



## THE EFFECT OF LEADER – FOLLOWER NARCISSISM ON COHESION IN SPORTS TEAMS

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### ABSTRACT

**Background:** The study investigates the effect of leader-follower narcissism on cohesion in sports teams, with a focus on narcissistic admiration and rivalry. Narcissism, generally marked by self-centredness, a desire for status, and devaluation of others, has a significant impact on team dynamics. It examines four hypotheses formulated from the Narcissistic Admiration and Rivalry Concept (NARC), proposing that the positive or negative relationship between athlete narcissistic admiration or rivalry and task and social cohesion may be moderated by varying levels (high or low) of coach narcissistic admiration or rivalry.

**Methods:** A total of 217 athletes participated, providing self-reports and informant assessments on narcissism and team cohesion, using questionnaires based on narcissistic admiration and rivalry questionnaire (NARQ), the group environment questionnaire (GEQ), as well as moderated regression analysis.

**Results:** The analysis demonstrated that coach narcissistic admiration acts as a moderator and mitigating factor in the relationship between athlete narcissistic admiration and task and social cohesion, offering partial support for both the first and second hypotheses. However, both athlete and coach rivalry significantly reduced both task and social cohesion, with no moderating impact between the two, therefore rejecting the third and fourth hypotheses.

**Conclusion:** These findings extend the narcissistic tolerance hypothesis, indicating that narcissists may collaborate more effectively with individuals who share comparable characteristics, particularly in terms of admiration, while rivalry remains generally detrimental. This study highlights the importance of managing narcissistic dynamics

*within sports teams. It provides helpful insights for leaders and sports coaches, demonstrating that coach narcissistic admiration may promote cohesion, while rivalry impairs it.*

**Keywords:** narcissism, leader and follower relationships, sports teams, task and social cohesion, admiration and rivalry, moderation.

## VPLIV NARCIZMA NA RAVNI ODNOSA MED VODJO IN SLEDILCI NA KOHEZIJO V ŠPORTNIH EKIPAH

### IZVLEČEK

**Ozadje:** V raziskavi smo proučili vpliv narcizma na ravni odnosa med vodjo (trenerjem) in sledilci (športniki) na kohezijo v športnih ekipah s poudarkom na narcističnem občudovanju in rivalstvu. Narcizem, za katerega so na splošno značilni egocentričnost, želja po statusu in omalovaževanje drugih, pomembno vpliva na dinamiko ekipe. Proučili smo štiri hipoteze, oblikovane na podlagi koncepta narcističnega občudovanja in rivalstva (Narcissistic Admiration and Rivalry Concept – NARC), ki predpostavljajo, da lahko različne (visoke ali nizke) ravni narcističnega občudovanja ali rivalstva trenerja vplivajo na pozitivno ali negativno razmerje med narcističnim občudovanjem ali rivalstvom športnika ter operativno in socialno kohezijo ekipe.

**Metode:** V raziskavi je sodelovalo skupno 217 športnikov, ki so s samoocenjevanjem in ocenami zunanjih opazovalcev podali podatke o narcizmu in koheziji ekipe. Pri tem smo uporabili vprašalnike, ki temeljijo na Vprašalniku o narcističnem občudovanju in rivalstvu (NARQ), vprašalnik o skupinskem okolju (GEQ) ter moderirano regresijsko analizo.

**Rezultati:** Analiza je pokazala, da ima narcistično občudovanje trenerja vlogo moderacijskega in ublažitvenega dejavnika v razmerju med narcističnim občudovanjem športnika ter operativno in socialno kohezijo, kar delno potrjuje prvo in drugo hipotezo, vendar pa je rivalstvo tako športnika kot trenerja znatno zmanjšalo tako operativno kot tudi socialno kohezijo, pri čemer med njima ni bilo moderacijskega vpliva, zaradi česar sta bili tretja in četrta hipoteza ovrženi.

**Zaključek:** Ti izsledki razširjajo hipotezo o narcistični toleranci in kažejo, da lahko narcisi učinkoviteje sodelujejo z osebami, ki imajo podobne značilnosti, zlasti kar zadeva občudovanje, medtem ko rivalstvo na splošno ostaja škodljivo. Ta raziskava poudarja pomen obvladovanja narcistične dinamike znotraj športnih ekip. Vodjem in športnim trenerjem ponuja koristne vpoglede, saj kaže, da lahko narcistično občudovanje trenerja spodbuja kohezijo, medtem ko jo rivalstvo spodkopava.

**Ključne besede:** narcizem, odnosi med vodjo in sledilci, športne ekipe, operativna in socialna kohezija, občudovanje in rivalstvo, moderacija

## INTRODUCTION

Narcissism is characterised by self-centredness, status striving, and a tendency to devalue others during interpersonal interactions (Roberts & Woodman, 2017; Grapsas, Brummelman, Back, & Denissen, 2020). However, despite these well-acknowledged interpersonal challenges, present-day personality research conceptualises narcissistic traits as existing on a continuum, varying in degree across individuals rather than representing a distinct categorical attribute (Wetzel, Leckelt, Gerlach, & Back, 2016). These tendencies are observed in the general population and include traits such as assertive behaviour, determination, self-enhancement, and social confidence, which can affect relationships even when there is no observable dysfunction or clinically significant difficulty (Ward, 2026). Accordingly, exploring narcissism as a dimensional personality construct enables researchers to examine the potential effects of varying degrees and manifestations of narcissistic characteristics on interpersonal interactions (Back et al., 2013).

These characteristics are particularly relevant in leadership contexts, as narcissistic individuals are often attracted to leadership roles due to confidence, assertiveness, and the opportunity for recognition and status (Nevicka, 2018). Although such traits may facilitate leadership emergence, narcissistic leaders may prioritise personal interests over collective goals, shaping relational dynamics within groups (Braun, 2017; Gauglitz, Schyns, Fehn, & Schütz, 2023).

Leadership outcomes, however, do not depend solely on leader characteristics. Emerging evidence indicates that follower traits influence leader–follower interactions, particularly when narcissistic tendencies are present. Research suggests that narcissistic leaders respond differently depending on follower dispositions, favouring individuals who reinforce their self-views or tolerate dominance, while narcissistic followers may maintain alignment with leaders when interpersonal exchanges provide personal benefits (Grijalva & Harms, 2014; Nevicka, 2018; Den Hartog, De Hoogh, & Belschak, 2020; London, 2019). These findings indicate that interpersonal compatibility between leaders and followers represents a central mechanism shaping relational functioning.

Within sport teams, the quality of leader–follower interaction is closely linked to team cohesion, a multidimensional construct encompassing both task cohesion, reflecting shared commitment to performance goals, and social cohesion, reflecting interpersonal bonds among members (Grossman, Nolan, Rosch, Mazer, & Salas, 2022; Eys & Kim, 2017). Cohesion develops through ongoing interpersonal processes and is influenced by team composition and personality characteristics, suggesting that shared psychological traits may affect collective

functioning (Acton, Braun, & Foti, 2020; Smith, Arthur, Hardy, Callow, & Williams, 2013). Consequently, examining narcissistic characteristics at both leader and follower levels provides a framework for understanding variations in team cohesion.

The Narcissistic Admiration and Rivalry Concept (NARC) offers a theoretical basis for distinguishing how narcissistic traits operate within interpersonal relationships (Back et al., 2013). The framework differentiates narcissistic admiration, which involves self-enhancement through assertive and socially engaging behaviour, from narcissistic rivalry, characterised by antagonism and defensive superiority aimed at protecting self-status (Back et al., 2013; Back, 2018). These distinct pathways suggest that narcissism may produce divergent interpersonal outcomes depending on whether admiration or rivalry processes dominate interactions.

The narcissistic tolerance hypothesis further proposes that individuals high in narcissism may respond more positively to others who share similar characteristics, because perceived similarity can increase acceptance and cooperation (Hart & Adams, 2014; Burton et al., 2017). Evidence indicating greater mutual preference or attachment among narcissistic individuals suggests that shared behavioural tendencies may facilitate collaboration under certain conditions, despite narcissism's association with disruptive behaviours (Adams, Hart, & Alex Burton, 2015; Wallace, Grotzinger, Howard, & Parkhill, 2015). However, the NARC framework indicates that while admiration may promote alignment and cooperation, rivalry is likely to generate conflict and undermine relational effectiveness (Back, 2018).

These contrasting processes reflect opposing relational outcomes described as the Boom Effect and the Bust Effect (Roberts, Woodman, & Sedikides, 2017). Alignment in narcissistic admiration may promote reciprocal validation and coordinated goal pursuit, potentially enhancing cohesion (Brunell & Campbell, 2011; Maaß, Lämmle, Bensch, & Ziegler, 2016; Roberts et al., 2017). In contrast, rivalry introduces competitive self-protection and status conflict, increasing antagonism and reducing cooperative functioning (Bushman & Baumeister, 1998; Stoeber, Sherry, & Nealis, 2015; Krizan & Johar, 2015; Roberts et al., 2017). Accordingly, leader–follower narcissistic dynamics may simultaneously represent a source of cohesion or disruption within teams. Besides its theoretical value, recognising leader-follower narcissistic dynamics has important practical implications for sports teams. Sport psychologists, coaches, and team administrators often work with athletes with varying interpersonal behaviours and personality traits (Allen, Greenlees, & Jones, 2013; Stanford, Healy, Sarkar, & Johnston, 2022). Exploring how narcissistic admiration and

rivalry impact task and social cohesion may offer practical insights into athlete management, leadership effectiveness, conflict reduction, and the development of more collaborative and productive sporting environments (Back et al., 2013; Eys & Kim, 2017; Roberts et al., 2017).

Despite increasing attention to narcissistic leadership, limited research has examined how leader and follower narcissistic traits jointly influence cohesion in sport teams. The present study therefore investigates the combined effects of leader and follower narcissistic admiration and rivalry on task and social cohesion, using the Narcissistic Admiration and Rivalry Concept as the primary theoretical framework, while considering propositions derived from the narcissistic tolerance hypothesis. Accordingly, the hypotheses below examine specific moderating interactions between leader and follower narcissistic characteristics and team cohesion outcomes.

## HYPOTHESES

### **Hypothesis 1 (Admiration on Task Cohesion)**

When coach admiration is high, increases in athlete admiration are predicted to be associated with increases in task cohesion. In this context, athletes are expected to respond positively to the coach's instructions, feedback, and expectations, and to collaborate effectively with teammates to achieve positive outcomes. Conversely, when coach admiration is low, increases in athlete admiration are predicted to be associated with decreases in task cohesion. This pattern is expected to reflect greater disagreement and self-serving goal pursuit, thereby hindering task cohesion (see Figure 1).

### **Hypothesis 2 (Admiration on Social Cohesion)**

When coach admiration is high, increases in athlete admiration are expected to be associated with increases in social cohesion. In this scenario, athletes are expected to respond positively to the coach's instructions, feedback, and expectations, resulting in a supportive team environment characterised by collaboration towards positive team outcomes. Conversely, when coach admiration is low, increases in athlete admiration are expected to be associated with decreases in social cohesion. This pattern is expected to reflect greater disagreement

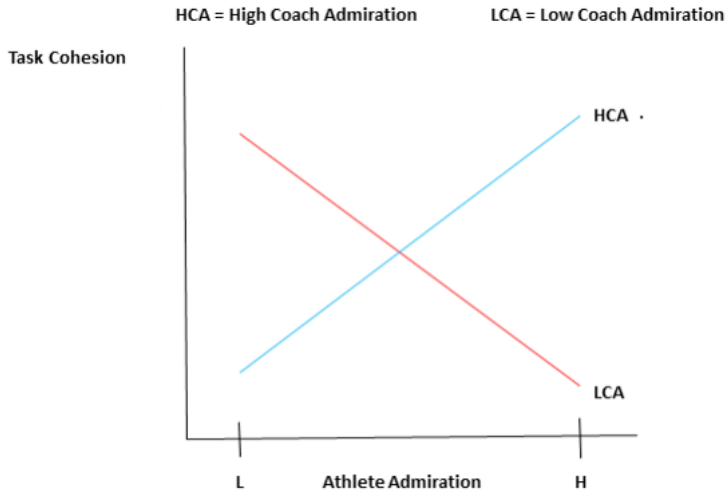


Figure 1: The graph shows the moderating effect of coach admiration on the athlete admiration-task cohesion relationship.

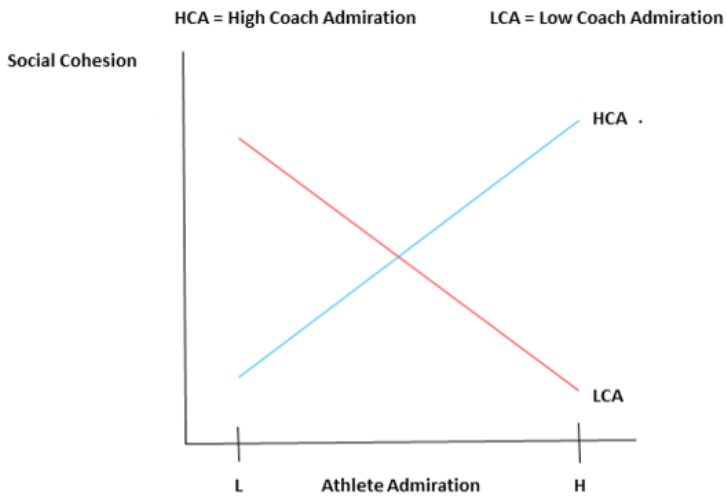


Figure 2: The graph shows the moderating effect of coach admiration on the athlete admiration-social cohesion relationship.

and more self-serving goal pursuit among team members, thereby reducing social cohesion (see Figure 2).

### Hypothesis 3 (Rivalry on Task Cohesion)

When coach rivalry is high, increases in athlete rivalry are expected to be associated with decreases in task cohesion. This pattern is expected to reflect greater interpersonal conflict, athlete resistance to the coach's guidance, and increased antagonistic interactions, with coaches criticising athletes' efforts and claiming disproportionate credit for team achievements, thereby undermining task cohesion. Conversely, when coach rivalry is low, increases in athlete rivalry are predicted to be associated with increases in task cohesion. This pattern is expected to reflect lower levels of conflict between coaches and athletes, fostering a healthy competitive team environment among athletes and enhancing team cohesion (see Figure 3).

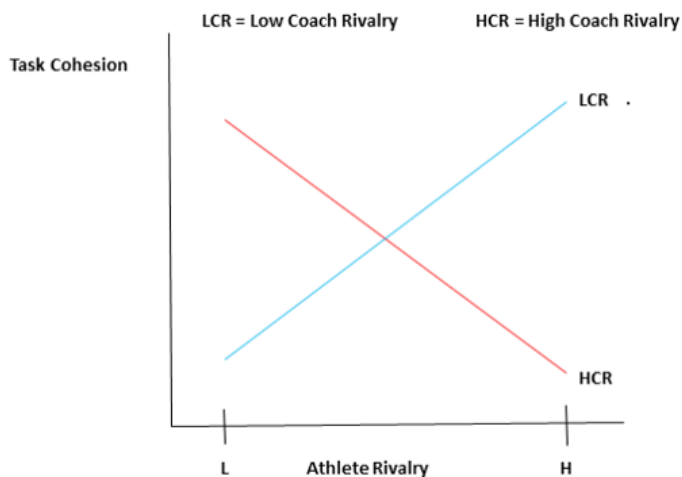


Figure 3: The graph shows the moderating effect of coach rivalry on the athlete rivalry-task cohesion relationship.

### Hypothesis 4 (Rivalry on Social Cohesion)

When coach rivalry is high, increases in athlete rivalry are expected to be associated with decreases in social cohesion. This pattern expected to reflect greater interpersonal conflict, athlete resistance to the coach's guidance, and increased antagonistic interaction between coaches and athletes' efforts and takes personal credit for everything, thereby reducing social cohesion. Conversely, when coach rivalry is low, increases in athlete rivalry are expected to be associated with increases in social cohesion. This pattern is expected to reflect lower levels of interpersonal conflict between coaches and athletes, fostering a healthy competitive team environment among athletes and strengthening team cohesion (see Figure 4).

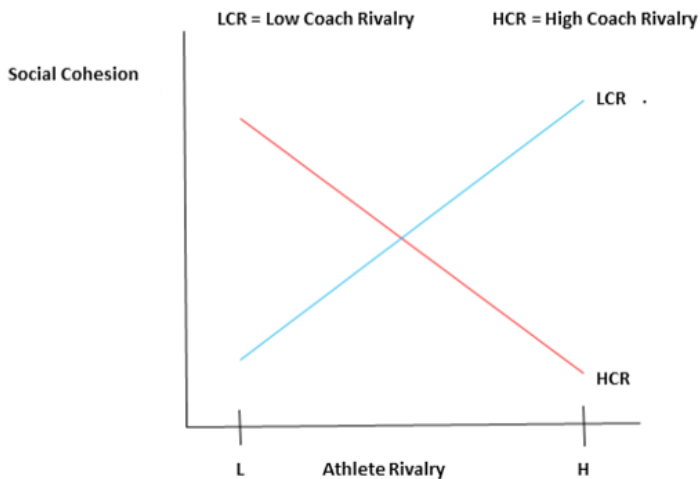


Figure 4: The graph shows the moderating effect of coach rivalry on the athlete rivalry-social cohesion relationship.

## METHODS

### Participants

A total of 305 participants completed the questionnaire. Following data screening for accuracy and completeness, the final sample comprised 217 athletes aged 18–39 ( $M = 22.23$ ,  $SD = 3.9$ ). Details of the screening procedure are provided in Appendix 1, while descriptive statistics and correlations are reported in Table 2. The sample consisted predominantly of male footballers. Participants competed across a range of competitive levels, including recreational sports, local leagues, national leagues, and premier divisions. Table 1 presents participants' demographic characteristics, including gender distribution, competition categories, and the frequencies of key sample characteristics.

### Measures

#### *1. Narcissism*

The 18-item Narcissistic Admiration and Rivalry Questionnaire (NARQ; Back et al., 2013) was used to measure narcissism in athletes and coaches. The NARQ comprises two subscales: rivalry, which evaluates competitiveness and the propensity to devalue others, and admiration, which measures the desire to receive praise (Mota et al., 2019). On a 6-point scale from 1 (completely disagree) to 6 (completely agree), respondents indicated how much they agreed with statements such as “I am fantastic”, “I tell people how impressive I have become”, and “I expect my opponents to struggle” (Doroszuk et al., 2020). Athletes filled out self-reports to assess their own narcissism, as well as informant reports, which included an adapted version of the NARQ to evaluate coaches. Informant ratings provide an external viewpoint that complements self-reports and may reduce self-report bias (Lieberman et al., 2016). Scores were calculated for each subscale, with higher values indicating greater admiration and rivalry (Ackerman, 2017; Bush-Evans, 2020). Importantly, the NARQ has good internal consistency and construct validity, accurately predicting narcissistic traits (Back et al., 2013; Leckelt et al., 2018). Descriptive statistics for all study variables are presented in Table 2.

*Table 1: Participants' Demographics*

| Category                      | Frequency |
|-------------------------------|-----------|
| <b>Gender</b>                 |           |
| Female                        | 28        |
| Male                          | 189       |
| <b>Type of Sports</b>         |           |
| Basketball                    | 5         |
| Cricket                       | 1         |
| Football                      | 207       |
| Netball                       | 1         |
| Rugby                         | 1         |
| Volleyball                    | 2         |
| <b>Level of Participation</b> |           |
| County League                 | 3         |
| Higher Division               | 2         |
| Local Division                | 2         |
| Local League                  | 129       |
| Lower League                  | 13        |
| National Championship         | 2         |
| National League               | 36        |
| Premier                       | 12        |
| Recreational                  | 18        |

## *2. Task and Social Cohesion*

To measure task and social cohesion, this study used the 18-item Group Environment Questionnaire (GEQ) (Carron et al., 1985; Boulter, Roberts, & Hardy, 2022). Participants responded to each item on a scale of 1 (strongly disagree) to 6 (strongly agree), including Group Integration-Social (GIS) (e.g. “Everybody in our squad want to attend an off-season event together”), Group Integration-Task (GIT) (e.g. “We are all responsible for the squad’s results”), Individual Attractions to Group-Social (ATGS) (e.g. “Most of my closest associates participate in this team”), and Individual Attractions to Group-Task (ATGT) (Smith et al., 2013; Whitton & Fletcher, 2014). To obtain overall measures of social and task cohesion, the GI (Group Integration) and ATG (Individual Attractions to the Group) subscales were combined according to their task and social dimensions (Brawley, Carron, & Widmeyer, 1987; Whitton & Fletcher, 2014). Descriptive statistics for these measures can be found in Table 2.

## *3. Procedure*

Ethical approval was obtained from the appropriate institutional review board, and the surveys were administered using Qualtrics. Participants received a link to complete confidential questionnaires assessing demographic characteristics, narcissism, and team cohesion. This approach prioritised participant convenience while ensuring compliance with established human research ethical standards (Kazak, 2016; Bain, 2017).

## *4. Analysis*

Preliminary analyses included descriptive statistics (means and standard deviations) and correlation analyses (LaFlair, Egbert, & Plonsky, 2015). Table 2 presents the descriptive statistics and correlations for the study variables, including coach narcissism, athlete narcissism, task cohesion, social cohesion, and age.

Table 2: Descriptive Statistics and Correlation Analysis

| Variable           | N   | Mean   | Standard Devia-<br>tion | Athlete Admi-<br>ration | Coach Admi-<br>ration | Athlete Rivalry | Coach Rivalry | Task Cohesion | Social Cohesion | Age     |
|--------------------|-----|--------|-------------------------|-------------------------|-----------------------|-----------------|---------------|---------------|-----------------|---------|
| Age                | 217 | 22.23  | 3.937                   | -.214**                 | -.204**               | -.043           | .90           | -.228**       | -.100           | 1.000   |
| Athlete Admiration | 217 | 4.7962 | 0.80280                 | 1.000                   | .547**                | .367**          | -.215**       | -.055         | -.149*          | -.214   |
| Coach Admiration   | 217 | 4.8258 | 0.70247                 | .547**                  | 1.000                 | -.115**         | .160**        | .272**        | .215**          | -.204*  |
| Athlete Rivalry    | 217 | 3.1178 | 0.86326                 | .367**                  | -.115*                | 1.000           | .238**        | -.625**       | -.671**         | -.043   |
| Coach Rivalry      | 217 | 3.3297 | 0.97853                 | -.215**                 | .160**                | .238**          | 1.000         | -.337**       | -.281**         | .090    |
| Task Cohesion      | 217 | 4.4931 | 1.07799                 | -.055                   | .272**                | -.625**         | -.337**       | 1.000         | .855**          | -.228** |
| Social Cohesion    | 217 | 4.1362 | 0.88302                 | -.149*                  | .215**                | -.671**         | -.281**       | .855**        | 1.000           | -.100   |

Significance measures: (1) p < .01; marked with \*\* (2) p < .05; marked with \* N = 217 for all variables.

To examine the interactions between the variables, moderated regression analyses were conducted in SPSS using Hayes' (2018) model. The results of the moderated regression analyses are presented in Table 3 (Outcomes 1–4), corresponding to the four hypotheses described in the Results section. Additional statistical output is provided in Appendix 2. The analysis examined whether coach rivalry and admiration moderated the relationship between narcissistic dynamics (rivalry and admiration) and team cohesion (task and social). The analyses also examined how differences in the moderating variable influenced the direction and intensity of these interactions.

Prior to the moderated regression analyses, the assumptions underlying the analysis were assessed to ensure that the data satisfied the criteria for moderated regression. Following Hayes (2017, 2018) assumptions of homoscedasticity, linearity, and normality were assessed. Assessing these assumptions was important because violations could compromise the reliability of the findings (Flatt & Jacobs, 2019). Athletes' narcissistic admiration and rivalry were entered as predictor variables, while task cohesion and social cohesion served as the outcome variables. Coach admiration and rivalry were entered as moderator variables to examine their moderating effects on these interactions.

The significance of the moderating effect was evaluated using the change in R-squared ( $R^2$ ) associated with the interaction term. A significant increase in  $R^2$  indicated that the interaction term explained additional variance in the outcome variable, demonstrating that the moderator significantly enhanced the model's predictive power (Hayes, 2017).

Following the analysis, simple slope analyses were conducted to examine the moderating effect in greater depth. These analyses explored the relationship between the predictor and outcome variables at different moderator variable levels (Preacher, Curran, & Bauer, 2006), illustrating how the direction and strength across moderator levels.

Interaction plots were generated to illustrate the significant moderating effects (see Figures 5–8). These plots facilitated interpretation by illustrating how the relationship between the predictor and outcome variables varied across different levels of the moderator.

*Table 3: Moderated Regression Analysis (Outcomes 1, 2, 3, and 4)*

Table 3, consisting of outcomes 1, 2, 3, and 4, shows the findings after the moderated regression analysis, which illustrates the interactions and their effects between the study's important variables (coach narcissism, athlete narcissism, task cohesion, and social cohesion). N=217

**Outcome 1: Athlete Admiration – Coach Admiration – Task Cohesion**

| Statistic                            | Value                                                            |
|--------------------------------------|------------------------------------------------------------------|
| <b>Model Summary</b>                 |                                                                  |
| R <sup>2</sup>                       | 0.2034                                                           |
| MSE                                  | 0.9387                                                           |
| F                                    | 18.13                                                            |
| df1                                  | 3                                                                |
| df2                                  | 213                                                              |
| p                                    | <0.001                                                           |
| <b>Model Coefficients</b>            |                                                                  |
| Constant                             | 4.3851 (SE = 0.0703, LLCI = 4.2465, ULCI = 4.5238, p < 0.001)    |
| Athlete Admiration (Ath_Ad)          | -0.2717 (SE = 0.0794, LLCI = -0.4282, ULCI = -0.1153, p < 0.001) |
| Coach Admiration (Co_Ad)             | 0.5065 (SE = 0.0793, LLCI = 0.3501, ULCI = 0.6629, p < 0.001)    |
| Interaction (Ath_Ad x Co_Ad)         | 0.1982 (SE = 0.0458, LLCI = 0.1079, ULCI = 0.2885, p < 0.001)    |
| <b>Test of interaction</b>           |                                                                  |
| $\Delta R^2$                         | 0.07                                                             |
| Interaction F                        | 18.72                                                            |
| df1                                  | 1                                                                |
| df2                                  | 213                                                              |
| p                                    | < 0.001                                                          |
| <b>Conditional Effects of Ath_Ad</b> |                                                                  |
| Co_Ad = -1.174                       | -0.4734 (SE = 0.0869, LLCI = -0.6448, ULCI = -0.3020, p < 0.001) |
| Co_Ad = 1.0389                       | -0.0658 (SE = 0.0974, LLCI = -0.2579, ULCI = 0.1262, p = 0.4999) |

**Outcome 2: Athlete Admiration – Coach Admiration – Social Cohesion**

| Statistic                            | Value                                                            |
|--------------------------------------|------------------------------------------------------------------|
| <b>Model Summary</b>                 |                                                                  |
| R <sup>2</sup>                       | 0.1688                                                           |
| MSE                                  | 0.6572                                                           |
| F                                    | 14.42                                                            |
| df1                                  | 3                                                                |
| df2                                  | 213                                                              |
| p                                    | < 0.001                                                          |
| <b>Model Coefficients</b>            |                                                                  |
| Constant                             | 4.0873 (SE = 0.0589, LLCI = 3.9713, ULCI = 4.2033, p < 0.001)    |
| Athlete Admiration (Ath_Ad)          | -0.3167 (SE = 0.0664, LLCI = -0.4476, ULCI = -0.1858, p < 0.001) |
| Coach Admiration (Co_Ad)             | 0.3921 (SE = 0.0664, LLCI = 0.2612, ULCI = 0.5229, p < 0.001)    |
| Interaction (Ath_Ad x Co_Ad)         | 0.0898 (SE = 0.0383, LLCI = 0.0143, ULCI = 0.1654, p < 0.001)    |
| <b>Test of interaction</b>           |                                                                  |
| $\Delta R^2$                         | 0.0214                                                           |
| Interaction F                        | 5.49                                                             |
| df1                                  | 1                                                                |
| df2                                  | 213                                                              |
| p                                    | 0.02                                                             |
| <b>Conditional Effects of Ath_Ad</b> |                                                                  |
| Co_Ad = -1.0174                      | -0.4081 (SE = 0.0728, LLCI = -0.5515, ULCI = -0.2647, p < 0.001) |
| Co_Ad = 1.0389                       | -0.2234 (SE = 0.0815, LLCI = -0.3841, ULCI = 0.0627, p = 0.0067) |

**Outcome 3: Athlete Rivalry – Coach Rivalry – Task Cohesion**

| Statistic                    | Value                                                            |
|------------------------------|------------------------------------------------------------------|
| <b>Model Summary</b>         |                                                                  |
| R <sup>2</sup>               | 0.4278                                                           |
| MSE                          | 0.6743                                                           |
| F                            | 53.09                                                            |
| df1                          | 3                                                                |
| df2                          | 213                                                              |
| p                            | < 0.001                                                          |
| <b>Model Coefficients</b>    |                                                                  |
| Constant                     | 4.4944 (SE = 0.0565, LLCI = 4.3830, ULCI = 4.6058, p < 0.001)    |
| Athlete Rivalry (Ath_Ri)     | -0.6222 (SE = 0.0575, LLCI = -0.7356, ULCI = -0.5088, p < 0.001) |
| Coach Rivalry (Co_Ri)        | -0.2157 (SE = 0.0576, LLCI = 0.3293, ULCI = 0.1021, p < 0.001)   |
| Interaction (Ath_Ri x Co_Ri) | 0.0054 (SE = 0.0395, LLCI = -0.0833, ULCI = 0.0724, p = 0.891)   |
| <b>Test of interaction</b>   |                                                                  |
| $\Delta R^2$                 | 0.0001                                                           |
| Interaction F                | 0.0189                                                           |
| df1                          | 1                                                                |
| df2                          | 213                                                              |
| p                            | 0.891                                                            |

**Outcome 4: Athlete Rivalry – Coach Rivalry – Social Cohesion**

| Statistic                    | Value                                                            |
|------------------------------|------------------------------------------------------------------|
| <b>Model Summary</b>         |                                                                  |
| R <sup>2</sup>               | 0.4709                                                           |
| MSE                          | 0.4183                                                           |
| F                            | 63.20                                                            |
| df1                          | 3                                                                |
| df2                          | 213                                                              |
| p                            | < 0.001                                                          |
|                              |                                                                  |
| <b>Model Coefficients</b>    |                                                                  |
| Constant                     | 4.1257 (SE = 0.0445, LLCI = 4.0379, ULCI = 4.2134, p < 0.001)    |
| Athlete Rivalry (Ath_Ri)     | -0.5644 (SE = 0.0453, LLCI = -0.6538, ULCI = -0.4751, p < 0.001) |
| Coach Rivalry (Co_Ri)        | -0.1093 (SE = 0.0454, LLCI = 0.1987, ULCI = 0.0198, p < 0.001)   |
| Interaction (Ath_Ri x Co_Ri) | 0.0444 (SE = 0.0311, LLCI = 0.0169, ULCI = 0.1057, p = 0.155)    |
| <b>Test of interaction</b>   |                                                                  |
| $\Delta R^2$                 | 0.0051                                                           |
| Interaction F                | 2.0372                                                           |
| df1                          | 1                                                                |
| df2                          | 213                                                              |
| p                            | 0.155                                                            |

## RESULTS

The moderated regression analyses examined the relationship between the predictor variables (athlete narcissistic rivalry or admiration) and the outcome variables (task or social cohesion), with coach narcissistic rivalry or admiration as the moderator. The results are presented across four outcomes. The following abbreviations are used: TC = task cohesion, SC = social cohesion, Ath\_Ad = athlete admiration, Ath\_Ri = athlete rivalry, Co\_Ad = coach admiration, and Co\_Ri = coach rivalry.

### Outcome 1

The model demonstrated a significant overall fit ( $R^2 = 0.2034$ ,  $F(3,213) = 18.13$ ,  $p < 0.001$ ), meaning that the predictors explained about 20.34% of the variance in TC. Athlete admiration was a significant negative predictor for TC ( $b = -0.2717$ ,  $p < 0.001$ ), while coach admiration positively influenced it ( $b = 0.5065$ ,  $p < 0.001$ ). The interaction term (Ath\_Ad  $\times$  Co\_Ad) was significant ( $b = 0.1982$ ,  $p < 0.001$ ), with an additional  $R^2$ -change of 0.07, which was statistically significant ( $p < 0.000$ ), indicating a significant moderation effect, whereby the relationship between task cohesion and athlete admiration depended on coach admiration. Conditional effects indicated that the negative influence of Ath\_Ad on TC diminished as Co\_Ad increased. Under low Co\_Ad, the effect of Ath\_Ad was significantly negative ( $b = -0.4734$ ,  $p < 0.001$ ), while at high Co\_Ad, the effect was minimal and insignificant ( $b = -0.0658$ ,  $p = 0.4999$ ). This implies that high admiration for the coach mitigated the negative associations of athlete admiration on TC (see Figure 5).

The interaction between athlete admiration and coach admiration is significant ( $b = 0.1982$ ,  $p < 0.001$ ), with an  $R^2$ -change of 0.07, suggesting a moderating effect. At low coach admiration, athlete admiration is significantly and negatively associated with task cohesion ( $b = -0.4734$ ,  $p = 0.0000$ ). At high coach admiration, the negative association between athlete admiration and task cohesion is minimal and not significant ( $b = -0.0658$ ,  $p = 0.4999$ ).

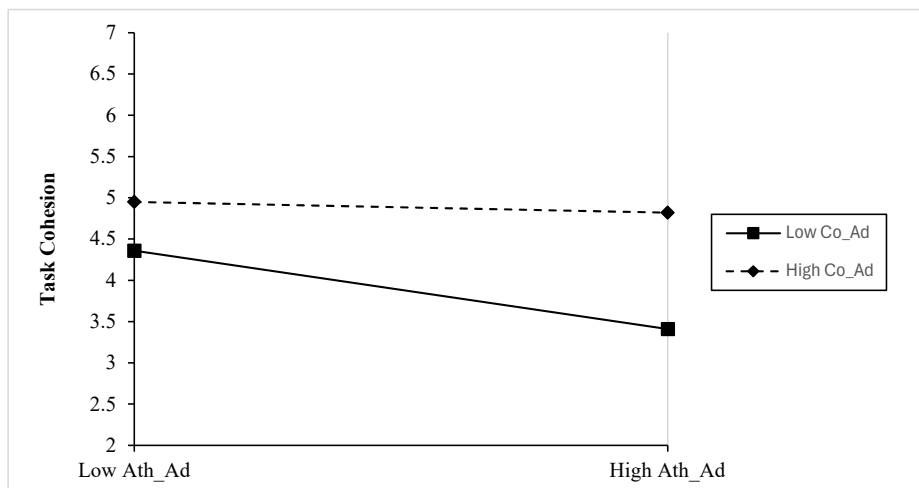


Figure 5: Graph for Outcome 1

## Outcome 2

The overall regression model was significant, explaining 16.88% of the variance in SC ( $R^2 = 0.1688$ ,  $F(3, 213) = 14.42$ ,  $p < 0.001$ ). Athlete admiration was a significant negative predictor of SC ( $b = -0.3167$ ,  $p < 0.001$ ), whereas coach admiration was a significant positive predictor ( $b = 0.3921$ ,  $p < 0.001$ ). The interaction term ( $Ath\_Ad \times Co\_Ad$ ) was significant ( $b = 0.0898$ ,  $p = 0.02$ ), with an  $R^2$ -change of 0.0214, which was also statistically significant ( $p < 0.0010$ ), indicating a significant moderation effect, whereby the relationship between athlete admiration and social cohesion depended on coach admiration. Conditional effects indicated that the negative association between  $Ath\_Ad$  and SC diminished as  $Co\_Ad$  increased. At low levels of  $Co\_Ad$ , the effect of  $Ath\_Ad$  was strongly negative ( $b = -0.4081$ ,  $p < 0.001$ ), whereas at high levels of  $Co\_Ad$ , the negative impact weakened but was still significant ( $b = -0.2234$ ,  $p = 0.0067$ ). These findings also demonstrated the mitigating and moderating function of  $Co\_Ad$  (see Figure 6).

The interaction term between athlete admiration and coach admiration is significant ( $b = 0.0898$ ,  $p = 0.02$ ), with an  $R^2$ -change of 0.0214, indicating moderation. At low coach admiration, athlete admiration is significantly and negatively associated with social cohesion ( $b = -0.4081$ ,  $p = 0.0000$ ). At high

coach admiration, the negative association between athlete admiration and social cohesion is reduced ( $b = -0.2234$ ,  $p = 0.0067$ ).

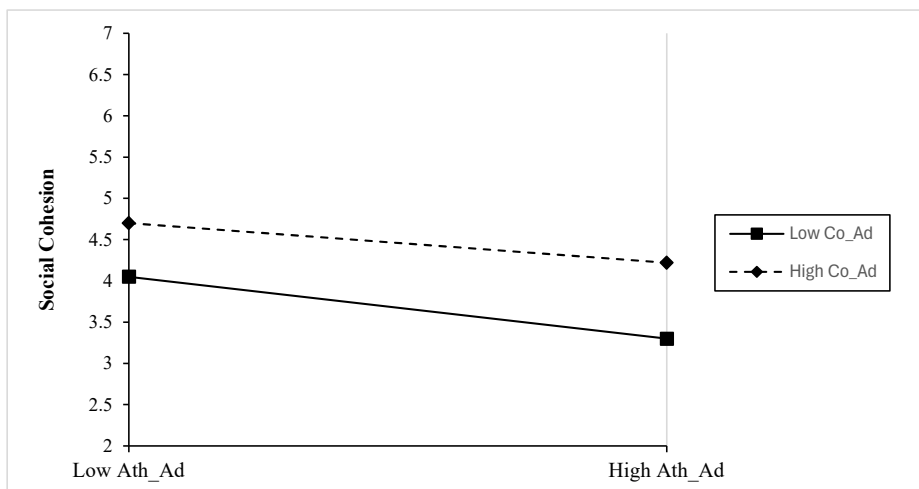


Figure 6: Graph for Outcome 2

### Outcome 3

This overall regression model was significant, explaining 42.78% of the variance in TC ( $R^2 = 0.4278$ ,  $F(3, 213) = 53.09$ ,  $p < 0.001$ ). Athlete rivalry was a significant negative predictor of TC ( $b = -0.6222$ ,  $p < 0.001$ ), while coach rivalry was also a significant negative predictor ( $b = -0.2157$ ,  $p < 0.001$ ). However, the interaction term ( $Ath\_Ri \times Co\_Ri$ ) was not significant ( $b = -0.0054$ ,  $p = 0.891$ ), indicating that coach rivalry did not moderate the relationship between athlete rivalry and task cohesion. These findings indicated that both coach rivalry and athlete rivalry were independently associated with lower TC, with no evidence of interaction effect (see Figure 7).

The interaction term between athlete rivalry and coach rivalry is not significant ( $b = -0.0054$ ,  $p = 0.891$ ), indicating no moderation effect. Both athlete rivalry ( $b = -0.6222$ ,  $p < 0.001$ ) and coach rivalry ( $b = -0.2157$ ,  $p < 0.001$ ) independently reduced task cohesion.

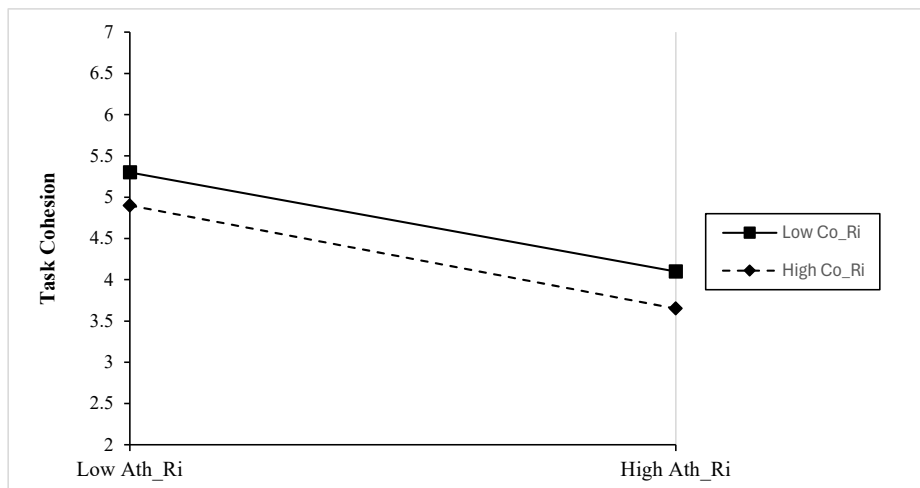


Figure 7: Graph for Outcome 3

#### Outcome 4

The final result was significant, explaining 47.09% of the variance in SC ( $R^2 = 0.4709$ ,  $F(3,213) = 63.20$ ,  $p < 0.001$ ). Athlete rivalry was a significant negative predictor of SC ( $b = -0.5644$ ,  $p < 0.001$ ), whereas coach rivalry was also a significant negative predictor, although the effect was smaller ( $b = -0.1093$ ,  $p = 0.017$ ). The interaction term ( $Ath\_Ri \times Co\_Ri$ ) was not significant ( $b = 0.0444$ ,  $p = 0.155$ ), indicating that coach rivalry did not moderate the relationship between athlete rivalry and social cohesion. These findings indicate that athlete rivalry and coach rivalry were independently associated with lower SC, with no evidence of an interaction effect (see Figure 8).

The interaction term between athlete rivalry and coach rivalry is not significant ( $b = 0.0444$ ,  $p = 0.155$ ), showing no moderation effect. Athlete rivalry significantly decreased social cohesion ( $b = -0.5644$ ,  $p < 0.001$ ), while coach rivalry also had a negative but lesser effect ( $b = -0.1093$ ,  $p = 0.017$ ).

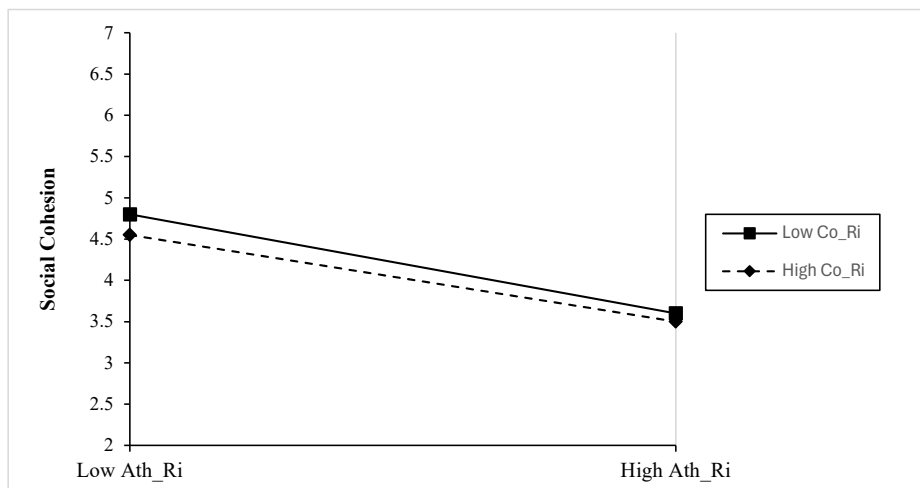


Figure 8: Graph for Outcome 4

## DISCUSSION

The current study provides insights into the dynamics of narcissism, leader–follower relationships, and team cohesion in sports teams, with particular emphasis on the roles of narcissistic admiration and rivalry. The findings contribute to the growing body of research on the impact of narcissistic traits on group dynamics, offering nuanced insights into the influence of narcissism on task and social cohesion. Some hypotheses were partially supported, whereas others lacked empirical support, highlighting the intricacies of the relationship between narcissism and group dynamics. The following discussion interprets these findings, considers their theoretical and practical implications, and situates them within the broader research context.

### The Role of Narcissistic Admiration in Task Cohesion

The first hypothesis predicted that high levels of coach admiration would strengthen the positive relationship between athlete admiration and task cohesion, whereas low levels of coach admiration would have a negative effect. Interestingly, narcissistic coach and athlete admiration showed opposing

associations with task cohesion, with coach admiration having a positive impact and athlete admiration having a negative effect. In terms of interaction, under low coach admiration, the negative association between athlete admiration and task cohesion became stronger. Conversely, with high coach admiration, the negative relationship between athlete admiration and task cohesion decreased to nonsignificant levels. However, the effect did not completely reverse, indicating that the predicted positive association was not observed. Consequently, the findings provide partial support for the first hypothesis and also confirm the moderating role of coach admiration.

These findings are consistent with the “Boom Effect” described by Roberts et al. (2017), which holds that individuals with similar narcissistic admiration tendencies may foster greater cooperation due to a common desire for attention and status. Furthermore, the outcomes correspond with the narcissistic tolerance hypothesis (Burton et al., 2017), which proposes that narcissists can build more cohesive relationships with those who share similar features, particularly in leader–follower dynamics.

However, the continued existence of an insignificant negative influence of athlete admiration on task cohesion, even at high levels of coach admiration, suggests that admiration alone may not be sufficient to ensure cohesion. This result is compatible with Back et al.’s (2013) study on the Narcissistic Admiration and Rivalry Concept (NARC), which emphasises the two facets of narcissistic traits. While admiration can promote collaboration, it does not always result in better task cohesion unless other elements, such as goals and value compatibility, are present (Roberts et al., 2017).

## **Narcissistic Admiration and Social Cohesion**

Hypothesis 2 suggested that high coach admiration would improve the relationship between athlete admiration and social cohesion, whereas low coach admiration would strengthen the negative association of athlete admiration with social cohesion. The finding revealed that athlete admiration has a negative association with social cohesion, but coach admiration has a positive one. Regarding interaction, the findings partially confirmed this hypothesis, revealing a negative association between athlete admiration and social cohesion at low coach admiration levels, but reducing this effect as coach admiration rose. This confirmed the moderating role of coach admiration. This is consistent with other studies that indicate that when a leader and follower are in alignment,

shared narcissistic traits can improve social outcomes (Hart & Adams, 2014; Roberts et al., 2017).

However, athlete narcissistic admiration by itself does not promote social cohesion unless it is bolstered by coach admiration, which encourages reciprocal awareness. This supports other studies showing that mutual admiration may foster respect and recognition among team members, strengthening interpersonal ties (Brunell & Campbell, 2011; London, 2019). Conversely, low levels of coach admiration exacerbated athletes' self-centred tendencies and hampered social cohesion, underscoring the importance of leadership in influencing team dynamics as noted by Eys and Kim (2017).

Although it is weaker, the persistent negative relationship indicates that social cohesion is not entirely dependent on admiration, even at high levels of coach admiration. Therefore, regardless of leadership admiration, narcissistic traits may still conflict with group goals, which highlights the importance of taking into account broader contextual and interpersonal factors (Bushman & Baumeister, 1998).

### **Narcissistic Rivalry and Task and Social Cohesion**

Hypotheses 3 and 4 anticipated that when coach rivalry is high, increases in athlete rivalry would be associated with increased task cohesion and social cohesion, respectively. Interestingly, athlete rivalry was negatively associated with both task and social cohesion, whereas coach rivalry had the same effect but to a lesser degree and independently. These detrimental effects of both coach and athlete rivalry on task and social cohesion underscore the disruptive potential of narcissistic traits (Krizan & Johar, 2015). This supports “Bust Effect” proposed by Roberts et al. (2017), which highlights how collaboration and team performance are weakened by narcissistic leader–follower rivalry. Furthermore, competition and interpersonal conflict are fostered by rivalry-driven dynamics, which interfere with the cooperative efforts required for task and social cohesion (Bushman & Baumeister, 1998; Stoeber et al. 2015). The moderating effects of coach rivalry on the association between athlete rivalry and both task and social cohesion, which was the focus of Hypotheses 3 and 4, were not supported. Reductions in task and social cohesion were independently predicted by coach and athlete rivalry, but no interaction effects were found.

Consequently, the narcissistic tolerance hypothesis is extended by this finding, which implies that while rivalry invariably results in disruption, tolerance among narcissists may only be possible in situations of mutual admiration (Hart

& Adams, 2014; Back et al. 2013). Without moderation, the detrimental effects on cohesion are exacerbated by rivalry between individuals, which fosters a culture of constant disagreement that weakens task and social cohesion. Remarkably, rivalry seems particularly resistant to intervention, underscoring its disruptive potential (Back et al., 2013), even in situations where leadership might effectively handle other types of interpersonal conflict.

### **Theoretical Implications**

The results integrate the narcissistic tolerance hypothesis with the NARC framework, leading to a better understanding of narcissistic dynamics in leadership and followership. The study emphasises the dualistic character of narcissistic traits, explaining how rivalry may contribute to the “Bust Effect,” which undermines team dynamics, while admiration may contribute to the “Boom Effect,” which fosters cohesiveness (Roberts et al., 2017). This duality is congruent with Back et al. (2013), who emphasise narcissism’s adaptive and maladaptive directions. Moreover, the findings extend the narcissistic tolerance hypothesis (Hart & Adams, 2014) by showing that shared narcissistic attributes, particularly admiration, can promote cohesion, whereas shared narcissistic rivalry, which intensifies conflict, was not associated with the tolerance effect proposed by the hypothesis.

### **Practical Implications**

The findings underline the relevance of leadership development in managing narcissistic dynamics within sports teams. Coaches ought to be conscious of their own narcissistic traits and the impact on athletes. To prevent conflicts that could undermine team cohesion, coaches should adopt effective leadership styles in their dealings with team members and develop strategies for managing diverse interpersonal behaviours among team members. Additionally, creating an atmosphere that transforms admiration into group goal setting and improves task and social cohesion must also be a top priority for coaches, sport psychologists, and team managers. On the other hand, the negative consequences of rivalry may be reduced through team-building activities and conflict resolution. Therefore, sport psychologists may assist by facilitating interventions aimed at managing interpersonal tensions, and strengthening group cohesion, while

team managers can support the implementation of team-focused practices that foster a positive team environment and positive leader–follower interactions. These approaches align with research by Smith et al. (2013), suggesting that transformational leadership can strengthen team cohesion by attending to team members' individual needs, promoting collaboration, and establishing objectives that strengthen teamwork and cohesion.

### **Limitations and Future Study Directions**

Despite its strengths, this study has limitations that should be addressed in future research. First, the generalisability of the findings is limited because the sample consisted primarily of male footballers. Future research should investigate these associations across different sports, genders, and levels of competition. Furthermore, while the study focused on self-reports and informant assessments, the use of observational or longitudinal designs could provide further insight into how narcissistic dynamics develop and change over time.

Future studies may also investigate how culture influences the interactions between narcissistic leaders and followers. For instance, cultures that prioritise collaboration may demonstrate different cohesion patterns from those that emphasise individual achievement. Finally, a better understanding of the interaction between narcissism and team dynamics could also be gained by examining additional moderators, such as team size, organisational culture, and competitive pressures.

### **CONCLUSION**

This study investigated the relationship between leaders' and followers' narcissistic traits and their associations with social and task cohesion in sports teams. The findings partially support the hypotheses, showing that leader narcissistic traits, particularly admiration, may buffer the negative associations between follower narcissistic admiration and team cohesion. While admiration encourages collaboration, narcissistic rivalry was consistently associated with lower cohesion, regardless of the level of coach rivalry. These findings have important practical implications for sport psychologists, coaches, and team managers. Specifically, the results suggest that narcissistic admiration may be managed in ways that support positive leadership, followership, and team

development outcomes, whereas narcissistic rivalry should be carefully monitored because of its consistently negative influence on cohesion. Overall, these results extend the narcissistic tolerance hypothesis and deepen our understanding of how leader–follower narcissistic dynamics influence cohesion in sport teams, providing both theoretical insights and practical guidance for improving team functioning and cohesion.

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## Appendices

### *Appendix 1: SPSS Output for Descriptive Statistics and Correlations*

#### APPENDIX 1 SPSS DATA OF DESCRIPTIVE STATISTICS AND CORRELATIONS

##### Descriptives

| Descriptive Statistics |     |         |         |        |                |
|------------------------|-----|---------|---------|--------|----------------|
|                        | N   | Minimum | Maximum | Mean   | Std. Deviation |
| Age                    | 217 | 18      | 39      | 22.23  | 3.937          |
| Athlete_Admiration     | 217 | 1.67    | 6.00    | 4.7962 | .80280         |
| Coach_Admiration       | 217 | 1.56    | 6.00    | 4.8258 | .70247         |
| Athlete_Rivalry        | 217 | 1.00    | 5.11    | 3.1178 | .86326         |
| Coach_Rivalry          | 217 | 1.00    | 5.67    | 3.3297 | .97853         |
| Task_Cohesion          | 217 | 1.67    | 6.00    | 4.4931 | 1.07799        |
| Social_Cohesion        | 217 | 1.33    | 5.78    | 4.1362 | .88302         |
| Valid N (listwise)     | 217 |         |         |        |                |

##### Correlations

|                    |                     | Correlations       |                  |                 |
|--------------------|---------------------|--------------------|------------------|-----------------|
|                    |                     | Athlete_Admiration | Coach_Admiration | Athlete_Rivalry |
| Athlete_Admiration | Pearson Correlation | 1                  | .547**           | .367**          |
|                    | Sig. (1-tailed)     |                    | <.001            | <.001           |
|                    | N                   | 217                | 217              | 217             |
| Coach_Admiration   | Pearson Correlation | .547**             | 1                | -.115*          |
|                    | Sig. (1-tailed)     | <.001              |                  | .046            |
|                    | N                   | 217                | 217              | 217             |
| Athlete_Rivalry    | Pearson Correlation | .367**             | -.115*           | 1               |
|                    | Sig. (1-tailed)     | <.001              | .046             |                 |
|                    | N                   | 217                | 217              | 217             |
| Coach_Rivalry      | Pearson Correlation | -.215**            | .160**           | .238**          |
|                    | Sig. (1-tailed)     | <.001              | .009             | <.001           |
|                    | N                   | 217                | 217              | 217             |
| Task_Cohesion      | Pearson Correlation | -.055              | .272**           | -.625**         |
|                    | Sig. (1-tailed)     | .209               | <.001            | <.001           |
|                    | N                   | 217                | 217              | 217             |
| Social_Cohesion    | Pearson Correlation | -.149*             | .215**           | -.671**         |
|                    | Sig. (1-tailed)     | .014               | <.001            | <.001           |
|                    | N                   | 217                | 217              | 217             |
| Age                | Pearson Correlation | -.214**            | -.204**          | -.043           |
|                    | Sig. (1-tailed)     | <.001              | .001             | .262            |
|                    | N                   | 217                | 217              | 217             |

|                    |                     | <b>Correlations</b> |               |                 |         |
|--------------------|---------------------|---------------------|---------------|-----------------|---------|
|                    |                     | Coach_Rivalry       | Task_Cohesion | Social_Cohesion | Age     |
| Athlete_Admiration | Pearson Correlation | -.215**             | -.055         | -.149*          | -.214** |
|                    | Sig. (1-tailed)     | <.001               | .209          | .014            | <.001   |
|                    | N                   | 217                 | 217           | 217             | 217     |
| Coach_Admiration   | Pearson Correlation | .160**              | .272**        | .215**          | -.204** |
|                    | Sig. (1-tailed)     | .009                | <.001         | <.001           | .001    |
|                    | N                   | 217                 | 217           | 217             | 217     |
| Athlete_Rivalry    | Pearson Correlation | .238**              | -.625**       | -.671**         | -.043   |
|                    | Sig. (1-tailed)     | <.001               | <.001         | <.001           | .262    |
|                    | N                   | 217                 | 217           | 217             | 217     |
| Coach_Rivalry      | Pearson Correlation | 1                   | -.337**       | -.281**         | .090    |
|                    | Sig. (1-tailed)     |                     | <.001         | <.001           | .094    |
|                    | N                   | 217                 | 217           | 217             | 217     |
| Task_Cohesion      | Pearson Correlation | -.337**             | 1             | .855**          | -.228** |
|                    | Sig. (1-tailed)     | <.001               |               | <.001           | <.001   |
|                    | N                   | 217                 | 217           | 217             | 217     |
| Social_Cohesion    | Pearson Correlation | -.281**             | .855**        | 1               | -.100   |
|                    | Sig. (1-tailed)     | <.001               | <.001         |                 | .071    |
|                    | N                   | 217                 | 217           | 217             | 217     |
| Age                | Pearson Correlation | .090                | -.228**       | -.100           | 1       |
|                    | Sig. (1-tailed)     | .094                | <.001         | .071            |         |
|                    | N                   | 217                 | 217           | 217             | 217     |

\*\* . Correlation is significant at the 0.01 level (1-tailed).

\* . Correlation is significant at the 0.05 level (1-tailed).

*Appendix 2: SPSS Output for Moderated Regression Analysis*

## APPENDIX 2

## SPSS DATA OF MODERATED REGRESSION ANALYSIS

**Descriptives**

| Descriptive Statistics |     |         |         |        |                |
|------------------------|-----|---------|---------|--------|----------------|
|                        | N   | Minimum | Maximum | Mean   | Std. Deviation |
| Ath_Ad                 | 217 | 1.67    | 6.00    | 4.7962 | .80280         |
| Co_Ad                  | 217 | 1.56    | 6.00    | 4.8258 | .70247         |
| Valid N (listwise)     | 217 |         |         |        |                |

**Descriptives**

| Descriptive Statistics |     |         |         |        |                |
|------------------------|-----|---------|---------|--------|----------------|
|                        | N   | Minimum | Maximum | Mean   | Std. Deviation |
| Ath_Ri                 | 217 | 1.00    | 5.11    | 3.1178 | .86326         |
| Co_Ri                  | 217 | 1.00    | 5.67    | 3.3297 | .97853         |
| Valid N (listwise)     | 217 |         |         |        |                |

**Matrix 1 OUTCOME/MODEL 1**

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Version 4.2 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)Documentation available in Hayes (2022). [www.guilford.com/p/hayes3](http://www.guilford.com/p/hayes3)

\*\*\*\*\*

Model : 1

Y : TC

X : ZAth\_Ad

W : ZCo\_Ad

Sample

Size: 217

\*\*\*\*\*

OUTCOME VARIABLE

TC

Model Summary

R R-sq MSE F df1 df2 p

.4510 .2034 .9387 18.1301 3.0000 213.0000 .0000

Model

coeff se t p LLCI ULCI

constant 4.3851 .0703 62.3386 .0000 4.2465 4.5238

ZAth\_Ad -.2717 .0794 -3.4241 .0007 -.4282 -.1153

ZCo\_Ad .5065 .0793 6.3841 .0000 .3501 .6629

Int\_1 .1982 .0458 4.3268 .0000 .1079 .2885

Product terms key:

Int\_1 : ZAth\_Ad x ZCo\_Ad

Test(s) of highest order unconditional interaction(s):

R2-chng F df1 df2 p

X\*W .0700 18.7208 1.0000 213.0000 .0000

Focal predict: ZAth\_Ad(X)

Mod var: ZCo\_Ad (W)

Conditional effects of the focal predictor at values of the moderator(s):

ZCo\_Ad Effect se t p LLCI ULCI

-1.0174 -.4734 .0869 -5.4443 .0000 -.6448 -.3020

.0898 -.2539 .0800 -3.1753 .0017 -.4116 -.0963

1.0389 -.0658 .0974 -.6757 .4999 -.2579 .1262

\*\*\*\*\* ANALYSISNOTES AND ERRORS \*\*\*\*\*

Level of confidence for all confidence intervals in output:

95.0000

W values in conditional tables are the 16th, 50th, and 84th percentiles .

----- END MATRIX-----

## Matrix 2 OUTCOME/MODEL 2

Run MATRIXprocedure:

\*\*\*\*\* PROCESS Procedure for SPSS Version 4.2 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)

Documentation available in Hayes (2022). [www.guilford.com/p/hayes3](http://www.guilford.com/p/hayes3)

Model : 1

Y : SC

X : ZAth\_Ad

W : ZCo\_Ad

Sample

Size: 217

OUTCOME VARIABLE

SC

Model Summary

| R     | R-sq  | MSE   | F       | df1    | df2      | p     |
|-------|-------|-------|---------|--------|----------|-------|
| .4109 | .1688 | .6572 | 14.4223 | 3.0000 | 213.0000 | .0000 |

Model

|          | coeff  | se    | t       | p     | LLCI   | ULCI   |
|----------|--------|-------|---------|-------|--------|--------|
| constant | 4.0873 | .0589 | 69.4426 | .0000 | 3.9713 | 4.2033 |
| ZAth_Ad  | -.3167 | .0664 | -4.7695 | .0000 | -.4476 | -.1858 |
| ZCo_Ad   | .3921  | .0664 | 5.9058  | .0000 | .2612  | .5229  |
| Int_1    | .0898  | .0383 | 2.3440  | .0200 | .0143  | .1654  |

Product terms key:

Int\_1 : ZAth\_Ad x ZCo\_Ad

Test(s) of highest order unconditional interaction(s):

| R2-chng | F     | df1    | df2    | p        |
|---------|-------|--------|--------|----------|
| X*W     | .0214 | 5.4944 | 1.0000 | 213.0000 |

Focal predict: ZAth\_Ad (X)

Mod var: ZCo\_Ad (W)

Conditional effects of the focal predictor at values of the moderator (s):

| ZCo_Ad  | Effect | se    | t       | p     | LLCI   | ULCI   |
|---------|--------|-------|---------|-------|--------|--------|
| -1.0174 | -.4081 | .0728 | -5.6096 | .0000 | -.5515 | -.2647 |
| .0898   | -.3086 | .0669 | -4.6125 | .0000 | -.4405 | -.1767 |
| 1.0389  | -.2234 | .0815 | -2.7402 | .0067 | -.3841 | -.0627 |

\*\*\*\*\* ANALYSISNOTES AND ERRORS \*\*\*\*\*

Level of confidence for all confidence intervals in output:  
95.0000

W values in conditional tables are the 16th, 50th, and 84th percentiles .

----- END MATRIX-----

### Matrix 3 OUTCOME/MODEL 3

Run MATRIXprocedure:

\*\*\*\*\* PROCESS Procedure for SPSS Version 4.2 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)  
Documentation available in Hayes (2022). [www.guilford.com/p/hayes3](http://www.guilford.com/p/hayes3)

\*\*\*\*\*

Model : 1

Y : TC

X : ZAth\_Ri

W : ZCo\_Ri

Sample

Size: 217

\*\*\*\*\*

OUTCOME VARIABLE

TC

## Model Summary

| R     | R-sq  | MSE   | F       | df1    | df2      | p     |
|-------|-------|-------|---------|--------|----------|-------|
| .6541 | .4278 | .6743 | 53.0854 | 3.0000 | 213.0000 | .0000 |

## Model

|          | coeff  | se    | t        | p     | LLCI   | ULCI   |
|----------|--------|-------|----------|-------|--------|--------|
| constant | 4.4944 | .0565 | 79.5118  | .0000 | 4.3830 | 4.6058 |
| ZAth_Ri  | -.6222 | .0575 | -10.8132 | .0000 | -.7356 | -.5088 |
| ZCo_Ri   | -.2157 | .0576 | -3.7437  | .0002 | -.3293 | -.1021 |
| Int_1    | -.0054 | .0395 | -.1374   | .8909 | -.0833 | .0724  |

Product terms key:

Int\_1 : ZAth\_Ri x ZCo\_Ri

Test(s) of highest order unconditional interaction(s):

| R2-chng | F     | df1   | df2    | p        |       |
|---------|-------|-------|--------|----------|-------|
| X*W     | .0001 | .0189 | 1.0000 | 213.0000 | .8909 |

\*\*\*\*\* ANALYSISNOTES AND ERRORS \*\*\*\*\*

Level of confidence for all confidence intervals in output:

95.0000

----- END MATRIX-----

**Matrix 4 OUTCOME/MODEL 4**

Run MATRIX procedure:

\*\*\*\*\* PROCESS Procedure for SPSS Version 4.2 \*\*\*\*\*

Written by Andrew F. Hayes, Ph.D. [www.afhayes.com](http://www.afhayes.com)  
 Documentation available in Hayes (2022). [www.guilford.com/p/hayes3](http://www.guilford.com/p/hayes3)

Model : 1

Y : SC

X : ZAth\_Ri

W : ZCo\_Ri

Sample

Size: 217

\*\*\*\*\*  
OUTCOME VARIABLE:

SC

## Model Summary

| R     | R-sq  | MSE   | F       | df1    | df2      | p     |
|-------|-------|-------|---------|--------|----------|-------|
| .6862 | .4709 | .4183 | 63.1998 | 3.0000 | 213.0000 | .0000 |

## Model

|  | coeff | se | t | p | LLCI | ULCI |
|--|-------|----|---|---|------|------|
|--|-------|----|---|---|------|------|