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The effect of birth month and seasons on athlete aggression

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ABSTRACT

In this study, there were 3,335 football players from four continents from around the world formed a study universe in which the causes of athlete aggression. Also, the factors affecting athlete aggression were investigated with different variables. It has been observed that the levels of aggression of footballers are different according to the positions they play. As the number of matches that players participate in increases, aggression levels increase among the important results. A correlation was found between the ages of the footballers and their levels of aggression, but it was concluded that athletes born in December were more aggressive. Those born in January and those born in winter have shown minimal levels of aggression compared to other footballers. It has been interpreted as having higher levels of aggression, with football players born in December and winter receiving more penalties than other participants. In the continents where football players were born, the highest number of athlete aggression was observed in the participating football players from the continent of Europe, while the aggression of athletes born in the continent of Africa and Asia was found to be lower. Taking into account the data obtained from the research, it was concluded that the athlete's position, age, month, and season of birth and continent of birth are factors affecting athlete aggression.

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1. INTRODUCTION

The concept of aggression has started to be seen in many areas due to increasing social relations, technological developments, and means of communication. An expanding state of aggression has emerged from education to health, from traffic to shopping, from sports to cyberspace [1]. Moreover, results have been obtained that the effects of global climate change increase aggression and aggressive behavior [2]. It is, therefore, necessary to carry out studies to help prevent aggression, causes of aggression, and aggression in all areas. This important action areas constitute two of the education and sports.

Aggression is an unwanted behavior that causes mental and physical harm and destruction caused by sudden reactions. While there are many definitions of aggression, the general definition of aggression is generally defined as behaviors intended for an individual to harm another individual. Aggression occurs in situations such as physical aggression, verbal aggression, anger, and hostility. Often individuals suffer physical, mental and cognitive harm as a result of aggression [3]. In other words, aggression can be defined as patterns of behavior that damage the object, property, psychology, and all the elements that connect the person to live [4].

Aggression and violent behavior, whether done to humans or non-human beings, is unacceptable to both. Often the concepts of aggression and violence are used interchangeably, but the two concepts are different [5]. However, aggressive behavior may differ from behaviors that involve a high degree of violence due to some characteristics [6]. Violence is uniquely human behavior. Violence, which comes across as a subtype of aggression aimed at harming people, involves aggression in a way, but not every attack is violence [7].

The literature on the source of aggression and aggression includes studies involving different subject areas [1], [3], [6]. There can be many underlying causes of aggression. These may be feelings, thoughts, individual tendencies, personality elements, deficiencies in communication skills, social or family structure, the year or season of an individual's birth, beliefs, or geographical environments in which he or she resides. Some of these effects have been studied in research on the effect of aggression, while others have not been the subject of research [8]–[10]. However, it is observed that violence and trained instrumental and observant learning aggression theories that occur as a natural response to anger stemming from human instincts as regards the basis of aggression are attempted to be explained in the literature with the general aggressiveness model [5]. It is also stated that the source of aggression is social causes other than these [11].

Aggression in athletes and sports usually occurs in situations that lead to failure or prevent success. Aggression, which takes place with the help of a physical, verbal, or language that the athlete can understand among them, can lead to situations such as anger, hostility, and fear. In other words, aggression in sports can be defined as the unwanted behavior of athletes who intend to harm someone due to psychological, biological or environmental factors that occur at the time of competition [12], [13].

Education should provide the individual with important skills in controlling unwanted behavior while improving the individual's knowledge, skills, and emotions [14]. Aggression, which is one of the behaviors that the individual needs to keep under control, can be kept under control by gaining the individual's self-regulation skills. Some research results have shown that as an individual's level of education falls, the level of arrogance and aggression increases [15]. Providing a good education to the individual with the help of a qualified education and training activity will help him gain a solid personality. Some studies have found that violence is an important factor in determining personality or predicting behaviors [5]. Therefore, quality education to be given to the individual will help the individual to control aggression.

There is a lot of research on aggression and its types in the field of Education. Different types and causes of aggression are included in these studies [16]. It has been found that these reasons leading to aggression at the educational level have consequences such as dropping out of school, failing to achieve academically desired success, being charged, and punished [17]. Some educational programs implemented at school and grade levels have been shown to control levels of aggression and make school environments more desirable [18].

Aggression is a negative condition seen throughout the individual's developmental periods. But there is a judgment that aggression is often seen more often among adolescents and developing individuals [19]. Aggression also has negative effects on the individual who makes the aggression and is exposed to aggression. The individual shows aggression during the training process. Male student aggression was found to be more difficult at all levels and periods of study [8]. Although this effect is also seen in athlete aggression, it is considered worth investigating in depth. Since the sport is known to shift or decrease aggressive behaviors [15], situations that cause athlete aggression can be identified [20], [21].

2. RESEARCH METHOD

This research aims to reveal the relationship between the age of the athletes, the seasons they were born, the months and continents, the position they played and the number of matches they played, and the red and yellow card penalties they received. A relational model was used in this research by the purpose of the study. The research carried out in the context of the specified objectives is a relational survey model. In the relational survey model, one determines the existence, degree, of co-variation between multiple variables [22], [23].

Within the scope of the research, there were 3,335 athletes determined using sampling methods were reached from the Transfermarkt official page and from the international football players who received penalties from the official sites of each national federation. After that, research analyses were made based on the data of 3,239 athletes. The distribution of the demographic characteristics of the athletes who make up the study group is to be seen in Table 1.

Table 1. Frequency and percentage distributions of athletes' demographics

	Categories	F	%
Season of birth	Winter	933	28.8
	Spring	859	26.5
	Summer	764	23.6
	Autumn	683	21.1
Continent of birth	Europe	1,123	34.7
	America	785	24.2
	Asia	606	18.7
	Africa	725	22.4
Positions	Defense	1,234	38.1
	Midfielders	1,392	43.0
	Striker	613	18.9
Total		3,239	100.0

Data collected from athletes in the scope of the research was processed into the SPSS-25 package program. When the distribution of the processed data was examined, 96 data showing extreme values were removed from the research, and analyses were continued on the remaining data. It is observed that the Skewness and Kurtosis values of the yellow card and red card sight numbers of athletes vary between -1 and +1. Normality and Levene homogeneity tests were conducted to decide whether the data distribution was parametric or nonparametric before the differences and relationship analyses were looked at with the athletes' data. The Kolmogorov-Smirnov Z test, which is used to test the normality conjecture, is a non-parametric method and compares the sample distribution with the unit normal distribution and gives information about whether the sample distribution is normal or not based on hypothesis testing [24].

In this context, in testing the normality assumption, it is necessary to take into account the statistics that directly reflect the data itself, such as Skewness and Kurtosis, apart from taking into account the interpretations based on the Kolmogorov-Smirnov statistic. Yellow card (.132 and .491) and red card (.604 and .466) shows that the Skewness and Kurtosis values studied for testing the normality assumption vary between -1 and +1. As a measure of the normality conjecture, it is acceptable to have the Skewness and Kurtosis coefficients in the range -1 to +1 [25]. The homogeneity of test variances, i.e. the distribution of Levene Homogeneity test, was examined and it was concluded that the test variances of score distribution according to Levene statistic $p>.05$ were uniformly distributed, i.e. the homogeneity assumption was provided. It is observed that the score distribution for the scales is continuous data and is at an equally spaced scale level. Two samples being independent of each other, the encounter of the range to be measured, or the ratio dependent on the scale level variable. Also satisfies the parametric test assumptions of normality and homogeneity assumptions providing [26].

Within the scope of the research, the significant difference between the number of yellow cards and the number of red cards according to the month of birth, season, continent, and location of the games played by the athletes was examined by one-way analysis of variance (One-way ANOVA). In one-way variance analysis, Tukey test was selected from multiple comparison tests to compare groups in case of significant differences in the context of variables with more than two groups [27]. The relationship between the number of yellow cards seen by the athletes and the number of red cards, the relationship between the age levels of the athletes and the number of yellow cards and red cards, and the relationship between the number of matches played by the athletes and the number of yellow cards and red cards were examined by Pearson Correlation Analysis. These criteria are defined as 0.20=very weak relation; 0.20 to 0.40=weak relation; 0.40 to 0.70=moderate relation; 0.70 to 0.90=high relation; 0.90 and above=very high relation [28].

3. RESULTS AND DISCUSSION

Is there a relationship between yellow card and red card penalties according to the position played by international athletes? In Table 2, the relation between the number of yellow card and the number of red cards penalties according to the position they play is examined. Yellow card numbers seen by defensive athletes and red card numbers ($r=0.61$, $p=.000<.05$) are shown to have a moderate positive relationship. The yellow card numbers seen by midfielders and the red card numbers ($r=0.63$, $p=.000<.05$) are shown to have a moderate positive relationship. The yellow card numbers seen by the striker athletes and the red card numbers ($r=0.66$, $p=.000<.05$) are shown to have a moderate positive relationship. The highest relation between yellow card numbers and red card numbers seen by athletes is seen in the athletes playing in the striker position and the lowest relationship is seen in the athletes playing in the defensive position This study found that some variables that affect athlete aggression However, the results obtained in this study were obtained with different variables such as the month of birth, year, season, the continent of birth, position of

player played, which were not used before in other studies. For this reason, it is seen that the results of this research offer new information to the relevant field paper. In this study, it was determined that the levels of aggression of the players were different according to the positions they played. It was concluded that the yellow and red card penalty rates of the players playing in the striker position were considerably higher than those playing in the other positions. Also, it was concluded that the relationship between defensive players receiving a red or yellow card was lower than those playing in other positions. Moreover, it seems possible to say that players who play in a striker's position have higher levels of aggression and that the position the player plays in is an element that affects their aggression [6], [9], [29], [30].

Table 2. The relationship between yellow card and red card penalties according to the position played by international athletes

The positions			Red card
Defense	Yellow card	r	0.61
		p	.000*
		N	1,234
Midfielders	Yellow card	r	0.63
		p	.000*
		N	1,392
Strikers	Yellow card	r	0,66
		p	.000*
		N	613

*p<.05

Is there a relationship between the total number of matches played by athletes and red card penalties? When Table 3 is examined, it is observed that there is a moderate positive relationship between the total number of matches played by the athletes and the number of red card penalties (r=0.47, *p=.000<.05).

Table 3. The relationship between the total number of matches played by the athletes and the red card penalties

		Red card
Total number of matches	r	0.47
	p	.000*
	N	3,239

Is there a relationship between the total number of matches played by the athletes and the yellow card penalties? According to Table 4, there is a positive high level and significant relationship between the total number of matches played by the athletes and the yellow card penalties (r=0.77, *p=.000<.05).

Table 4. The relationship between the total number of matches played by the athletes and the yellow cards penalties

		Yellow card
Total number of matches	r	0.77
	p	.000*
	N	3,239

Is there a relationship between the age levels of athletes and the red card penalties? According to Table 5, the age levels of the athletes and the number of red card penalties are significantly lower in positive terms (r=0.34, *p=.000<.05).

Table 5. The relationship between athletes' age levels and their red card penalties

		Red card
Athletes' age levels	r	0.34
	p	.000*
	N	3,239

Is there a relationship between the age levels of athletes and the yellow card penalties? When Table 6 is examined, it is observed that there is a moderate positive relationship between the age levels of the athletes and the number of yellow card penalties (r=0.51, *p=.000<.05).

Table 6. The relationship between age levels of athletes and the yellow card penalties

		Yellow card
Athletes' age levels	r	0.51
	p	.000*
	N	3239

Is there a significant difference between red card penalties according to the month in which athletes are born? Table 7 shows that there are no significant differences between the red card penalties according to the month they were born ($F_{(11-3227)}$=1.53, p=.115>.05). Although there are no significant differences, on average the highest month for which a red card is received was in players born in December (1.32). It has been found that the average of the lowest card penalties seen by footballers born in January (0.93).

Table 7. The difference between red card penalties according to the month in which athletes are born

Red card	Total of squares	Sd	Average of squares	F	p
Intergroup	36.454	11	3.314	1.53	.115
Intragroup	7007.774	3227	2.172		
Total	7044.228	3238			

*p<.05

Is there a significant difference between the yellow card penalties according to the month in which the athletes were born? According to Table 8, there is a significant difference between the yellow card penalties according to the month they were born ($F_{(11-3227)}$=2.40, p=.006<.05). This is a significant difference for the number of athletes born in the month of December (23.07) seeing an average of a yellow card, a yellow card for the number of athletes born in the month of January (17.18) stems from the fact that it is seeing higher than average [31], [32].

Table 8. The difference between the yellow card penalties according to the month in which the athletes were born

Yellow card	Total of squares	Sd	Average of squares	F	p	Post hoc (Tukey)
Intergroup	7569.66	11	688.15	2.40	.006	December>January
Intragroup	924818.68	3227	286.59			
Total	932388.33	3238				

*p<.05

Is there a significant difference between the red card penalties according to the season in which the athletes were born? According to Table 9, there is no significant difference between the yellow card penalties according to the season in which they were born ($F_{(3-3235)}$=1,93, p=,123>,05). Although there are no significant differences, the average number of yellow card sightings is the highest in the summer and the athletes with the lowest yellow card sight count average are the athletes born in the winter.

Table 9. The difference between the red card penalties according to the season in which the athletes were born

Red card	Total of squares	Sd	Average of squares	F	p
Intergroup	1665.79	3	555.26	1.93	.123
Intragroup	930722.54	3235	287.70		
Total	932388.33	3238			

*p<.05

Is there a significant difference between the red card penalties according to the season in which the athletes were born? Table 10 shows that there are no significant differences between the red card penalties

according to the season in which they were born ($F_{(3-3235)}$=1.87, p=.132>.05). Although there are no significant differences, the average number of red card sightings is the highest in the fall season and the athletes with the lowest red card sight count average are the athletes born in the winter season.

Table 10. The difference between the red card penalties according to the season in which the athletes were born

Red card	Total of squares	Sd	Average of squares	F	p
Intergroup	12.20	3	4.07	1.87	.132
Intragroup	7032.03	3235	2.17		
Total	7044.23	3238			

*p<.05

Is there a significant difference between the yellow card penalties according to the continent in which the athletes were born? According to Table 11, there is a significant difference between the yellow card penalties according to the continent in which they were born ($F_{(3-3235)}$=193.62, p=.000<.05). This significant difference is because the yellow card number averages seen by athletes born in Europe (27.86) are higher than the yellow card number averages seen by athletes born in America (20.37) the yellow card number averages seen by athletes born in Asia (11.85) and the yellow card number averages seen by athletes born in Africa (13.32). Also, the yellow card number averages seen by athletes born in America (20.37) are higher than the yellow card number averages seen by athletes born in Asia (11.85) and the yellow card number averages seen by athletes born in Africa (13.32).

Table 11. The difference between the yellow card penalties according to the continent in which the athletes were born

Yellow card	Total of squares	Sd	Average of squares	F	p	Post hoc (Tukey)
Intergroup	141929.53	3	47309.84	193.62	.000*	
Intragroup	790458.80	3235	244.35			1>2, 1>3, 1>4, 2>3, 2>4
Total	932388.33	3238				

*p<.05 Categories: Europe=1; America=2; Asia= 3; Africa=4

Is there a significant difference between the red card penalties according to the continent in which the athletes were born? According to the data in Table 12, there is a significant difference between the red card penalties according to the continent in which they were born ($F_{(3-3235)}$=76,68, p=.000<.05). This significant difference is because the red card number averages seen by athletes born in Europe (1.52) are higher than the red card number averages seen by athletes born in America (1.34) the red card number averages seen by athletes born in Asia (0.57) and the red card number averages seen by athletes born in Africa (0.81). Also, the average number of red cards seen by athletes born in America (1.34) is higher than the average number of red cards seen by athletes born in Asia (0.57) and the average number of red cards seen by athletes born in Africa (0.81), and the average number of red cards seen by athletes born in Africa (0.81) is higher than the average number of red cards seen by athletes born in [31], [32].

Table 12. The difference between the red card penalties according to the continent in which the athletes were born

Red card	Total of squares	Sd	Average of squares	F	p	Post hoc (Tukey)
Intergroup	467.65	3	155.89	76.68	.000*	
Intragroup	6576.57	3235	2.03			1>2, 1>3, 1>4, 2>3, 2>4, 3>4
Total	7044.23	3238				

*p<.05 Categories: Europe=1; America=2; Asia= 3; Africa=4

Is there a significant difference between the red card penalties of the athletes based on the position they play? When Table 13 is examined, it is seen that there is a significant difference between the number of red card penalties according to the position they have played ($F_{(2-3236)}$=31.15, p=.000<.05). This significant difference is because the red card number averages of the athletes playing in the defensive position (1.39) are higher than the red card number averages of the athletes playing in the midfield position (0.97) and the red card number averages of the athletes playing in the striker position (1.00).

Table 13. The difference between the red card penalties of the athletes based on the position they play

Red card	Total of squares	Sd	Average of squares	F	p	Post hoc (Tukey)
Intergroup	133.03	2	66.52	31.15	.000*	
Intragroup	6911.20	3236	2.14			1>2, 1>3
Total	7044.23	3238				

*p<.05 Categories: Defence=1; Midfielder=2; Striker=3

Is there a significant difference between the yellow card penalties of the athletes based on the position they play? When the data in Table 14 is examined, it is seen that there is a significant difference between the number of yellow card penalties according to the position they play ($F_{(2\text{-}3236)}$=25.04, p=.000<.05). This significant difference is because the yellow card number averages of the athletes playing in the defensive position (22.33) are higher than the yellow card number averages of the athletes playing in the midfield position (18.79) and the yellow card number averages of the athletes playing in the striker position (16.97). Considering the given results obtained from this research, it was concluded that the athlete's position, age, the month and season he was born in, and the continent he was born in are factors affecting the athlete's aggression. As a result, aggression has become a growing problem, spreading from family and work to sporting events, one of the components of social life. As a result, aggression has become a growing problem, spreading from family and work to sporting events, one of the components of social life [29]–[32].

Table 14. The difference between the yellow card penalties of the athletes based on the position they play

Yellow card	Total of squares	Sd	Average of squares	F	p	Post hoc (Tukey)
Intergroup	14206.97	2	7103.48	25.04	.000*	1>2, 1>3
Intragroup	918181.37	3236	283.75			
Total	932366.33	3238				

*p<.05 Categories: Defence=1; Midfielder=2; Striker=3

4. CONCLUSION

In this research, the causes of athlete aggression and the factors affecting aggression were investigated with different variables. In this context, there were 3,335 football players from around the world formed the study universe. This study, which is in the relational survey model, found that some variables that affect athlete aggression.

According to the results of the study, as the number of matches participated by football players increased, their level of aggression increased. As the number of athletes participating in the competition increased, both yellow card and red card penalty rates were determined. This was more likely on the red card. A positive correlation has been found between the ages of the football players and their levels of aggression. In other words, as the age of the athlete increases, the levels of aggression can be said to increase as punishment situations increase. This explains the impact of the athlete's calendar age on aggression. The reasons for athlete aggression were examined and the month and season variables of the participants were also examined. When the yellow card and red card penalties are examined, it is concluded that the athletes born in December are more aggressive. Those born in January and those born in winter showed minimal levels of aggression compared to other footballers. It has been interpreted as having higher levels of aggression, with football players born in December and Autumn receiving more penalties than other participants. It was found that the highest number of athlete aggression among the continents where players were born was observed in the participating footballers from the continent of Europe, while the aggressiveness of the athletes born in the continent of Africa and Asia was lower. It has been seen to affect the level of aggression of the continent where the athlete was born.

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