

The effect of contextual variables on the attacking style of play in professional soccer

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ABSTRACT

The aim of this paper was to investigate the interactive effects of contextual variables on the attacking style of play in professional soccer. 5849 team possessions from 40 random matches from Spanish La Liga and English Premier League 2017-2018 were analysed by means of multidimensional observation. Multilevel multivariate logistic regressions showed that home teams had higher odds of implementing fast attacks ($p < .05$) and lower odds of implementing direct attacks ($p < .05$) than combinative attacks. High-ranked teams presented lower odds of using direct attacks ($p < .05$) than combinative attacks in comparison with low-ranked teams, while playing against high-ranked opponents decreased the probability of implementing fast ($p < .05$) and direct attacks ($p < .05$) in comparison with low-ranking opponents. As for match status, winning teams presented higher probabilities of attacking by means of counterattacks ($p < .001$) and direct attacks ($p < .001$) than combinative attacks compared to losing teams. Finally, playing during the second half presented higher odds of progressing by counterattacks ($p < .01$) than by combinative attacks. Our results suggest that tactical analysts, coaches and researchers should consider the interactive effects of contextual variables on the teams' style of play when evaluating the offensive performance in professional soccer.

Keywords: Match analysis; Football; Performance indicators; Notational analysis; Situational variables.

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INTRODUCTION

Professional soccer coaches prepare their players to implement a specific style of play in order to beat the opposing team in each match. A style of play could be considered as the general behaviour of the whole team to achieve the attacking and defensive objectives in the game (Fernandez-Navarro, *et al.*, 2016) and it shows players and ball movements, interaction of players, as well as elements of speed, time and space (Hewitt, *et al.*, 2016).

In terms of offensive tactics, the "direct" and "possession" styles of play have been described by previous literature (Hughes & Franks, 2005). In this sense, the "direct" style represents a quick way to reach the opposing goal, using long balls or few but very vertical passes, while the "possession" style would require more passes and longer attacking sequences. Recent studies based on observational methodology and qualitative evaluation have described more detailed offensive styles of play. These studies differentiated between "counterattacks" produced in offensive transitions (Tenga, *et al.*, 2010; Gonzalez-Rodenas, *et al.*, 2015a), "direct attacks" characterized by long passes (Lago-Ballesteros, *et al.*, 2012; Gonzalez-Rodenas, *et al.*, 2019), "fast attacks" that use quick and vertical passes (Sarmiento, *et al.*, 2018) and "combinative attacks", characterized by long ball possessions (Mitrotasius, *et al.*, 2019). However, the actual implementation of each team's style of play not only depends on the team's preparation but it is strongly influenced by the interaction with the opponent's tactical behaviour, as well as by the contextual variables.

In this manner, it has been observed how playing against low or high-ranked opponents influence the ball possession and offensive indicators (Lago-Peñas, *et al.*, 2010; Almeida, *et al.*, 2014; Bradley, *et al.*, 2014). This fact is probably due to the differences on technical and tactical skills between the players of top, medium and bottom teams. Moreover, contextual variables such as match location, match status and time of the game have been shown to influence the tactical performance and success of teams during competition (Fernández-Navarro, *et al.*, 2018). In this regard, playing at home seems to make coaches establish more ambitious objectives and more offensive strategies (Staufenbiel *et al.*, 2014), what seems to be related to the achievement of more goals and wins (Almeida & Volossovitch, 2017; Pic & Castellano, 2017). The match status also plays a significant role in the teams' style of play (Paixao, *et al.*, 2015; Fernandez-Navarro, *et al.*, 2018), so that losing teams present more urgency to attack in order to equalize the score, whereas winning teams could prioritize to retain their advantage by implementing a more defensive behaviour. Also, it has been observed how during the second half and especially during the last minutes of the match the players experience fatigue that can influence the teams' style of play and offensive success (Alberti, *et al.*, 2013).

For this reason, the further understanding of how the contextual variables influence the offensive performance in soccer is crucial for coaches to prepare their players and teams for competition. Nevertheless, very few studies have evaluated how the contextual factors can affect the offensive styles of play implemented by teams during matches.

Therefore, the aim of this paper was to investigate the interactive effects of the competition, match location, quality of the team, quality of the opponent, match status and match half on the attacking style of play in professional soccer.

METHODS

Sample

The unit of analysis was a "team possession" according to the definition of Pollard and Reep (1997, p. 542): "a team possession starts when a player gains possession of the ball by any means other than from a player of the same team. The player must have enough control over the ball to be able to have a deliberate influence on its subsequent direction. The team possession may continue with a series of passes between players of the same team but ends immediately when one of the following events occurs: a) the ball goes out of play; b) the ball touches a player of the opposing team (e.g. by means of a tackle, an intercepted pass or a shot being saved). A momentary touch that does not significantly change the direction of the ball is excluded".

A total of 5849 team possessions from 40 random matches from Spanish La Liga (n=2905) and English Premier league (n=2944) during the 2017-2018 season were analysed by means of systematic observation.

Variables

This study included the analysis of six contextual and independent variables:

1. **Competition:** "English Premier League vs Spanish La Liga".
2. **Match location:** "Home vs away".
3. **Quality of the team:** *High-ranked:* from first position to fifth position in the moment of the observed match; *Medium-ranked:* from sixth position to fifteenth position in the moment of the observed match; *Low-ranked:* from sixteenth position to twentieth position in the moment of the observed match".
4. **Quality of opposition:** "*High-ranked:* from first position to fifth position in the moment of the observed match; *Medium-ranked:* from sixth position to fifteenth position in the moment of the observed match; *Low-ranked:* from sixteenth position to twentieth position in the moment of the observed match".
5. **Match status:** "Losing vs drawing vs winning".
6. **Match half:** "First half vs second half".

For the analysis of the style of play in each team possession, the dependent variable "type of attack" was evaluated according to the REOFUT theoretical framework (Aranda, *et al.*, 2019). This framework includes the definition and description of four different types of attack (Table 1) and has been used in previous studies (Mitrotasios, *et al.*, 2019; Gonzalez-Rodenas, *et al.*, 2019).

Table 1. Definition and description of the variable "type of attack".

<p>Type of attack: degree of offensive directness (Tenga <i>et al.</i>, 2010; Lago-Ballesteros <i>et al.</i>, 2012; Gonzalez-Rodenas <i>et al.</i>, 2015; Sarmiento <i>et al.</i> 2018) in the offensive process. Four categories were considered:</p> <p>1. Counterattack</p> <p>(a) The possession starts by winning the ball in play.</p> <p>(b) The progression towards the goal attempts to utilize a degree of imbalance right from start to the end with high tempo (Tenga <i>et al.</i>, 2010)</p> <p>(c) The circulation of the ball takes place more in depth than in width and the intention of the team is to exploit the space left by the opponent when they were attacking.</p> <p>(d) The opposing team does not have the opportunity to minimize surprise, reorganize his system and be prepared defensively.</p>
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2. Combinative attack

- (a) The possession starts by winning the ball in play or restarting the game.
- (b) The progression towards the goal has a high number of non-penetrative and short passes.
- (c) The circulation of the ball takes place more in width than in depth (Sarmiento et al., 2018) and the intention of the team is to disorder the opponent using a high number of passes and relatively slow tempo. (evaluated qualitatively).
- (d) The opposing team has the opportunity to minimize surprise, reorganize his system and be prepared defensively.

3. Fast attack

- (a) The possession starts by winning the ball in play or restarting the game.
- (b) The progression towards the goal has a high number of penetrative passes and short passes.
- (c) The circulation of the ball takes place in width and depth (Sarmiento et al., 2018) but the intention of the team is to disorder the opponent with a reduced number of passes and high tempo (evaluated qualitatively).
- (d) The opposing team has the opportunity to minimize surprise, reorganize his system and be prepared defensively.

4. Direct attack

- (a) The possession starts by winning the ball in play or restarting the game.
- (b) The progression towards the goal is based on one long pass from the defensive players to the forward players (evaluated qualitatively).
- (c) The circulation of the ball takes place more in depth than in width and the intention of the team is to take the ball directly near the goal area to have opportunities of finishing by using reduced number or passes and high tempo.
- (d) The opposing team has the opportunity to minimize surprise, reorganize his system and be prepared defensively

Match performance analysis

The study is based on observational methodology (Anguera & Hernández-Mendo, 2013). The software Lince (Gabin et al., 2012) was used to observe, code and register the data during the evaluation process. For the analysis, a researcher with experience in match analysis and soccer coaching evaluated each possession as many times as necessary. Regarding the quality of the data, inter-observer and intra-observer analyses showed appropriate levels of reliability for the variable "type of attack" based on Cohen's Kappa calculations (inter-observer: .776; intra-observer: .898) after the analysis of one complete match (107 team possessions).

Statistical analysis

All the analyses were performed using SPSS software (IBM SPSS, Version 20.0). An analysis of frequencies was carried out to describe the occurrence of each attacking style of play according to the contextual variables.

Due to the hierarchal structure of ball possessions in soccer (each team has its own tactical style), multilevel modelling was carried out to cluster the team possessions (Level 2) within teams (Level 1) (Sommet & Morselli, 2017). With this organization of the data, multivariate logistic regressions were created to predict the effect of the contextual variables (fixed effects) on the attacking style of play implemented by the teams (0=combinative attack, 1=fast attack, 2= counterattack, 3= direct attack).

Firstly, unadjusted models (univariate analysis) were carried out to determine the association of each contextual variable with the dependent variable. Secondly, adjusted logistic multilevel models (multivariate

analysis) were constructed in order to check the interactive effects of all the contextual variables on the attacking style of play.

RESULTS

Table 2 shows the descriptive analysis of the sample. The most used type of attack by the teams was the combinative attack (33.1%) followed closely by the fast attack (30.6%) and direct attack (30.3%), while the less frequent attacking style was the counterattack (5.9%). As far as the differences between competitions, Spanish La Liga presented slightly more proportion of combinative attacks (35.6%) and less proportion of direct attacks (28.3%) than English Premier League (30.6% vs 32.3%), respectively.

Table 2. Descriptive characteristics of the sample.

Contextual Variables	N	Type of attack			
		Combinative Attack N (%)	Fast attack N (%)	Counterattack N (%)	Direct attack N (%)
Competition					
Spanish La Liga	2905	1035 (35.6)	873 (30.1)	174 (6.0)	823 (28.3)
English Premier League	2944	900 (30.6)	919 (31.2)	173 (5.9)	952 (32.3)
Match location					
Away	2806	942 (33.6)	785 (28.0)	168 (6.0)	911 (32.5)
Home	3043	993 (32.6)	1007 (33.1)	179 (5.9)	864 (28.4)
Quality of team					
Low-ranked	1327	363 (27.4)	423 (31.9)	76 (5.7)	465 (35.0)
Medium-ranked	2986	902 (30.2)	878 (29.4)	156 (5.2)	1050 (35.2)
High-ranked	1536	670 (43.6)	491 (32.0)	115 (7.5)	260 (16.9)
Quality of opposition					
Low-ranked	1381	477 (34.5)	430 (31.1)	89 (6.4)	385 (27.9)
Medium-ranked	3051	1066 (34.9)	897 (29.4)	158 (5.2)	930 (30.5)
High-ranked	1417	392 (27.7)	465 (32.8)	100 (7.1)	460 (32.5)
Match status					
Losing	1340	408 (30.4)	488 (36.4)	31 (2.3)	413 (30.8)
Drawing	3068	1068 (34.8)	883 (28.8)	180 (5.9)	937 (30.5)
Winning	1441	459 (31.9)	421 (29.2)	136 (9.4)	425 (29.5)
Match half					
First	2990	1032 (34.5)	889 (29.7)	158 (5.3)	911 (30.5)
Second	2859	903 (31.6)	903 (31.6)	189 (6.6)	864 (30.2)
Total	5849	1935 (33.1)	1792 (30.6)	347 (5.9)	1775 (30.3)

Tables 3 show that all the contextual variables presented univariate effects on the attacking style of play implemented by the teams except for the variable "competition". In this way, the variables "match location" and "quality of the team" showed effects on the use of direct attacks in comparison with combinative attacks, while the variable "quality of opposition" had effects on the odds of using fast and direct attacks. Also, the variable "match status" influenced the odds of implementing all types of attacks, while the variable "match half" showed effects on the odds of progressing by counterattacks instead of combinative attacks.

Table 3. Multilevel multinomial logistic regression predicting the type of attack (Univariate analysis).

	Type of attack		
	Fast attacks OR (95% CI)	Counterattacks OR (95% CI)	Direct attacks OR (95% CI)
Competition			
English Premier League	.855 (.608-1.201)	.842 (.546-1.297)	.716 (.427-1.202)
Spanish La Liga			
Match location			
Away			
Home	1.131 (.975-1.313)	.951 (.736-1.230)	.825 (.705-.966)*
Quality of team			
Low-ranked			
Medium-ranked	1.013 (.713-1.382)	.896 (.578-1.389)	.904 (.669-1.221)
High-ranked	.993 (.713-1.382)	.603 (.359-1.010)	.657 (.448-.963)*
Quality of opposition			
Low-ranked	1.067 (.879-1.295)	.724 (.522-1.003)	1.201 (.976-1.478)
Medium-ranked	1.460 (1.160-1.836)**	1.139 (.787-1.647)	1.433 (1.122-1.831)**
High-ranked			
Match status			
Losing			
Drawing	.795 (.664-.951)*	2.460 (1.618-3.740)***	1.211 (1.000-1.467)*
Winning	.893 (.716-1.113)	4.555 (2.903-7.146)***	1.919 (1.512-2.435)***
Match half			
First			
Second	.862 (.756-.982)*	.716 (.568-.902)**	.904 (.805-1.377)
Intercept	.967 (.816-1.146)	.176 (.142-.218)***	.998 (.770-1.294)

OR= Odds Ratio; CI= Confidence interval for odds ratio; *= $p > .05$ **= $p > .01$ ***= $P > .001$.

Regarding the multivariate effects, table 4 shows that playing at home increased the odds of implementing fast attacks (OR=1.171; 95% CI=1.007-1.362; $p < .05$) and reduced the odds of implementing direct attacks (OR=.819; 95% CI=.698-.960; $p < .05$) in comparison with combinative attacks and playing away.

As for the effects of the quality of the team, high-ranked teams presented lower odds of implementing direct attacks (OR=.633; 95% CI=.439-1.000; $p < .05$) than combinative attacks in comparison with low-ranked teams.

Table 4 also shows that playing against high-ranked opponents increased the probability of implementing fast (OR=1.400; 95% CI=1.102-1.779; $p < .05$) and direct attacks (OR=1.670; 95% CI=1.286-2.169; $p < .05$) rather than combinative attacks in comparison with playing against low-ranking opponents.

The variable "match status" presented a high effect on the attacking style of play. In this regard, winning teams presented higher probability to attack by means of counterattacks (OR=4.588; 95% CI=2.912-7.229; $p < .001$) and direct attacks (OR=2.000; 95% CI=1.568-2.550; $p < .001$) than combinative attacks in comparison with losing teams. In the same way, drawing teams had higher odds of playing counterattacks (OR=2.836;

95% CI=1.846-4.357; $p < .001$) and direct attacks (OR=1.303; 95% CI=1.067-1.593; $p < .05$) than losing teams in comparison with progressing by combinative attacks.

Finally, playing in the first half obtained lower odds of progressing by counterattacks (OR=.711; 95% CI=.556-.909; $p < .01$) than progressing with combinative attacks in comparison with the second half.

Table 4. Multilevel multinomial logistic regression predicting the type of attack. (Multivariate analysis).

		Type of attack		
		Fast attacks OR (95% CI)	Counterattacks OR (95% CI)	Direct attacks OR (95% CI)
Competition				
English Premier League		.851 (.618-1.171)	.872 (.567-1.342)	.752 (.445-1.272)
Spanish La Liga				
Match location				
Away				
Home		1,171 (1.007-1.362)*	.902 (.693-1.175)	.819 (.698-.960)*
Quality of team				
Low-ranked				
Medium-ranked		.923 (.695-1.227)	.840 (.534-1.321)	.756 (.547-1.043)
High-ranked		.823 (.588-1.152)	.680 (.399-1.157)	.663 (.439-1.000)*
Quality of opposition				
Low-ranked				
Medium-ranked		1.049 (.860-1.279)	.838 (.596-1.179)	1.288 (1.042-1.593)***
High-ranked		1.400 (1.102-1.779)**	1.432 (.961-2.135)	1.670 (1.286-2.169)*
Match status				
Losing				
Drawing		.841 (.698-1.015)	2.836 (1.846-4.357)***	1.303 (1.067-1.593)*
Winning		.902 (.720-1.129)	4.588 (2.912-7.229)***	2.000 (1.568-2.550)***
Match half				
Second				
First		.895 (.780-1.027)	.711 (.556-.909)**	.925 (.802-1.066)
Intercept		1.115 (.757-1.643)	.066 (.034-.127)***	.769 (.419-1.412)

OR= Odds Ratio; CI= Confidence interval for odds ratio; *= $p > .05$ **= $p > .01$ ***= $P > .001$.

DISCUSSION

The aim of this paper was to investigate the interactive effects of the competition, match location, quality of the team, quality of the opponent, match status and match half on the attacking style of play in professional soccer.

First of all, this study did not find significant differences between the English Premier League and Spanish La Liga in the odds of implementing counterattacks, fast attacks or direct attacks rather than combinative attacks. Previous studies observed how the English competition seems to possess a more direct and fast style of play, while the Spanish league had a more possession-based style (Sarmiento, *et al.*, 2013; Mitrotasius, *et al.*, 2019). This lack of differences between these two competitions may be due to the tactical

evolution of the English Premier League towards a more combinative and passing style of play in recent years (Barnes, *et al.*, 2014), especially driven by the highest ranked clubs (Bradley, *et al.*, 2016).

Regarding the match location, home teams increased the use of fast attacks and decreased the implementation of direct attacks compared to combinative attacks. In the same line, Fernandez-Navarro *et al.* (2018) found that home teams increased possession during build-up and sustained threat with a reduction in direct play in English Premier League. Also, the study of Fernandez-Navarro found that home teams used faster tempo and more crossing than away teams. These results suggest that home teams increase the speed of play and the verticality to break defensive lines in order to progress towards the opposing goal but reducing the use of long and direct passes. Other studies found that home teams have a more offensive style of play and more attacking production than away teams (Lago-Peñas, & Lago Ballesteros, 2010; Almeida, & Volossovitch, 2017), as well as more complex and structured attacking patterns (Diana, *et al.*, 2017). These findings may be due to the fact that teams have greater winning expectative, more ambitious objectives and a more offensive strategy when playing at home (Staufenbiel, *et al.*, 2015).

As far as the effect of the quality of the team, high-ranked teams showed less probability of using direct attacks than low-ranked teams. In this sense, previous research has found how high-ranked teams normally show higher ball possession (Bradley, *et al.*, 2014), implement a more offensive style of play and produce more offensive events than medium and low-ranked teams in different leagues (Yang, *et al.*, 2018; Gomez, *et al.*, 2018). Our study suggests that high-ranked teams implement a more combinative style of play based on ball possession and short passes and they do not use as many long and direct passes as low-ranked teams. These differences may be due to the higher technical and tactical ability of players from the top teams, who can have a better ball control and passing accuracy than the weakest teams in the competition.

Conversely, playing against high-ranked opponents increased the odds of implementing fast and direct attacks in comparison with playing against low-ranked opponents. In this regard, playing against the best teams in the competition seems to make difficult to sustain long attacks so teams would try to be more vertical and direct in order to achieve offensive success. In this line, Fernandez-Navarro, *et al.* (2018) observed that playing against a stronger opposition reduced the effectiveness of all styles of play. Furthermore, previous studies have observed that playing against weak opposition was associated with displaying higher offensive length, width and surface area (Castellano, *et al.*, 2013) and more ball possession (Lago-Peñas, 2007; Kubayi, & Toriola, 2019).

For the variable match status, our results showed that drawing and especially winning teams had higher odds of implementing counterattacks and direct attacks rather than combinative attacks in comparison with losing teams. These findings are related to previous literature that found how losing teams had more ball possession than winning teams (Bradley, *et al.*, 2014; Kubayi, & Toriola, 2019). This increase in ball control is probably due to the necessity of changing the match score by scoring a goal, what makes them to be more aggressive offensively by implementing longer passing sequences (Paixao, *et al.*, 2015), as well as defending in more advanced pitch zones (Almeida, *et al.*, 2014) and creating more scoring opportunities (Lago-Ballesteros, *et al.*, 2012; Gonzalez-Rodenas, *et al.*, 2015). In that context, winning teams would prioritize to protect the score by improving the defensive organization. Also, winning teams would try to take advantage of the offensive urgency of the opponent by counterattacking or playing more direct in order to exploit the space left by the opposing team while attacking.

Finally, higher odds of playing counterattacks rather than combinative attacks were found in the second half of the matches. This tactical aspect may be related to the higher fatigue that players experience during the

second half (Castellano, *et al.*, 2011; Rusell, *et al.*, 2016), what may provoke higher difficulty for teams to re-organize quickly their defensive structure after losing the ball possession. Besides that, the tactical context in the second half may become more desperate for the team that chases a score, requiring a more offensive strategy, what also may provoke more defensive risks and vulnerability (Abt, *et al.*, 2002). This interaction between the tactical urgency and fatigue would create a more open context in terms of space, as well as more possibilities not only for counterattacking but also to score more goals (Alberti, *et al.*, 2013) and creating goal scoring opportunities (Gonzalez-Rodenas, *et al.*, 2015; Sarmiento, *et al.*, 2018).

Regarding the limitations of this study, our research only included the analysis of one offensive variable. In this sense, it would be interesting for future studies to evaluate the effects of contextual variables not only on more offensive dimensions but also on defensive ones. Furthermore, we are aware of the limitations of observational methodology to capture the high tactical complexity of styles of plays in soccer, where the interaction between multiple tactical and technical factors create unique situations in each team possession.

In terms of practical applications, our study suggests that tactical analysts, coaches and researchers should consider the interactive influence of contextual variables on the offensive performance in order to evaluate objectively the teams' style of play in professional soccer. Moreover, soccer coaches should include the contextual variables in training sessions to prepare their players for different tactical scenarios during the competition. For example, soccer coaches could introduce the role of a losing team that have to score a goal in the last minutes of the match during training exercises in order to expose their players to real contextual situations.

In conclusion, contextual variables such as match location, quality of the team, quality of opposition, match status and match half showed interactive effects on the attacking style of play in professional teams from the Spanish La Liga and the English Premier League.

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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DISCLOSURE STATEMENT

The authors declare no conflicts of interest.

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