback during training or tactical discussions, coaches help foster a positive team training atmosphere, enhancing athletic performance. Within the coach–athlete relationship, athletes reported the highest sense of commitment, followed by closeness and complementarity. This finding is consistent with the results reported by Nicholls et al. (2017). As coaches are primarily responsible for managing and training their teams and are typically professionally trained, they can effectively guide and support athletes. This subsequently encourages athletes to invest their time and effort in continued participation. Among the dimensions of perceived leadership effectiveness, athletes reported the highest level for "cohesion," followed by "satisfaction" and "performance." Thus, coaches play a critical role in influencing sports teams – not only by demonstrating appropriate leadership behaviors and guiding athletes toward technical and goal-related

Dimension name	Autocratic behavior group	*M*	SD	*T*	*p*
Satisfaction	Low	4.27	0.50	2.77*	0.007
	High	3.93	0.55		
Cohesion	Low	4.29	0.44	0.78	0.425
	High	4.20	0.57		
Performance	Low	3.33	0.67	−0.32	0.744
	High	3.38	0.75		

Table 7. Summary of independent sample *t*-test on leadership effectiveness by autocratic behavior group.
Source: Author's contribution.

achievements but also by paying attention to interactions among team members. A positive team atmosphere is essential for striving toward shared goals. When team cohesion is high, members are more willing to invest effort and contribute to the team (Vincer & Loughead, 2010). Therefore, team cohesion tends to increase when athletes have positive experiences in the training environment and enjoy harmonious relationships with teammates.

This study found that democratic leadership behavior positively influenced the coach–athlete relationship, whereas autocratic behavior had no significant effect. Furthermore, implicit attitude did not moderate the relationship between coach leadership behavior and the coach–athlete relationship. The quality of the coach–athlete relationship depends primarily on emotional connection, trust, and the quality of communication rather than on a close match between leadership style and athletes' preferences. Landman, Grobbelaar, and Kraak (2024) note that the development of closeness, commitment, and complementarity relies on coaches' empathy, understanding of athletes' needs, and ongoing communication, rather than merely on stylistic fit. Felton and Jowett (2013) further show that coaches' empathy and interpersonal care play a pivotal role in relationship building. Moreover, Coussens et al. (2025) report that both the actual support athletes receive and their subjective perceptions of coaching behaviors enhance confidence and psychological well-being via improvements in relationship quality. For nonelite, recreationally engaged athletes, coaches' interpersonal sensitivity and supportive behaviors often contribute more to establishing and maintaining the coach–athlete relationship than whether the leadership style aligns with individual preferences. Thus, alignment between the coach's leadership style and the athlete's leadership preference did not significantly enhance their relationship quality. This may be because leadership behavior involves various interpersonal processes, e.g., planning, instruction, communication, coordination, team unity, and public relations, which are all forms of interaction between coaches and athletes. Establishing a positive and effective communication channel can facilitate athletes' commitment to achieving team goals (Westre & Weis, 1991; Chan et al., 2011). Poor interactions between coaches and athletes may cause rifts in the coach–athlete relationship. This may lead to emotional distance, uncertainty, escalating conflicts, or problem-focused responses, further intensifying alienation while deteriorating the relationship (Wachsmuth et al., 2018). Regarding the relationship between coach leadership and the coach–athlete relationship, López de Subijana et al., (2021) found that both coach leadership behavior and athlete preferences can effectively predict closeness, commitment, and complementarity in the coach–athlete relationship; their conclusions differ from the findings of the present study. Possible explanations for this difference are as follows: (1) Past studies commonly employed the LSS to measure leadership behaviors. The present study utilized the IAT, and differences in measurement tools may have led to divergent results. (2) Most past studies examined coach leadership through five dimensions. The present study focused solely on democratic and autocratic leadership. Moreover, the participants in this study were collegiate athletes in the general division, who typically have fewer training hours and days than those in elite divisions. As a result, their interaction time with coaches is more limited, which may have led to weaker perceptions of the coach–athlete relationship and contributed to the contrasting findings. Shanmuganathan-Felton et al. (2022) indicate that the time athletes spend with their coaches significantly affects their perceptions of the coaches' training and technical guidance. Extended interaction helps build trust and a supportive environment, motivating athletes to train and compete while enhancing their confidence in the coach's professional expertise. This finding suggests that when coaches adopt a democratic leadership style, they are more likely to establish effective communication channels with athletes, maximize adjustment time, and, with longer training interactions, strengthen emotional bonds and increase mutual trust.

5.1.2 Impact of Coach Leadership Behavior on Leadership Effectiveness

This study found that democratic leadership behavior positively enhanced leadership effectiveness, whereas autocratic behavior did not show a significant effect. However, athlete preference exerted a significant negative moderating effect on the link from autocratic behavior to leadership effectiveness. These results indicate that the correspondence between athletes' preferred leadership style and coaches' enacted style is not peripheral; it is a key condition that determines whether leadership behaviors translate into effectiveness and satisfaction. When coaches' enacted behaviors conflict with athletes' preferred leadership styles, athletes are more likely to evaluate leadership effectiveness negatively – especially when coaches adopt an autocratic style. Autocratic leadership emphasizes control and directives; coaches make most decisions, leaving limited opportunities for athlete input or participation. As a result, interaction becomes one way and the sense of involvement is reduced. For athletes who prefer democratic or participatory

interactions, such mismatch undermines autonomy and participation, leading to frustration of psychological needs, lower interaction quality, and weakened identification with the coach. Conversely, when coaching behaviors align with team members' expectations, athletes' identification with the coach strengthens, thus increasing satisfaction and acceptance of leadership. In particular, supportive behaviors that address athletes' personal beliefs and needs further enhance satisfaction. Without such fit, athletes' basic psychological needs (e.g., autonomy, competence, relatedness) may not be met, which can, in turn, impair sport performance and self-concept (Reddy et al., 2013).

From both theoretical and empirical perspectives, the importance of fit is well supported. Person–environment fit suggests that a good match between individual preferences and situational features improves satisfaction and performance (Kristof-Brown et al., 2005). In the coach–athlete domain, relationship quality is driven by interactional processes such as closeness, commitment, and complementarity; coaches who adjust their communication and opportunities for participation accordingly are more likely to build high-quality relationships (Jowett & Ntoumanis, 2004). In addition, supportive coaching behaviors – for example, listening, feedback, and encouraging participation – satisfy athletes' psychological needs and strengthen intrinsic motivation and satisfaction (Amorose & Anderson-Butcher, 2007), while interpersonal sensitivity and empathy are key mechanisms for relationship development and adaptation (Felton & Jowett, 2013). Taken together, the "effects" of leadership style are not fixed; they are conditioned by athletes' preferences. Only by proactively assessing and responding to athletes' stylistic tendencies can coaches translate leadership behaviors into satisfaction, cohesion, and performance. When coaches apply their leadership traits and behaviors effectively while building trust and motivation through interactions with team members, they can enhance team cohesion and goal attainment. Transformational leadership promotes collaboration and communication among team members, creating a positive team atmosphere and fostering athlete recognition and support to achieve shared goals (Choudhury & Das, 2024). Moreover, providing timely encouragement and praise, along with involving athletes in training planning and decision-making, can help counteract the negative effects of authoritarian leadership (Kilit et al., 2024). Coaches often maintain strict discipline during training but adopt a mentor-and-friend role afterward, emphasizing the importance of care and approachability in their interactions with athletes (Liu et al., 2025). Therefore, when a coach's democratic leadership behavior aligns closely with athletes' preferences, it is more likely to foster team cohesion and stimulate a positive interactive atmosphere. This alignment enhances leadership effectiveness and team performance, serving as a key factor in optimizing team functioning and achieving competitive goals.

6. Research Recommendations and Limitations

6.1 Practical Recommendations

1. The findings indicate that a democratic coaching style enhances the coach–athlete relationship and leadership effectiveness, while an autocratic style does not significantly weaken these outcomes. Notably, athletes who reached the finals reported perceiving more autocratic behaviors from their coaches. Although most collegiate coaches adopt a democratic leadership approach, those aiming for optimal performance should balance democratic and autocratic leadership styles.
2. We recommend that coaches adopt diversified training approaches when leading sports teams, e.g., off-site training or consensus-building camps, to increase communication and interaction with athletes. These opportunities allow coaches to better understand athletes' leadership style preferences, enabling them to design more suitable training programs that enhance training satisfaction and strengthen leadership effectiveness.

6.2 Recommendations for Future Research

1. Compare different research methods

   This study employed survey questionnaires and the IAT to investigate the impact of coaching leadership behaviors on coach–athlete relationships and leadership effectiveness. Since most prior studies have primarily utilized the LSS as the research tool, methodological differences may lead to variations in findings. Therefore, future research should integrate multiple research instruments to compare outcomes and obtain more comprehensive results.
2. Include emotional intelligence in the discussion

   This study found that discrepancies between a coach's leadership style and an athlete's preferred style can negatively affect athlete satisfaction. Such misalignment may trigger negative emotions in athletes, potentially undermining their perception of leadership effectiveness. Therefore, future research should include emotional intelligence as a variable to explore the relationship between athletes' emotional states and leadership effectiveness.

6.3 Research Limitations

This study adopted purposive sampling, recruiting athletes from schools that had advanced to the finals of the National University and College Badminton Championships in recent years. As the sample did not include a broader population of collegiate athletes, the generalizability of the findings should be interpreted with caution. Finally, using the IAT as the research instrument limited the study to examining only democratic and autocratic leadership behaviors, excluding other coaching leadership styles from its scope.

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Author contributions

Chin-Wei Lin, Bo-Hao Lai, and Su-Shiang Lee: conception and design of the study; Chin-Wei Lin and Yu-Sheng Lin: analysis and interpretation of the data; Yu-Sheng Lin and I-Yu Tsai: manuscript preparation.

Conflict of interest statement

The author declares no conflict of interest.

Ethics approval and informed consent

This questionnaire-based study was noninvasive, and all participants took part voluntarily. Prior to the commencement of the study, participants were fully informed and gave their oral consent. The study was conducted in accordance with the ethical guidelines set out in the Declaration of Helsinki.

Data availability statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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