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Psychological health in male athletes: the effect of perceived coaching behaviors on male athletes' anger and aggression levels

Tarkan Havadar[1,2,]*, Arslan Kalkavan[3], Gökmen Özen[4]

[1] Sarikamis Faculty of Sport Sciences, Kafkas University, 36000 Kars, Türkiye
[2] Institute of Health Sciences, Recep Tayyip Erdogan University, 53100 Rize, Türkiye
[3] Faculty of Sport Sciences, Recep Tayyip Erdogan University, 53100 Rize, Türkiye
[4] Faculty of Sport Sciences, Canakkale Onsekiz Mart University, 17000 Canakkale, Türkiye

*Correspondence
tarkanhavadar@kafkas.edu.tr
(Tarkan Havadar)

Abstract

Coaches are the main people who have an impact on the mental and psychological performance of athletes as well as their physical performance. The purpose of this study is to investigate the effect of perceived coaching behaviors on the anger and aggression levels of male athletes. This study was conducted with 748 licensed male athletes who are over 18 years of age and participate in individual and team sports branches. In this study, the "Coaching Behavior Assessment Questionnaire" and the "Competitive Aggressiveness and Anger Scale" were used as data collection tools. The study results showed that athletes' levels of evaluation of the coaching behaviors were high, while the levels of aggressiveness and anger in sports were low. It was determined that there is a negative lowlevel relationship between the athletes' evaluation levels of the coaching behaviors and the aggressiveness and anger levels in sports and that the coach's behaviors predict the anger and aggressiveness levels of the athletes by 9% and 6%, respectively. The results of this study show that the attitudes and behaviors of coaches can affect the emotional states of male athletes and have the potential to increase or decrease their anger and aggressiveness levels. Coaches who exhibit positive, supportive and modeling behaviors help create a healthy sports environment and help male athletes maintain emotional balance.

Keywords

Coach; Athlete; Anger; Aggressiveness; Male

1. Introduction

The increasing interest and popularity in sports from past to present has increased the difficulties of being an athlete. To become a professional and elite athlete, from an early age the body is exposed to high physical and psychological stress. In the literature, Souter *et al*. [1] (2018) stated in their compilation studies that psychological stress caused by personal performance or environmental (coach, fans, family, media, *etc.*) that athletes are exposed to can cause psychological problems and traumas both during their active sportsmanship periods and in the years after they quit sports. It has been stated that high-level male athletes, especially in sports competitions where competition is high, are viewed as superhumans and their psychological states are ignored. In this regard, it has been determined that male athletes are more vulnerable to health and behavioral disorders that may arise due to psychological pressure and stress [1].

In the field of sports, coaches and athletes are related to each other for individual sports or team sports, and this relationship can be one of the most important factors determining the success or defeat of an athlete or team [2]. Coaches should not only plan training programs and prepare the team for com-petitive competitions but also motivate the athletes, develop an emotional environment within the team, and maintain a learning environment that facilitates growth and the achievement of goals [3]. In this learning environment, there is a coach-athlete relationship, a relationship between the athlete and the coach in which emotions, thoughts and behaviors affect each other. This relationship includes the interaction, communication and dynamics of the relationship between the athlete and the coach. The coach's leadership style, communication skills, guidance and approach have direct effects on the athlete [4]. LeUnes [5] stated that the sports environment basically consists of the relationship between the coach, the athlete, the competition and the training environment. Coaches who are engaged in individual and team sports not only increase the performance of the athletes but also have the motivation to enable the athletes to positively improve their behaviors, such as anger and aggressiveness, in competitions [6]. Some negative behaviors of coaches may reduce athlete satisfaction and cause disappointment and fear of failure. Such a case can lead the athlete to avoid taking risks and increase the possibility of making mistakes by increasing the anxiety level. Likewise, undesirable behaviors in such situations can lead to feelings of anger and aggressiveness and trigger discipline

problems [7]. Cho *et al.* [8] (2019) stated that coaching behaviors significantly affect athletes' feelings of anxiety and burnout, therefore coach behaviors are important to reduce anxiety and burnout in athletes [8]. Danilewicz [9] argues the pressure exerted on the athlete by the family and/or coach is an important factor behind anger and aggression in sports [9]. Athletes with high levels of anger and aggressiveness also tend to exhibit behaviors contrary to sporting rules, such as cheating or harming another player [10]. Predominantly, male athletes express their anger more frequently in the form of verbal and physical aggressiveness. Another reason for anger and aggressiveness in sports is attributed to the learning process that occurs during participation in sports [11], which is why anger and aggressiveness can be tolerated in sports, which is a social phenomenon. It has been observed that some behaviors exhibited by athletes can turn into acts of anger and aggression during competitions. Moreover, studies show that anger and aggressive behaviors differ according to the type of sport. Athletes participating in individual sports generally exhibit lower levels of aggressiveness than those participating in team sports [11]. Athletes, in particular, may resort to verbal or physical aggression to intimidate their weaker opponents. If such behavior goes unpunished [9], it can cause them to lose focus on their goal or to be disqualified [12].

While anger and aggression can be seen at every stage of sports, they can also affect athletes of all age categories [13]. Factors such as technical and tactical abilities, psychological state, training time, and efficiency of athletes in this age category play a role in achieving success. However, the most important factor is that the coaches know the athletes and their needs. Coaches strive to understand the deficiencies and needs of athletes and provide appropriate conditions. In this way, negative behaviors such as anger and aggressiveness are prevented [14]. The coach guides athletes to achieve high levels of physical and emotional (psychological) performance with their own knowledge and experience, in cooperation with sports physicians, scientists and psychologists. In this process, the coach is in direct contact with the athlete throughout a long training process and facilitates the management of emotional factors such as anger and aggressiveness [15]. Coaches have both positive and negative effects on their athletes [16]. Therefore, coaches should encourage their athletes to adopt sports as a philosophy of life and support the lifelong continuation of sports [14].

In summary, examining coach-athlete anger and aggression levels shows whether they have a decisive effect on the performance of athletes. Therefore, investigating coach-athlete relationships is important in controlling negative risk factors such as anger and aggression. In this context, the aim of the study was to examine the effects of perceived coaching behavior on athletes' anger and aggression levels in athletes from different sports branches in Turkiye.

2. Materials and methods

2.1 Research model

This study aimed to accurately describe an existing situation by using a relational screening model. A relational screening model is a model used to determine the relationship between variables and the degree of change [17]. The purpose of the study is to examine the relationship between anger and aggressiveness levels and coaching behaviors. This model makes it possible to understand and evaluate the relationship between these variables.

2.2 Participants

The population of the study consisted of licensed male athletes who are over the age of 18, and engage in olympic individual and team sports in 14 provinces (Kars, Erzurum, Ardahan, Ağrı, Muş, Bingöl, Bitlis, Erzincan, Tunceli, Van, Malatya, Elazığ, Hakkari and Iğdır) in the East Anatolia region in Turkiye. Although the smallest sample (with a 95% confidence level and a 5% confidence interval) to reach in the infinite population of athletes was calculated to be 384, as many individual and team athletes as possible were reached, and the data were collected from 748 athletes. The research sample consisted of a total of 748 male athletes. These forms were obtained from participants face to face using printed forms or online forms via the internet.

2.3 Data collection tool

The data were collected using the Coaching Behavior Assessment Questionnaire (CBAQ) and the Competitive Aggressiveness and Anger Scale (CAAS). While the CBAQ was adapted to Turkish by Filiz and Demirhan in 2019 [18], the CAAS was adapted to Turkish by Gürbüz, Kural and Özbek in 2017 [19]. The CAAS has a two-dimension structure (1–6: Anger Dimension and 7–12: Aggressiveness Dimension), while CBAQ has a five-dimension structure (1–6: Encouragement—E, 7–11: General Encouragement—GE, 12–14: General Encouragement Instruction—GEI, 15–18: General Communication—GC, and 19–21: Mistake-Contingent Technical Instruction—MCTI). The scales were designed as 5-point Likert scales. Each statement in the scale is scored on 5-point Likert scales, from "Never (1)" to "Always (5)" in CBAQ and "Strongly Disagree (1)" to "Strongly Agree (5)" in CAAS. Although the validity and reliability levels of the scales were measured in previous studies, necessary tests were performed in this study as well to determine the validity and reliability levels of the scales. Thus, expert opinions were sought from experts in sports sciences and educational sciences regarding the content and face validity of the scales. A confirmatory factor analysis (CFA) was completed for construct validity, and the Cronbach's alpha internal consistency coefficient (α) was calculated for reliability. The CFA diagrams of the scales are presented in Fig. 1, and the goodness of fit indices are presented in Table 1.

Harrington [22] stated that item factor loads should be above 0.30. Therefore, during the CFA process, items 4, 6, 7, 9, 12 in CAAS were excluded from the scale as their factor loads were lower than 0.30. According to the CFA diagrams, the factor loads of the other items are greater than 0.30. Additionally, modifications were made between items 1–2 and 10–11 in the CBAQ and items 1–2, 8–11 and 19–21 in the CAAS. Finally, it was determined that the fit index values obtained in the CFA and presented in Table 1 were within the ref-erence
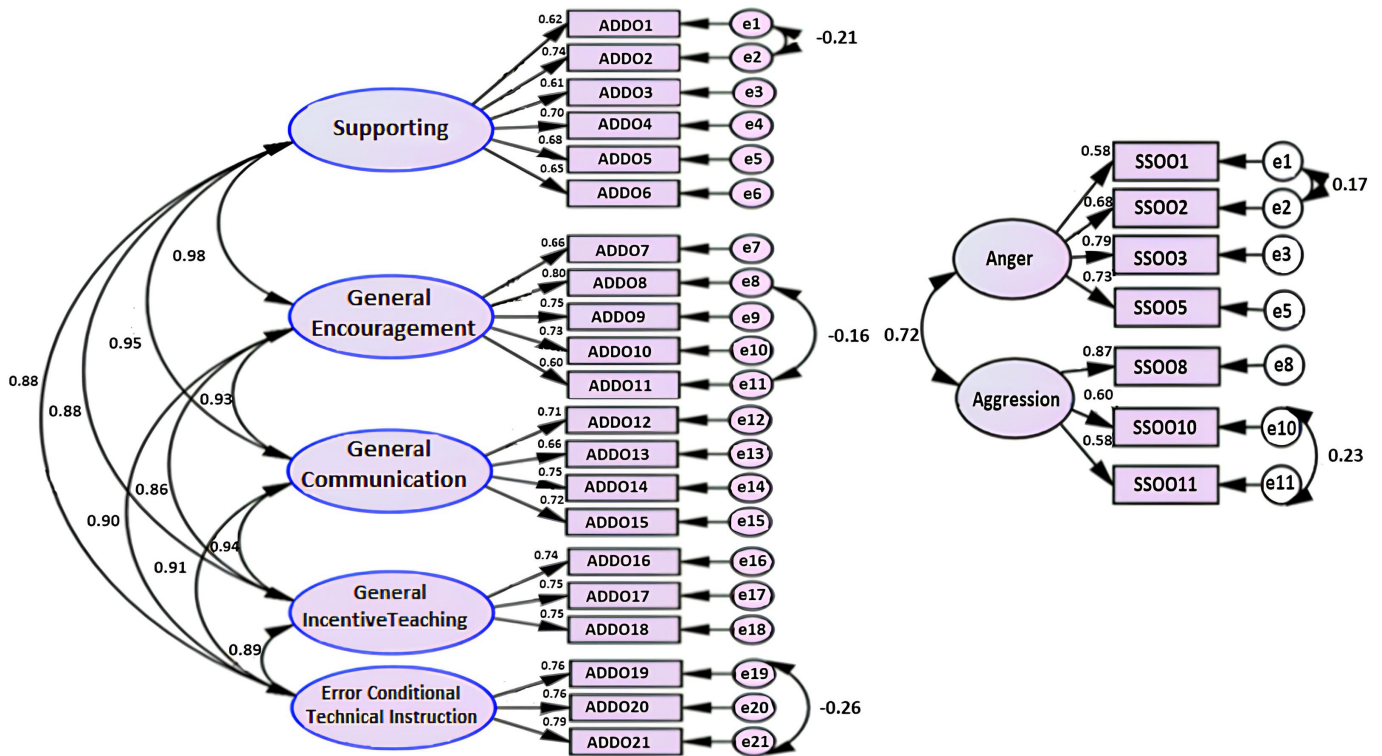
F I G U R E 1. CFA diagrams.

T A B L E 1. Goodness of fit indices/results (Hooper, Coughan, & Mullen [20]; Korucuk [21]).

Fit Indices	Reference Range		Results		Evaluation	
	Good	Acceptable	CAAS	CBAQ	CAAS	CBAQ
CMIN/DF	$0 < \chi^2/sd \leq 3$	$3 < \chi^2/sd \leq 5$	3.600	4.815	Acceptable	Acceptable
RMSEA	$0 \leq RMSEA \leq 0.05$	$0.05 \leq RMSEA \leq 0.08$	0.059	0.071	Acceptable	Acceptable
GFI	$0.90 < GFI \leq 1.00$	$0.85 < GFI \leq 0.90$	0.985	0.904	Good	Good
AGFI	$0.90 < GFI \leq 1.00$	$0.85 < GFI \leq 0.90$	0.962	0.874	Good	Acceptable
CFI	$0.95 < CFI \leq 1.00$	$0.90 < CFI \leq 0.94$	0.984	0.922	Good	Acceptable
RMR	$0 \leq RMR \leq 0.05$	$0.05 \leq SRMR \leq 0.10$	0.039	0.042	Good	Good
TLI	$0.95 < TLI \leq 1.00$	$0.90 < TLI \leq 0.94$	0.970	0.907	Good	Acceptable
DF			11	176		
CMIN			39.595	847.366		
Cronbach's Alfa-α			0.83	0.95	Highly Reliable	

CMIN/DF: Minimum Discrepancy Function by Degrees of Freedom divided; RMSEA: Root Mean Squared Error of Approximation; GFI: Goodness of Fit Index; AGFI: Adjusted Goodness of Fit Index; CFI: Comparative Fit Index; RMR: Root Mean Square Residual; TLI: Tucker-Lewis Index; DF: Degree of freedom; CMIN: Goodness-of-Fit indices; CAAS: Competitive Aggressiveness and Anger Scale; CBAQ: Coaching Behavior Assessment Questionnaire; sd: Standard Deviation; SRMR: Standardized Root Mean Squared Residual.

ranges. Furthermore, it was determined that a high level of reliability was achieved with CAAS-α = 0.83 and CBAQ-α = 0.95. These results indicate that the CAAS and CBAQ scales, which are the data collection tools used in the study, have high reliability.

2.4 Data analysis

This study aims to reveal the current situation in an unbiased manner. For this purpose, the researcher performed the data analysis process upon completion of data collection by using statistical methods. SPSS 26.0 (IBM SPSS Statistics, Chicago, IL, USA) and AMOS 24 (SPSS Inc., Chicago, IL, USA) statistical package programs were used in analyzing the data. The significance level (significance level) was accepted as p = 0.05. During data analysis, the validity and reliability of the data collection tools were first tested. According to Büyüköztürk [23], the Cronbach's alpha value was calculated for the reliability of the measurement tool, and two semi-tests

were applied to the measurement tool. A confirmatory factor analysis (CFA) was completed to determine the construct validity of the measurement tool. To evaluate whether the data is normally distributed, mean-mode-median, skewness-kurtosis values, Q-Q plots, box plot, histogram graphs, and Kolmogorov-Smirnov and Shapiro-Wilk normality tests can be used [24]. The Pearson correlation analysis was used to determine the level of correlation between scales. In this analysis, $p \leq 0.05$ was accepted as the level of significance. "Although this value shows that there are significant differences between the groups, it may not be a definite value" [25]. Therefore, prior to determining the statistical methods to use in analyzing the data in this study, graphs, skewness-kurtosis values, and normality tests were evaluated.

For the data to be considered normally distributed, the skewness-kurtosis values should be between (-1) and $(+1)$, and the p values of the Kolmogorov-Smirnov and Shapiro-Wilk normality tests should be greater than 0.05 ($p > 0.05$). Likewise, Levene's test value ($p > 0.05$) should be considered for homogeneity of variances [26]. A Levene's test value greater than 0.05 indicates a homogenous distribution [24].

3. Results

The skewness, kurtosis, mean, and standard deviation values of the scale and sub-dimensions of the Coaching Behavior Assessment Questionnaire and the Competitive Aggressiveness and Anger Scale are presented in Table 2.

Correlation coefficients were calculated in the multiple regression analysis to determine whether there was a linear relationship between the predictive variables of the CBAQ (E, GE, GEI, GC and MCTI) sub-dimensions and the predicted variables of the CAAS (AD: Anger Dimension, AGD: Aggressiveness Dimension) sub-dimensions. The results of the Pearson correlation analysis performed to determine the possible relationship between the sub-dimensions of both scales are presented in Table 3.

The results of the multiple regression analysis performed

to answer the question "Do the variables of trainer behaviors E, GE, GEI, GC and MCTI together predict athletes' anger significantly?" are presented in Tables 4 and 5. Table 4 shows the results of the Analysis of Variance (ANOVA) performed to determine if the regression model of the relationship between the predictor variables and the predicted variable was significant.

The results of the multiple regression analysis completed to answer the question "Do the E, GE, GEI, GC, and MCTI variables of coaching behavior significantly predict athletes' aggressiveness (AAG)?" are presented in Tables 6 and 7. Table 6 presents the results of the ANOVA completed to determine whether the regression model accounted for the relationship between the predictor and predicted variables.

According to Table 2, the mean scores of the five sub-dimensions of the "Coaching Behavior Assessment Questionnaire" vary between 4.02–4.14, and the standard deviations vary between 0.88–0.99, while the mean scores of the sub-dimensions of the "Aggressiveness and Anger in Sports Scale" are 2.09 and 2.68, and the standard deviations are 0.87 and 1.03. The decrease between the mean scores and the standard deviation in both scales indicates a homogeneous structure has formed and the data are close to the mean. When the skewness and kurtosis values in Table 2 are examined, it can be said that the values calculated for the sub-dimensions of both scales range from 3 to -3, indicating a normal distribution [27]. These findings show that there is no abnormality in the distribution of the data, meaning there is a normal distribution in the scores of the scales and their sub-dimensions used in the study. In other words, the E, GE, GEI, GC and MCTI scores are assumed to be normally distributed in multiple regression.

Table 3 shows a negative relationship between the mean scores of the CBAQ and CAAS. As the correlation coefficient is -0.255, this is a weak but significant relationship. This indicates that as the CBAQ mean scores increase, the CAAS mean scores decrease. However, this is not a strong relationship. Based on the results presented in Table 3, there is a positive and moderate relationship between athlete's anger (AA) and

T A B L E 2. Skewness-Kurtosis, mean and standard deviation values of the scales/dimensions.

Variables	n	M	sd	Skewness	Kurtosis
CBAQ	748	3.99	0.73	−0.471	−0.907
CAAS	748	2.38	0.86	0.306	−0.331
CBAQ Encouragement dimension	748	4.02	0.88	−0.527	−0.689
CBAQ General Encouragement dimension	748	4.14	0.92	−0.883	0.197
CBAQ General Encouragement Instruction	748	4.11	0.91	−0.806	0.063
CBAQ General Communication dimension	748	4.07	0.92	−0.826	−0.137
CBAQ Mistake-Contingent Tech. Inst.	748	4.06	0.99	−0.886	0.083
CAAS Anger Dimension	748	2.09	0.87	0.797	0.485
CAAS Aggressiveness Dimension	748	2.38	1.03	0.070	−0.944

CBAQ: Coaching Behavior Assessment Questionnaire; CAAS: Competitive Aggressiveness and Anger Scale; M: Mean; sd: Standard Deviation.

TABLE 3. Correlation analysis of the mean scores of CBAQ and CAAS.

Scales/Sub-Dimensions	1	1.a	1.b	1.c	1.d	1.e	2	2.a	2.b
1.CBAQ	1.000								
1.a-E	0.894**	1.000							
1.b-GE	0.869**	0.758**	1.000						
1.c-GET	0.814**	0.712**	0.674**	1.000					
1.d-GC	0.849**	0.691**	0.661**	0.675**	1.000				
1.e-MCTI	0.827**	0.670**	0.701**	0.637**	0.696**	1.000			
2.CAAS	−0.255**	−0.185**	−0.262**	−0.153**	−0.227**	−0.223**	1.000		
2.a-Anger	−0.279**	−0.223**	−0.276**	−0.185**	−0.247**	−0.224**	0.887**	1.000	
2.b-Aggressiveness	−0.191**	−0.122**	−0.205**	−0.100**	−0.172**	−0.185**	0.922**	0.640**	1.000

E: Encouragement; GE: General Encouragement; GEI: General Encouragement Instruction; GC: General Communication; MCTI: Mistake-Contingent Technical Instruction; CBAQ: Coaching Behavior Assessment Questionnaire; CAAS: Competitive Aggressiveness and Anger Scale.

TABLE 4. The results of the ANOVA regarding the prediction of the anger in sports dimension of the CBAA according to the CAAS dimensions of encouragement, general encouragement, general encouragement instruction, general communication, and mistake-contingent technical instruction.

Model	Sum of Squares	df	Mean Square	f	p
Regression	48.390	5	9.678		
Residual	518.160	742	0.698	13.859	$p < 0.001^a$
Total	566.550	747			

^{a}*Predictor variables: The E, GE, GEI, GC and MCTI dimensions of CBAQ.*

TABLE 5. Multiple regression analysis results to predict the anger dimension of the CAAS according to the encouragement, general encouragement instruction, general communication, and mistake-contingent technical instruction dimensions of the CBAQ.

Variable	B	Standard Error$_B$	Standardized (β)	t	p
Fixed	3.264	0.159	-	20.486	$p < 0.001$
E dimension	0.005	0.061	0.005	0.075	0.94
GE dimension	−0.207	0.057	−0.220	−3.663	$p < 0.001$
GEI dimension	0.060	0.053	0.063	1.145	0.25
GC dimension	−0.125	0.053	−0.133	−2.365	0.01
MCTI dimension	−0.018	0.049	−0.020	−0.365	0.71

$R = 0.292$, $R^2 = 0.085$, $F_{(5,742)} = 13.859$, $p < 0.001$

E: Encouragement; GE: General Encouragement; GEI: General Encouragement Instruction; GC: General Communication; MCTI: Mistake-Contingent Technical Instruction; B: the Unstandardized Beta; Standard Error$_B$: Standard error for the unstandardized beta (SE B).

(AAG) ($r = 0.640, p < 0.01$), a negative and weak relationship between AA and E ($r = −0.223, p < 0.01$), a negative and weak relationship between AA and GE ($r = −0.276, p < 0.01$), a negative and weak relationship between AA and GEI ($r = −0.185, p < 0.01$), a negative and weak relationship with CG ($r = −0.247, p < 0.01$), and a negative and weak relationship with MCTI ($r = −0.224, p < 0.01$). Similarly, the athlete's aggressiveness (AAG), which is another dimension of coaching behavior, has a negative and weak relationship with E ($r = −0.122, p < 0.01$), a negative and weak relationship with GE ($r = −0.205, p < 0.01$), a negative and weak relationship with GEI ($r = −0.100, p < 0.01$), a negative and weak relationship with GC ($r = −0.172, p < 0.01$), and a negative and weak relationship with MCTI ($r = −0.185, p < 0.01$). In terms of the correlations between the dimensions of the coaching behavior scale, there is a positive and strong relationship between E and GE ($r = 0.758, p < 0.01$), a positive and strong relationship between E and GEI ($r = 0.712, p < 0.01$), a positive and

TABLE 6. ANOVA results for predicting the athlete's aggressiveness (AAG) dimension of CAAS according to the CBAQ dimensions of encouragement, general encouragement, general encouragement instruction, general communication, and mistake-contingent technical instruction.

Model	Sum of Squares	df	Mean Square	F	p
Regression	46.115	5	9.223	9.010	$p < 0.001^a$
Residual	759.537	742	1.024		
Total	805.652	747			

^{a} *Predictor variables: The E, GE, GEI, GC, and MCTI dimensions of CBAQ.*

TABLE 7. Multiple regression analysis results for the prediction of athletes' aggressiveness dimension of CAAS according to the encouragement, general encouragement, general encouragement instruction, general communication, and mistake-contingent technical instruction dimensions of CBAQ.

Variable	B	Standard Error$_B$	Standardized (β)	t	p
Fixed	3.593	0.193	-	18.626	$p < 0.001$
E dimension	0.127	0.074	0.108	1.723	0.08
GE dimension	−0.247	0.069	−0.220	−3.607	$p < 0.001$
GEI dimension	0.118	0.064	0.104	1.846	0.06
GC dimension	−0.116	0.064	−0.103	−1.807	0.07
MCTI dimension	−0.101	0.059	−0.097	−1.717	0.08

$R = 0.239$, $R^2 = 0.057$, $F_{(5,742)} = 9.010$, $p < 0.001$

E: Encouragement; GE: General Encouragement; GEI: General Encouragement Instruction; GC: General Communication; MCTI: Mistake-Contingent Technical Instruction; B: the Unstandardized Beta; Standard Error$_B$: Standard error for the unstandardized beta (SE B).

moderate relationship between E and GC ($r = 0.691, p < 0.01$), and a positive and moderate relationship between E and MCTI ($r = 0.670, p < 0.01$). It was also determined that there is a positive and moderate relationship between GE and GEI ($r = 0.674, p < 0.01$), a positive and moderate relationship between GE and GC ($r = 0.661, p < 0.01$), and a positive and strong relationship between GE and MCTI ($r = 0.701, p < 0.01$). Additionally, there was a positive and moderate relationship between the GEI variable and GC ($r = 0.675, p < 0.01$) and a positive and moderate relationship between GEI and MCTI ($r = 0.637, p < 0.01$). Lastly, there is a positive and moderate relationship between GC and MCTI ($r = 0.696, p < 0.01$).

According to the ANOVA results presented in Table 4, the multiple regression model for predicting the athlete's anger dimension of the CAAS according to the encouragement, general encouragement, general encouragement instruction, general communication, and mistakecontingent technical instruction dimensions of the CBAQ is statistically significant ($F (5, 42) = 13.859$).

Based on the results presented in Table 5, the variables E, GE, GEI, GC and MCTI together show a weak but significant relationship with the athletes' anger (AA) dimension in terms of trainer behaviors ($R = 0.292, R^2 = 0.085, p < 0.01$). The five variables together explain approximately 9% of the total variance in athletes' anger (AA). According to the standardized regression coefficient (β), the relative significance of the predictor variables on job satisfaction is GE, GC, GEI, MCTI

and E, respectively. When the t-test results regarding the significance of the regression coefficients are examined, it is found that only the General Encouragement (GE) variable is a significant predictor of athletes' anger ($t (747) = 3.66, p < 0.01$). The E, GE, GEI, GC and MCTI do not have any significant effect. The regression equation for the prediction of athletes' anger according to the results of the regression analysis is given below.

Athlete's Anger (AA) = [3.264 + 0.005 Encouragement (E) + 0.060 General Encouragement Instruction (GEI)] − [0.207 General Encouragement (GE) + 0.125 General Communication (GC) + 0.018 Mistake-Contingent Technical Instruction (MCTI)].

According to the ANOVA results presented in Table 6, the multiple regression model for the prediction of AAG according to E, GE, GEI, GC and MCTI is statistically significant ($F (5, 742) = 9.010$).

According to the results shown in Table 7, the variables E, GE, GEI, GC and MCTI together show a low and significant relationship with athletes' aggressiveness (AAG) ($R = 0.239, R^2 = 0.057, p < 0.01$). These five variables together explain approximately 6% of the total variance in athletes' aggressiveness (AAG). The relative order of significance of the predictor variables on job satisfaction according to the standardized regression coefficient (β) is GE, E, GEI, GC and MCTI, respectively. The t-test results regarding the significance of the regression coefficients indicate that only the

general encouragement (GE) variable is a significant predictor of athletes' aggressiveness (SD) t (747) = 3.61, $p < 0.01$. On the other hand, it is seen that E, GEI, GC and MCTI do not have a significant effect on athletes' aggressiveness (AAG). The regression equation for the prediction of athletes' aggressiveness (AAG) based on the results of the regression analysis is given below.

Athlete's Aggressiveness (AAG) = [3.593 + 0.127 Encouragement (E) + 0.118 General Encouragement Instruction (GEI)] − [0.247 General Encouragement (GE) + 0.116 General Communication (GC) + 0.101 Mistake-Contingent Technical Instruction (MCTI)].

According to these results, the hypothesis that only GE is a significant predictor of AA and AAG (H2) in the established model can be accepted. The other hypotheses that E is a significant predictor of AA and AAG (H1), that GEI is a significant predictor of AA and AAG (H3), that GC is a significant predictor of AA and AAG (H4), and that MCTI is a significant predictor of AA and AAG (H5) are refuted.

4. Discussion

This study was conducted to examine the effects of perceived coaching behaviors on the anger and aggressiveness levels of male athletes. It has been determined in the literature that coach behaviors perceived by athletes have a multidimensional effect on athletes. It has been observed that it especially affects the psychological state of athletes such as success motivation, anxiety, stress and fear of failure. In recent years, as the level of competition has increased as a result of the increase in material and spiritual gains achieved in the sports environment, it has been observed that aggressive and angry behaviors among high-level athletes, coaches and fans have increased. Among these stakeholders, the causes of anger and aggressive behavior, especially in athletes, are the subject of scientific studies [1, 7–9]. In this regard, the effect of coach behavior on athletes' feelings of anger and aggression was discussed in detail in this research.

In this study, the results of this study demonstrated that the CBAQ scale generally reflects moderate encouragement behaviors with a mean value of 3.99, while the CAAS scale reflects a low level of aggressiveness and anger with a mean value of 2.38 in male athletes. Correlation analysis results show that there are relationships at different levels between CBAQ and CAAS dimensions. These results show that coaching behaviors are effective in affecting the emotional reactions of athletes and show different relationships according to sub-dimensions. In the literature Kassim and Boardley (2018) found that perceived coach behavior is a factor affecting the motivation, communication, confidence, character and moral status of athletes [28]. In the study, ANOVA results show the degree to which CBAQ dimensions predict CAAS dimensions. The results of this analysis show that the predictor variables (CBAQ dimensions) have a significant effect on the CAAS dimensions. In the study, ANOVA results show the degree to which CBAQ dimensions predict CAAS dimensions. The results of this analysis show that the predictor variables (CBAQ dimensions) have a significant effect on the CAAS dimensions. These results show that coaching behaviors affect male

athletes' anger and aggression levels. The results of multiple regression analysis and the degree to which CBAQ dimensions predicted CAAS dimensions were examined in more detail. Analysis results reveal that encouragement and general encouragement dimensions significantly predict CAAS dimensions. These results revealed that coaches can influence athletes' anger and aggression levels by encouraging them and displaying positive incentive behaviors. In the literature, it is stated that positive and supportive coach behaviors are effective in reducing the angry and aggressive behaviors of athletes, while oppressive and authoritarian coach behaviors have the opposite effect [8, 29]. In this regard, in light of this information, which is compatible with our research findings, coaches should adopt a more moderate and constructive approach to manage athletes' anger and aggression.

Coaches have a great influence on athletes. Their guidance and leadership skills can directly affect the performance of athletes. Factors such as providing motivation, developing technical skills, and creating team unity are just some of the areas where coaches are effective. Moreover, the behaviors and attitudes of coaches can affect the morale, motivation and general psychological state of the athletes. Therefore, the subjective influence of coaches on athletes can significantly affect their success and performance [30]. A study by Mouratidou [31], on the other hand, found the moral competence of individual athletes to be higher than that of team athletes. These results show that individual athletes attach more importance to moral values and have a higher level of moral competence. A study by Karayılmaz [32] examined the psychosocial factors affecting the aggression tendencies of amateur male football players. While the results of the study showed that various factors affect the aggressiveness levels of male football players, Tutkun *et al.* [33] concluded that the passive aggressiveness scores of athletes in individual sports are statistically significantly higher than those who engage in team sports. In terms of the hypotheses tested in our research, the general encouraging behaviors of coaches show that they have a positive effect on the anger and aggression behaviors of male athletes. In this regard, it will be beneficial for sports success if coaches adopt more encouraging attitudes before competitions with high levels of competition and stress.

The results of the correlation analysis revealed relationships between coaching behaviors and levels of anger and aggression. A certain level of correlation was observed between the dimensions of the CBAQ (Coaching Behavior Assessment Questionnaire) and the CAAS (Competitive Aggressiveness and Anger Scale) (Table 3). These findings show that coaching behaviors can influence the anger and aggressiveness levels of male athletes. Multiple regression analysis results reveal the role of coaching behaviors in predicting the anger and aggression levels of male athletes. In the analyses performed based on the dimensions of the CBAQ, it was determined that certain dimensions affected the anger and aggressiveness levels of the athletes. These results show that the positive and supportive behaviors of coaches can play an important role in reducing the anger and aggression levels of male athletes. In the literature, it is seen that elite and high-level male athletes are perceived as superhumans, as mentioned before, but on the contrary, male athletes are affected by their environment,

especially the attitudes and behaviors of their coaches [1, 8]. Our research results also show that male athletes are psychologically affected by the coach's behavior they perceive.

The results of this study highlight the impact of coaches on the anger and aggression levels of athletes. It is important to emphasize strategies for coping with anger and aggression in the training and development of coaches. Positive, supportive and communicative coaching behaviors can increase the emotional well-being of athletes and positively affect their sporting performance. This study had some limitations, as in scientific research. The research sample was carried out with male athletes from 14 provinces. Subgroup analyzes such as age, gender and sports branch were not performed. Athletes under the age of 18 are excluded from the scope. In addition, characteristics such as the gender, age and experience of the athletes' coaches are also effective factors on the results. More detailed results can be presented in future studies, taking into account the limitations of our research.

5. Conclusions

In conclusion, the findings of this study can help coaches understand the emotional needs of athletes and provide support for them. At the same time, a positive sports environment can be created by protecting the emotional well-being of the male athletes, and their performance and personal development can be promoted. Sports clubs and federations should support the training and development of coaches. Training programs should aim to strengthen coaches' emotional management skills, communication skills, and leadership abilities. However, it should not be forgotten that the sports environment is not an environment that can be completely free from stress, anxiety, anger and aggression. Scientific studies also show that controllable levels of stress, anxiety, anger and aggression increase motivation, affect body hormones and increase physical performance. In this regard, coaches need to analyze the current emotional states of the athletes and decide whether to adopt encouraging or provocative attitudes. The coach cannot be expected to act like a sedative drug.

The following recommendations were made based on the results of this study:

1- Training programs for coaches should aim to improve their emotional intelligence and communication skills. Coaches should be trained in emotional management strategies and stress coping techniques and transfer these skills to athletes.

2- Coaches should set an example by supporting athletes and creating an environment of trust. Focusing on the personal development of athletes, they should consider individual differences and provide them with appropriate support.

3- Coaches should actively communicate with athletes and try to understand their emotional needs. They should show empathy and provide open communication channels to protect athletes' emotional well-being and increase their motivation.

4- Sports clubs and federations should support the training and development of coaches. Training programs should aim to strengthen the leadership skills, communication skills, and psychological counseling competencies of coaches.

5- Coaches should emphasize sport's ethical values and support the spirit of fair play.

6- It will be beneficial for the athletes if the coach stays away from attitudes that will put the athletes under excessive pressure and statements that will increase their aggression.

It will be beneficial for athletes to pay attention to the behavioral perceptions of their athletes during training and competitions, and to stay away from attitudes that will put their athletes under excessive pressure based on scores or expectations and statements that will increase their aggression.

AVAILABILITY OF DATA AND MATERIALS

The data presented in this study are available on request from the corresponding author.

AUTHOR CONTRIBUTIONS

AK and TH—conceptualization. GÖ—methodology. TH and GÖ—software; investigation. AK—validation; resources; supervision. TH—formal analysis; data curation; visualization. TH, AK and GÖ—writing-original draft preparation. AK and GÖ—writing-review and editing. All authors read and approved the final manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study was conducted in accordance with the Declaration of Helsinki, and approved by the Scientific Research Ethics Committee of Kafkas University Social and Human Sciences Publication Ethics Committee (protocol code 2023/47 and date 05 July 2023). Consent forms were obtained from the participants.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

[1] Souter G, Lewis R, Serrant L. Men, mental health and elite sport: a narrative review. Sports Medicine-Open. 2018; 4: 57.

[2] Sagar SS, Jowett S. Communicative acts in coach–athlete interactions: when losing competitions and when making mistakes in training. Western Journal of Communication. 2012; 76: 148–174.

[3] Jaakkola T, Ntoumanis N, Liukkonen J. Motivational climate, goal orientation, perceived sport ability, and enjoyment within. Scand Scandinavian Journal of Medicine & Science in Sports. 2016; 26: 109–115.

[4] Seden Avcı K, Çepikkurt F, Kızıldağ Kale E. Examination of the relationship between coach-athlete communication levels and perceived motivational climate for volleyball players. Universal Journal of Educational Research. 2018; 6: 346–353.

[5] LeUnes A. Modelling the complexity of the coaching process: a commentary. International Journal of Sports Science & Coaching. 2007; 2: 403–426.

[6] Jowett S, Poczwardowski A. Understanding the coach-athlete relationship. In Jowette S, Lavallee D (eds.) Social psychology in sport (pp. 3–14). 1st edn. Human Kinetics: Champaign. 2007.

[7] Albrecht R. Positive cooaching, motivation and communication. research study for the study of young sports [doctoral thesis]. Michigan State University. 2003.

[8] Cho S, Choi H, Kim Y. The relationship between perceived coaching behaviors, competitive trait anxiety, and athlete burnout: a cross-sectional study. International Journal of Environmental Research and Public Health. 2019; 16: 1424.

[9] Danilewicz C. Violence in youth sport: potential preventative measures and solutions [doctoral thesis]. University of Nevada, Las Vegas. 2012.

[10] Kavussanu M, Stanger N, Boardley ID. The prosocial and antisocial behaviour in sport scale: further evidence for construct validity and reliability. Journal of Sports Sciences. 2013; 31: 1208–1221.

[11] Maxwell JP. Anger rumination: an antecedent of athlete aggression? Psychology of Sport and Exercise. 2004; 5: 279–289.

[12] İkizler C, Karagözoğlu C. Psychology of success in sports. 3rd edn. Alfa Basım Yayım Dağıtım: İstanbul. 1997.

[13] Fields S, Collins CL, Comstock RD. Violence in youth sports: hazing, brawling and foul play. British Journal of Sports Medicine. 2010; 44: 32–37.

[14] Gönen M. The effect of coach-athlete relationship on athletes' state anxiety, anger and subjective well-being levels: taekwondo and protective football example [doctoral thesis]. Ankara: Gazi University Institute of Health Sciences. 2019.

[15] Sevim Y. Training science [doctoral thesis]. Ankara: Nobel Yayın Dağıtım. 2002.

[16] Dosil J. The sport psychologist's handbook: a guide for sport-specific performance enhancement. 1st edn. John Wiley Press: San Francisco. 2005.

[17] Karasar N. Scientific research method. 26th edn. Baski Nobel Akademik Yayincilik: Ankara. 2012.

[18] Filiz B, Demirhan G. Adaptation of the coaching behavior assessment questionnaire into the Turkish culture. Spormetre The Journal Of Physical Education And Sport Sciences. 2017; 15: 1–10.

[19] Gürbüz B, Kural S, Özbek O. Competitive aggressiveness and anger scale: validity and reliability study. Sportive Perspective: Journal of Sports and Education Sciences. 2019; 6: 206–217.

[20] Coughan J, Mullen MR. Structural equation modelling: guidelines for determining model fit. Electronic Journal of Business Research Methods. 2008; 6: 53–60.

[21] Korucuk M. A distance education attitude scale: a validity and reliability study. National Education Journal. 2023; 52: 1133–1156.

[22] Harrington D. Confirmatory factor analysis. 1st edn. Oxford University Press: UK. 2009.

[23] Büyüköztürk Ş. Manual of data analysis for social sciences. 8th edn. Pegem Akademi Yayınları: Ankara. 2010.

[24] Korucuk N. Consumer purchasing behavior on green products in the context of green marketing [master's thesis]. Kars: Kafkas University. 2019.

[25] Hung HMJ, O'neıl RT, Bauer P, Kohne K. The behavior of the *p*-value when the alternative hypothesis is true. Biometrics. 1997; 53: 11–22.

[26] Pallant J. SPSS survival manual: a step by step guide to data analysis using IBM SPSS. 7th edn. Anı Yayıncılık: Ankara. 2020.

[27] Tabachnick BG, Fidell LS. Using multivariate statistics. 6th edn. Allyn and Bacon: Boston. 2013.

[28] Kassim AFBM, Boardley I. Athletes' perceptions of coaching effectiveness and athlete-level outcomes in team and individual sports: a cross-cultural investigation. The Sport Psychologist. 2018; 32: 189–198.

[29] Brinton CS, Hill BJ, Ward PJ. Authoritative coach: building youth through sport. Journal of Park and Recreation Administration. 2017; 35: 51–65.

[30] Kalkan T, Sarı İ. Coaching behaviors: theoretical approaches, coaches' effect on athletes and recommendations. Journal of Exercise and Sport Sciences Research. 2021; 1: 38–49.

[31] Mouratidou K. Determinants of athletes' moral competence: the role of demographic characteristics and sport-related perceptions. Sport in Society. 2017; 20: 802–815.

[32] Karayılmaz A. Psychological and social reasons that make the amateur players of show agressive behaviours (Zonguldak Super Amateur League Sample) [master's thesis]. Sakarya: Sakarya University Insitute of Social Sciences. 2006.

[33] Tutkun E, Güner BÇ, Ağaoğlu SA, Soslu R. Evaluation of aggression levels of individuals participating in team and individual sports. Ondokuz Mayıs University Journal of Sports and Performance Researches. 2010; 1: 23–29.