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The older the wiser? Determinants of misbehaviour in team contests

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The older the wiser? Determinants of misbehaviour in team contests

by

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Working Paper No. 2211

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The older the wiser? Determinants of misbehaviour in team contests *

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September 2, 2022

Abstract

We use data from top-level soccer to examine determinants of individual misbehaviour in team contests. Our estimates indicate a significant positive and non-linear relationship between a player's age and (relative) ability on the one hand and the tendency to misbehave on the other. These findings are consistent with Social Learning Theory in that the group of high-status players may has learned that the consequences of misconduct are low and manageable. Furthermore, we demonstrate that misbehaviour is costly to both the players and their teams.

JEL-Code: J32, J24, K42, L83

Keywords: misconduct, contests, status, soccer

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1. Introduction

Misconduct in contests has been subject to intensive research over the past decades, with the interest focused on sabotage, lying, and cheating. Gilpatric & Reiser (2017), for instance, find that a moderate level of cheating might be beneficial to contest organisers. Sabotage, which means to exert destructive efforts towards competitors, can be beneficial to the saboteur but produces negative externalities (Chowdhury & Gürtler 2015). These kinds of misconduct have in common that they are based on rational grounds; sabotage, lying, and cheating are deliberate actions in accordance with the agent's ambitions to win the contest. In the case of sports, for instance, Deutscher et al. (2013) show that underdogs in professional soccer engage in destructive acts more often than favourites. The authors explain their finding with differences in the return of productive efforts.

In this study, we do not consider such 'rational' misbehaviour but examine the rule-breaking that is to the disadvantage of the delinquent. These actions could be called 'self-sabotage'. Contests can be considered as high-pressure situations where emotional control is of high importance. Negative emotions may occur when participants feel that they have been treated unfairly or when they are faced with the prospect of imminent defeat. A temporary loss of self-control, however, may have severe consequences such as disciplinary sanctions for the involved parties. In sports, a loss of self-control can lead to suspension and disqualification to the detriment of players and their teams. Due to ethical concerns and difficulties in implementation, this type of misconduct can hardly be studied in an experimental setting.

We use field data on sanctions in professional soccer to examine determinants and consequences of misbehaviour. Typical actions involve dissent by word or action, violent conduct, insulting language, and mass confrontation. The papers most closely related to our study are Kendall (2008) and Kempa & Rusch (2019). Kendall (2008) shows that a player's salary rank within his team affects the number of technical fouls per season in a negative and non-linear (quadratic) way in the National Basketball Association (NBA). Kempa & Rusch (2019) examine match factors that influence sanctions for dissent by word and action against the referee in professional soccer. Their results indicate that the probability of being cautioned for dissent is higher for players of the teams that are (i) trailing, (ii) the ex ante favourite, and (iii) playing away.

The focus in this study is on player characteristics that shape misbehaviour in team contests. Unlike Kendall (2008), our data allow for a clean identification of misconduct as they do include information about the actual infraction the sanction was given for. Furthermore, we use a player's (estimated) market value as a proxy for status. Compared to salaries which typically result from multi-year contracts, we

argue that (age-adjusted) market values reflect current productivity and talent in a more proper way. Specifically, we examine misbehaviour at the individual match level, focusing on a player's market value in absolute and relative terms with different reference groups.

We find that a 1% increase in a player's relative market value (absolute market value) increases the probability of misbehaviour by 4.06% (0.24%) when evaluated at the sample mean. Unlike prior studies, we also provide clear evidence for a significant age effect implying that it is not the younger but the older players who are more inclined to break the rules. With reference to Social Learning Theory, we explain these findings by the fact that teams shy away from disciplining high-status players. Finally, our results indicate that ex ante favoured teams suffer from a player's misconduct whereas ex ante underdogs do not.

2. Data

We use data from four seasons (2014/15 to 2018/19) of Germany's premier soccer league *Erste Bundesliga*, covering 42,517 player-game level observations.[1] The data include detailed information about the type of misconduct (e.g., insulting the referee), the type of sanction (yellow and red cards), and game-level variables such as attendance, score, minute, game number, referee, and league ranking positions of the teams. Furthermore, player characteristics involve age, estimated market value as a proxy for ability, German language, position, playing time (whole-game vs. interchanged players), and captain status.

We focus on disciplinary sanctions for misconduct, i.e., rule-breaking that is not in the nature of the game like regular fouls. This involves dissent by word or action, unsporting behaviour, violent conduct, insulting language, delay of game, and mass confrontation. Our analyses will account for the fact that delay of game can be seen as sabotage to reduce the opponent's chance of winning.

Table 1 presents summary statistics. The fact that disciplinary sanctions for misconduct are relatively rare suggests that the players are very careful not to lose self-control. In total, we observe 730 player-game combinations with at least one sanction due to misconduct. 95% of all sanctions represent a yellow card, 4% represent a direct send-off as a result of a red card, while only 1% are two yellow card send-offs.

Age and market value are strongly correlated.[2] Figure 1 plots the average market value by player age in half-year intervals. Market values sharply increase at young ages, suggesting the investment value of young talents, and, after a plateau, declines at the age of 30. This inverse-U-shaped relationship between worker productivity and reward has long been established in labour economics: workers' abilities tend to decline when individuals get older and this effect will dominate the gain in experience at some point.

[1]The data were collected from three German websites: `transfermarkt.de`, `weltfussball.de`, and `kicker.de`.

[2]Data on market values were collected from `www.transfermarkt.de`. These crowd-sourced values represent estimates of potential transfer values. See Coates & Parshakov (2022) for details.

We argue that this is an advantage of market values compared to salaries as used in Kendall (2008), because in many US sports salaries tend to increase in age due to collective bargaining agreements and result from multi-year contracts.[3] There is a caveat to the use of market values in order to proxy a player's actual ability, however: these values also reflect the 'investment value' of a player, meaning the potential to reach a higher level, and hence may (over-) underestimate the actual productivity of an older (younger) player. To circumvent this problem, we also set individual market values in relation to age specific means.

TABLE 1 — Descriptive statistics

ALL OBSERVATIONS (N = 42,517)	mean	st.dev.	max	min
Misbehaviour (1 = yes, 0 = no)	0.02	-	0.00	1.00
Market value	9.08	12.18	0.05	100.00
Age	26.08	3.76	17.00	40.60
German native speaker	0.53	-	0.00	1.00
Game number	17.49	9.82	1.00	34.00
Attendance (in 10,000)	4.33	1.75	1.35	8.14
Full game (1 = yes, 0 = no)	0.59	-	0.00	1.00

PLAYER-GAME OBS. WITH MISBEHAVIOUR (N = 730)	mean	st.dev.	max	min
Minute	69.35	21.43	4.00	98.00
Rank difference	-0.33	7.19	-17.00	17.00
Score difference	-0.03	1.25	-5.00	5.00
Yellow card	0.95	-	0.00	1.00
Red card after two yellow cards	0.01	-	0.00	1.00
Red card	0.04	-	0.00	1.00

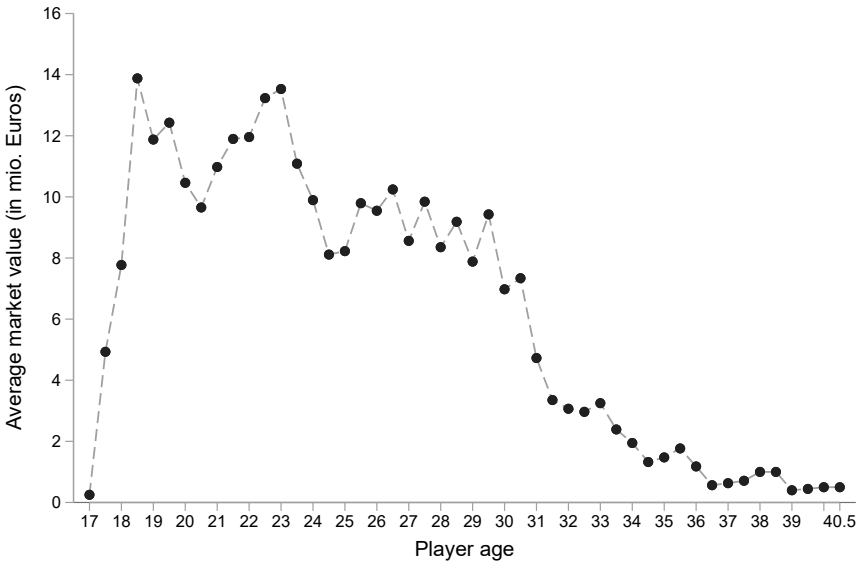
Notes: Player-game combinations may involve multiple sanctions for misconduct, i.e. two yellow cards. In this case, we only consider the second event (red card after two yellow cards).

3. Empirical approach and results

We aim to identify player characteristics that are associated with misconduct in contests. Results by Kendall (2008) suggest that a player's ability affects the likelihood of misbehaviour. With reference to research on peer leadership in sports, Kempa & Rusch (2019) argue that the team captain status may also have an impact on a player's behaviour. In the case of insulting language, for instance, we expect the ability to speak German to be of importance. Finally, we consider age to be another significant factor as it is regarded as a predictor for self-control. Roberts et al. (2006), for instance, show that there is a strong increase in emotional stability between the age of 20 to 40. Moreover, new findings presented in

[3]See, for instance, https://nbpa.com/cba for CBA details for the National Basketball Association (NBA).

FIGURE 1 — Market values by age



Notes: N = 42,517.

Cobb-Clark et al. (2022) suggest that the ability to self-regulate increases almost linearly with age.

Figure 2 illustrates the relationship between a player's age on matchday and the probability of being sanctioned for misbehaviour. The distribution shows little variation with age, given that the peaks at the tails are associated with a small number of observations.

The underlying empirical model reads:

$$misconduct_{i,m} = \beta_0 + \beta_1\, age_{i,m} + \beta_2\, value_{i,m} + \phi'\mathbf{X}_i + \gamma'\mathbf{M}_m + \xi_t + \tau_r + \epsilon_{i,m}, \qquad (1)$$

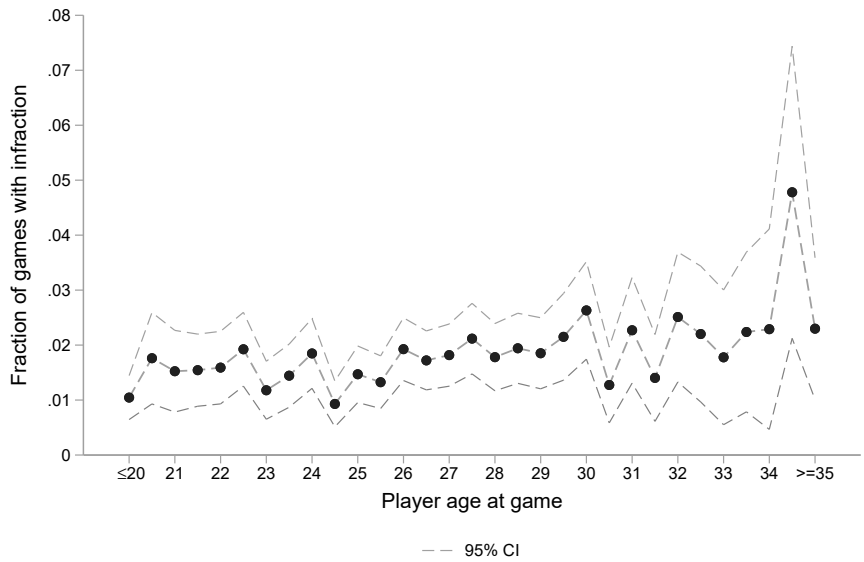
where $misconduct_{i,m}$ is a binary variable equal to 1 if player i was sanctioned for misconduct in match m. $age_{i,m}$ is player i's age at match m in years, while $value_{i,m}$ is our proxy variable for ability. More specifically, $value_{i,m}$ is a placeholder for five different measures of the absolute and relative market value of player i at match m: (i) the log of the absolute market value and player i's market value relative to the cumulative value of (ii) all of his teammates, (iii) all players on the pitch, (iv) all players from the opposing team involved in match m. In addition, $value_{i,m}$ takes the form of (v) player i's market value relative to the mean market value of all players of the same age (see Section 2). The idea behind this variety of measures is that it is ex ante not clear what the reference group is regarding the focused player's status.

$\mathbf{X}_i$ is a vector of other player-specific variables that may affect the outcome variable. These include i's position (goalkeeper, defender, midfielder, forward) and an indicator variable for the team captain status. Furthermore, we control for German language using a binary variable equal to 1 if the focused

player has German, Swiss, or Austrian citizenship (0 otherwise). Instead of using player fixed effects, we proxy the player's general tendency for misconduct by the sanctions-to-matches ratio prior to match m within our sample. For example, this ratio would be $\frac{2}{10}$ for a player with two sanctions for misconduct in ten games.

We also control for game-specific variables (vector $\mathbf{M}_m$). Team heterogeneity (defined by the difference in the ranking positions between the two teams) and a dummy accounting for regional rivalry games (i.e., local derbies) are proxy variables for match intensity, whereas attendance, game location (a binary variable which takes the value 1 if the focused player plays at home, 0 otherwise), and a set of matchday dummies account for match importance. Moreover, team-season fixed effects ξ_t were added to control for unobserved heterogeneity between teams within a season, such as the general atmosphere and tensions due to the team composition. We also include referee fixed-effects τ_r to capture general differences in the tendency to penalise players for misbehaviour between referees.

FIGURE 2 — Probability of misconduct by age



N = 42,517.

3.1. Player characteristics

Table 2 presents the results. We estimate a significant positive association between $log(market\ value)$ and the propensity to misbehave: a 1-percent increase in the market value is associated with a 0.0043 percentage points (ppts.) higher probability for misconduct, or about 0.24% more at the sample mean (column (1)). The result hardly changes when we use age-adjusted market values (column 5). For a

1-ppts. increase relative market values with different reference groups, the estimates of β_2 indicate an increase in the probability for misconduct by 4.06% (teammates, column 2), 6.36% (all players, column 3), and 0.40% (opponent players, column 4) at the sample mean. We interpret this to mean that reference groups matter and will return to this idea in Section 4. Note that we refrain from estimating a model that simultaneously includes absolute and relative market values. This is because given the team-season fixed effects, such a model would be susceptible to multicollinearity and the results, thus, not interpretable.

Table 2 also documents a significant relationship between age and misconduct. For the model including age-adjusted market values (column 5), we find that a 10-year increase in age is associated with a 0.005 ppt. increase in the probability of misbehaviour (2.94% at the sample mean).[4] Contrary to our expectations, it is the older players who are more likely to break the rules and show misbehaviour.

As a supplement, Figure 3 presents estimated semi-elasticities (evaluated at the sample mean of the dependent variable) based on a model specification where we use quartile dummies of age and our three different measures of the relative market value. Quartile 1 is the omitted reference category. The results confirm previous findings and suggest an independent positive relationship between both age and market value and misconduct. The estimated coefficients for the fourth quartiles indicate a substantial effect between 40% and 48% for age and between 57% and 67% for market values. We find no evidence for a non-liner relationship.

Further results suggest that—conditional on other player characteristics—neither the captain status nor the ability to speak German does explain misconduct in our sample. Prior incidents are, as expected, a strong predictor for actual misbehaviour. On the match level, we find that players are less likely to be sanctioned for misconduct in home than in away games. This might best be explained with the more supportive atmosphere and the well-known referee bias (e.g., Dohmen & Sauermann 2016).

Additional robustness checks based on a level-log specification of model (1) and the logit model can be found in Table A.1 in the Appendix (columns 1–5). Further exercises involve a sample restricted to starters, misconduct sanctions excluding delaying the restart of play, and penalties that occur after the 85th minute. This is because delaying is often used as a running out the clock strategy and hence rather sabotage than 'self-sabotage' behaviour. Finally, lagged market values, i.e. a player's market value at the end of previous season or before he joined his current team, are used to rule out the simultaneity bias. In sum, we find that our main findings presented in Table 2 hold.

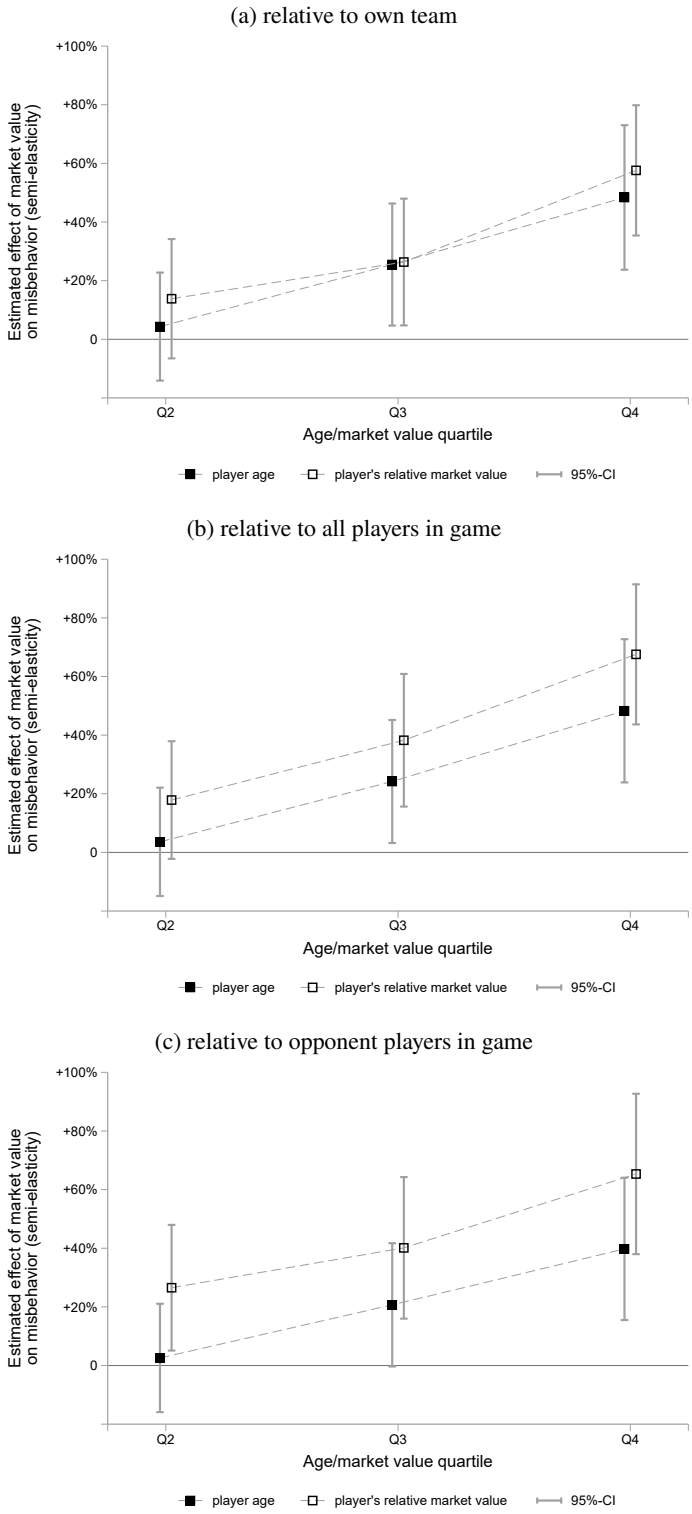
[4]Note that adding age squared to the model does not improve the fit of the model.

TABLE 2 — Determinants of misbehaviour in team contests

	(1)	(2)	(3)	(4)	(5)
Age	0.0009***	0.0009***	0.0008***	0.0005***	0.0005**
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
	[5.16]	[5.14]	[4.58]	[2.98]	[2.98]
Log(Market value)	0.0043***				
	(0.0008)				
	[0.24]				
Relative value[a]		0.0007***			
		(0.0001)			
		[4.06]			
Rel. value alt. I[b]			0.0011***		
			(0.0002)		
			[6.36]		
Rel. value alt. II[c]				0.0001**	
				(0.0000)	
				[0.40]	
Age-adjusted market value					0.0046***
					(0.0008)
					[0.26]
German language[d]	0.0011	0.0011	0.0009	0.0007	0.0012
	(0.0013)	(0.0013)	(0.0014)	(0.0014)	(0.0013)
Captain	0.0004	0.0002	0.0005	0.0017	0.0001
	(0.0020)	(0.0020)	(0.0020)	(0.0020)	(0.0020)
Local rivalry	0.0020	0.0021	0.0021	0.0022	0.0020
	(0.0032)	(0.0032)	(0.0032)	(0.0032)	(0.0032)
Attendance[e]	-0.0003	-0.0003	-0.0001	-0.0002	-0.0003
	(0.0005)	(0.0005)	(0.0005)	(0.0005)	(0.0005)
Home game	-0.0029**	-0.0029**	-0.0030**	-0.0029**	-0.0029**
	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)
Avg. misbehaviour[f]	0.0817***	0.0814***	0.0837***	0.0890***	0.0817***
	(0.0229)	(0.0230)	(0.0231)	(0.0233)	(0.0229)
Add. binary controls[g]	*yes*	*yes*	*yes*	*yes*	*yes*
Team-season fixed-effects	*yes*	*yes*	*yes*	*yes*	*yes*
Position fixed-effects	*yes*	*yes*	*yes*	*yes*	*yes*
R^2	0.010	0.010	0.010	0.010	0.010

Notes: The dependent variable is equal to 1 if the focused player i was sanctioned for misconduct in match m, 0 otherwise; N = 41,499 (mean 0.017, std. dev. 0.131). *, ** and *** indicate statistical significance at the 10% level, 5% level, and 1% level. Standard errors (clustered on player-season level) in parentheses. Calculated semi-elasticities (using the unweighted mean as the base) in % in square brackets. [a] Relative market value of the focused player relative to the aggregate value of all of his teammates involved in the match, mean 7.248, std. dev. 5.214. [b] Relative market value of the focused player relative to the cumulative value of all players involved in the match; mean 3.628, std. dev. 3.309. [c] Relative market value in percent of the aggregate value of all players from the opposing team participating in the observed game; mean 13.272, std. dev. 23.749. [d] Binary variable equal to 1 if the observed player has a German, Austrian or Swiss nationality. [e] Match attendance in 10,000. [f] Variable defined as the ratio of matches with a sanction for player i over all matches played in a season (excluding the actual match). [g] Additional binary controls include position indicators, indicator variables accounting for the difference in current league rankings of both teams, and referee dummies.

FIGURE 3 — Player age, relative market value, and misbehaviour: a non-linear relationship



Notes: Age and relative market value of players and prevalence of sanctioned misbehaviour; N = 41,499. Estimates are based on quartile dummies with the lowest quartile as the omitted base category. Standard errors used for calculating 95% confidence intervals are clustered on the player-season level.

3.2. Consequences of misbehaviour

Misbehaviour in soccer—like in other contexts—may have negative consequences for the delinquent and, given that he or she acts in a group, also for others. In a competitive environment, contrary to the case of sabotage, there is much to lose and little to gain from it. Sanctions in soccer may result in an insecure and less aggressive play for the cautioned player (yellow card) or even a dismissal (red card). Furthermore, there might be fines imposed in the aftermath of the match by the league and/or the club.

Our aim in this section is to quantify the effects of individual misconduct on match outcomes. We therefore exclude all sanctions related to the delay of game, because 'killing the clock' is a strategy of players from the leading team. Therefore, we would expect a positive correlation between 'booking' players for time wasting and the match outcome. Furthermore, we categorise teams according to their relative ranking position in the match under consideration. Specifically, a team is the ex ante favourite (underdog) if the difference in ranking positions exceeds two (falls below minus two). Other matches are considered as balanced.

Table 3 indicates that (one or more) incidents of misbehaviour affects teams differently: While underdogs appear to be unaffected by 'self-sabotage' actions, teams in balanced matches and, in particular, the favourites suffer from it. For instance, favourite teams are 12.9 ppts. less likely to win the game in case one (or more) player(s) is sanctioned for misconduct. We explain this effect heterogeneity with differences between offensive and defensive play. That is because it is more challenging to organise offensive actions and to create scoring opportunities than to organise defensive actions, in particular for shorthanded teams. Since better teams are typically more engaged in offensive actions, we expect them to suffer more from disruptions due to incidents of misconduct. Moreover, underdogs may also benefit from the agitation caused by the misconduct since it throws the other team out of rhythm.

TABLE 3 — Association of misbehaviour and game success

	(1) **Underdogs**[a]	(2) **Balanced**[b]	(3) **Favourites**[c]
GAME WIN[d]			
Misbehaviour	0.013	-0.068*	-0.129***
	(0.037)	(0.041)	(0.043)
Add. controls	*yes*	*yes*	*yes*
Team-season fixed-effects	*yes*	*yes*	*yes*
Mean dep. var	0.244	0.367	0.515
R^2	0.160	0.180	0.195
POINTS WON[e]			
Misbehaviour	0.035	-0.226**	-0.364***
	(0.103)	(0.112)	(0.110)
Add. controls	*yes*	*yes*	*yes*
Team-season fixed-effects	*yes*	*yes*	*yes*
Mean dep. var	0.973	1.365	1.790
R^2	0.185	0.194	0.215
FINAL-SCORE DIFFERENCE[f]			
Misbehaviour	0.009	-0.313**	-0.600***
	(0.146)	(0.148)	(0.141)
Add. controls	*yes*	*yes*	*yes*
Team-season fixed-effects	*yes*	*yes*	*yes*
Mean dep. var	-0.701	-0.002	0.699
R^2	0.237	0.223	0.253
N	1,008	1,030	1,008
Mean of misbehaviour	0.178	0.184	0.182

Notes: *, ** and *** indicate statistical significance at the 10% level, 5% level, and 1% level. Standard errors (clustered on player-season level) in parentheses. Additional control variables include the opposing team's total market value, a binary variable equal to 1 if the focused player plays at home (0 otherwise), and a variable measuring the difference in the league ranking positions before the match (own minus opponent's ranking).

[a] Underdogs are defined as teams that are ranked three or more ranking positions below their opponent.

[b] We define a match to be balanced when the difference in ranking positions does not exceed three.

[c] Favourites are defined as teams that are ranked three or more places above their opponent.

[d] Dependent variable is equal to 1 if the observed team wins the game, 0 otherwise.

[e] Dependent variable is the number of points won (3, 1, and 0).

[f] Dependent variable is the final score difference, defined as the difference between the focused and the opposing team's score.

4. Interpretation and Conclusions

We empirically investigate age and ability as potentially important drivers of misconduct in contests. It shows that a 10-year increase in age is associated with an increase in the probability of being sanctioned of about 30% (at the sample mean) for misconduct in soccer matches. In addition, we document a 4.06% higher probability for a 1-ppts. increase in the 'own market value to team market value' ratio (6.36% when the reference group is all players on the pitch). Furthermore, the effects are non-linear and more strongly pronounced in the top quartiles of the overall distributions.

To explain our results, we identify status (Berger et al. 1998) as the link between age and ability. First, more mature and experienced players with longer league and/or team tenure are typically the more established members of the team with the highest standing. Second, regardless of age, it is the best players on a team who also enjoy privileges. This is because these players are those with the lowest degrees of substitutability. Taken together, for this group of high-status players, the costs of conflicts are the highest: If managers (or coaches) want to mess with them, they risk weakening the team and tensions.

Within his Social Learning Theory (SLT), Bandura (1978, 1979) identifies external reinforcement as a mechanism that maintains or stabilises deviant behaviour. In the context of professional soccer, official sanctions are imposed by the rules of the game and the national sporting tribunals. This can involve bans for further matches in case of offences that are more serious and additional fines.[5] In addition, there are internal sanctions for misconduct. Media coverage is scarce but indicates rather low monetary penalties given the revenues of players in the elite league.[6] Internal bans as a disciplinary measure are rare and mainly affect young and 'substitutable' players.[7]

So, given that there are personality traits (e.g., a strong will to succeed and/or a high degree of extraversion (Allen et al. 2021)) and behaviours (e.g., self-serving (external) attribution) that promote consistent and above-average performances as well as misconduct towards the referee and opponents, high-status players may have learned that the negative consequences of such misconduct are low and manageable. Hence, unlike other more general theories of aggression, the SLT can explain why some players show a higher tendency for misconduct than others do in identical situations. For age, this effect

[5]See the DfB *Rechts- und Verfahrensordnung* (Rules of Law and Procedure) available at https://www.dfb.de/fileadmin/_dfbdam/260706-09_Rechts-Verfahrensordnung.pdf .

[6]For instance, German tabloid newspaper *BILD* reports of fines of 500 to 100 EUR for 'unnecessary' cautions and up to 5,000 EUR for 'stupid' dismissals (BILD 2013).

[7]For instance, Raúl Bobadilla was dismissed for violent conduct and the use of insulting language against the referee in December 2010. Aged 23 at this time and not a dominant player in the offensive line-up, Bobadilla was temporarily excluded from his team (Borussia Mönchengladbach) afterwards.

appears to trump the gain in emotional stability and self-control reported in, e.g., Roberts et al. (2006) and Gottfredson & Hirschi (2022), Cobb-Clark et al. (2022), respectively.

Our analysis has revealed that misconduct in contests harms not only the delinquent but—with the exception of the ex ante underdogs—is also associated with negative consequences for his team. Since behaviour is strongly regulated by its consequences, increasing the (anticipated) costs of misconduct is the obvious way teams can reduce it. The fact that teams typically shy away from disciplining the high-status group of players suggests that they expect the gains of this action to be dominated by its costs. However, it could be that the teams underestimate the benefits from punishing deviant behaviour; this is because SLT also predict positive externalities on other team members through vicarious reinforcement (i.e., learning through observation of the consequences of actions for others). Thus, disciplining high-status players is associated with high costs of conflict but may lead to long run benefits.

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A. Additional Tables

Table A.1 — Determinants of misbehaviour in team contests: Robustness checks

	(1) **Empty**	(2) **Small**	(3) **Fixed-1**	(4) **Fixed-2**	(5) **Levels**	(6) **Logit**	(7) **Reduced 1**[a]	(8) **Reduced 2**[b]	(9) **No delay**[c]	(10) **Lagged**
Log[age]	0.0009***	0.0009***	0.0012***	0.0009***	0.0006***	0.0631***	0.0009***	0.0007***	0.0008***	0.0005*
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0137)	(0.0003)	(0.0002)	(0.0002)	(0.0003)
Log[market value]	0.0017***	0.0019***	0.0047***	0.0043***		0.3028***	0.0036***	0.0034***	0.0040***	
	(0.0006)	(0.0006)	(0.0008)	(0.0008)		(0.0558)	(0.0010)	(0.0007)	(0.0007)	
Market value					0.0002***					
					(0.0001)					
lag Log[value]										0.0030***
										(0.0009)
German language[d]		0.0016	0.0026*	0.0011	0.0008	0.0615	0.0014	0.0021*	0.0011	0.0005
		(0.0014)	(0.0014)	(0.0013)	(0.0013)	(0.0807)	(0.0016)	(0.0011)	(0.0013)	(0.0017)
Captain		0.0011	-0.0001	0.0004	0.0012	0.0156	-0.0020	-0.0012	0.0017	-0.0004
		(0.0021)	(0.0021)	(0.0020)	(0.0020)	(0.1028)	(0.0021)	(0.0017)	(0.0019)	(0.0023)
Local rivalry		0.0043	0.0042	0.0020	0.0020	0.1059	0.0041	-0.0002	0.0025	0.0019
		(0.0030)	(0.0031)	(0.0032)	(0.0032)	(0.1607)	(0.0039)	(0.0025)	(0.0030)	(0.0040)
Attendance[e]		-0.0006*	-0.0004	-0.0003	-0.0003	-0.0219	-0.0005	-0.0004	-0.0003	-0.0002
		(0.0004)	(0.0004)	(0.0005)	(0.0005)	(0.0270)	(0.0005)	(0.0004)	(0.0004)	(0.0006)
Home game		-0.0027**	-0.0027**	-0.0029**	-0.0029**	-0.1870**	-0.0030*	-0.0031***	-0.0018	-0.0022
		(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0778)	(0.0015)	(0.0011)	(0.0012)	(0.0017)
Avg. misbehaviour[f]				0.0817***	0.0878***	2.7971***	0.0803***	0.0681***	0.0756***	0.2114***
				(0.0229)	(0.0233)	(0.5974)	(0.0261)	(0.0203)	(0.0214)	(0.0402)
Team-season FEs	*no*	*no*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Game-number FEs	*no*	*no*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
Add. bin. controls[g]	*no*	*no*	*no*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
N	42,517	42,517	41,499	41,499	41,499	41,048	33,179	41,499	41,499	26,578
R^2	0.001	0.001	0.006	0.010	0.010		0.012	0.008	0.009	0.012

The dependent variable is equal to 1 if the player received a yellow or red card during the match, 0 otherwise. *, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively. Robust standard errors (clustered on player-season level) in round parentheses. Column (6): regressions based on a reduced sample with player-game combinations for players who were not involved in a substitution. [a] Sample excluding all player-game observations where the focused player was substituted into the game. [b] The dependent variable is equal to 1 if the focused player was sanctioned for misbehaviour in the first 85 minutes of the game, 0 otherwise (mean 0.012, st. dev. 0.109). [c] The dependent variable is equal to 1 if the focused player was sanctioned for misbehaviour excluding all penalties associated with delay of game, 0 otherwise (mean 0.015, st. dev. 0.120) [d] Binary variable equal to 1 if the observed player has a German, Austrian or Swiss nationality. [e] Match attendance in 10,000. [f] Additional binary controls include position indicators, binary variables accounting for the difference in current league rankings of both teams, and referee dummies.