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# Does the German sports system recruit coaches with a functional personality?—Attempting an answer by comparing German basketball coaches with teachers and managers

## Supplementary Information

The online version of this article (<https://doi.org/10.1007/s12662-024-00963-5>) contains supplementary material, which is available to authorized users.

## Introduction

The following study aims to fill a gap in understanding the relationship between coaches' personalities and their roles and shedding light on the implications for athlete development and team dynamics. Even though the ideal Big Five personality scores for coaches are still unknown, one could argue that the ideal personality pattern of a coach should match those of teachers and managers. The individuals in these two professions must already exhibit appropriate characteristics necessary for their respective roles due to institutional selection, self-selection, education, and training. Therefore, the appropriateness of coaches' traits is evaluated using professional groups as a reference. To do this, the study uses a specialized coach survey to identify differences be-

tween coaches at the professional and amateur levels. After that, these results are compared to the two professional cohorts that deal with comparable challenges in the workplace: teachers and managers, as well as the general population. Thus, the goals of the study was to assess whether German basketball coaches are making the proper personal growth and if their training adequately addresses these subjects.

It is still up for debate how a coach's personality and their line of work relate—for example, whether personality is shaped by the job or whether personality traits influence career choice. The German Olympic Sports Federation points out the necessity of emphasizing personal growth in addition to technical skills in coach education (Deutscher Olympischer Sportbund, 2018). For example, action skills, which include technical, social, methodical, and personality competencies, can be improved through mentoring, feedback, and coaching sessions (Wien & Franzke, 2013; Negri, 2010). According to recent research, social environment and genetic predisposition play a significant role in personality development (Jucksch, Salbach-Andrae, & Lehmkuhl, 2009). The degree to which personality traits persist

throughout a person's life is not entirely clear. Research to date has acknowledged variations during childhood, adolescence, and adulthood (Roberts, Walton, & Viechtbauer, 2006; Lucas & Donnellan, 2011; Graham et al., 2020). An inverted U-shaped curve is thought to represent the pattern of trait consistency, with stability increasing until approximately the age of 40 and then declining after the age of 60 (Seifert, Rohrer, Egloff, & Schmukle, 2022). Notably, the course of personality development can be influenced by important life events and how people react to them (Specht, Egloff, & Schmukle, 2011; Sneed & Pimontel, 2012). Considering the possibility of personality changes over time, recent research, including that conducted by Seifert et al. (2022), raises the possibility that stability may not be totally fixed, especially in adulthood. Through interventions, contemporary literature questions the transformability of adult personalities—albeit within the confines of a general stability anchored in early life (Roberts et al., 2017; Hudson, 2021). However, it is thought that choosing a career that fits your personality is essential for success (Treier, 2019).

Academic contemplation persists in emphasizing the complex interrelation-

Gert G. Wagner died shortly before the article was published. We deeply thank him for his tireless dedication.

ship between a coach's personal nature and their professional role, as well as the reciprocal influence between professional obligations and intrinsic personality traits. This reflection is divided into the selection hypothesis, which highlights how a person's personality influences their choice of vocation, and the socialization hypothesis, which contends that career goals have an impact on personality traits (Externbrink & Keil, 2018). The combination of these theories, while dynamic and interrelated, points to the unstoppable impact of both on a coach's personality. Moreover, Marsh (1986) proposed that choosing a career or hobby can be significantly influenced by one's self-concept. Furthermore, it is crucial to the sustainability of training and learning because long-lasting effects can only be attained when the self-concept is also impacted (Suls, 1993).

Sports science has paid a lot of attention to coaches' personalities in recent years, attempting to explore various facets of personalities (Conzelmann, Gabler, & Nagel, 1998; Schliermann & Stoll, 2008; Krug, 2010; Fabinski, Finck, Hasse, Witusch, & Zender, 2018; Strauch, Waesche, Jekauc, 2018, Morlang, 2020; Sygusch et al., 2020a; Conzelmann & Schmidt, 2020; Cook, Fletcher, & Carroll, 2020; Cook, Fletcher, & Peyrebrune, 2021; Siegel & Buckwitz, 2021). Still, research examining the relationship between personality and sports was published as late as the 1960s (Hansen, 1960; Kane & Harris, 1973; Stoll & Rolle, 1996). During this time, a variety of subjects were covered in sports psychology research, including personality in professional roles like coaching and sports participation. There have also been attempts to identify specific personality traits and make the necessary corrections (Conzelmann & Schmidt, 2020). Sports personality trait measurement is still a topic of great interest at the moment (Laborde, Allen, Katschak, Mattonet, & Lachner, 2019; Cook et al., 2020; Cook et al., 2021). Numerous studies (Balch & Scott, 2007; Pla-Cortés, Gomà I Freixanet, & Avilés Antón, 2015) have shown differences in personality traits between team sport referees and the general population, but not with occupational groups. Dodt,

Fasold, and Memmert (2021), for example, examined the personality profiles of highly experienced German handball referees. In a similar vein, comparisons with the German general population were conducted using data from Danner et al. (2019), but not with other professional groups such as teachers and managers. Additionally, another study examined the characteristics of amateur handball referees within a comparable framework (Dodt, Fasold, & Memmert, 2022). A study by Cook et al. (2021) looked at the personalities of professional swimming coaches. Their research revealed that world-class (Olympic participation) coaches are generally less agreeable than elite (Olympic medal) coaches. Characteristic differences appear to be significant in connection to athletes' success. An athlete may be able to dedicate more of their free time to their performance, for example, if their coach has a high agreeableness rating. This is because they will not waste mental energy reflecting on previous disputes or questioning whether decisions were made with their best interests in mind. A thorough review of qualities impacting athlete performance (Cook et al., 2020) also emphasizes the relevance of coaches' conscientiousness. Consequently, the alignment of an individual's selected career path with their innate personality traits becomes essential, serving as a foundation for the most fruitful professional interactions. But there appears to be a glaring hole in the German sports associations' meticulous investigation of the qualities that make up their coaches. The coaching curriculum of the German Basketball Association makes this particularly clear (Bauer & Boesing, 2018). Recent empirical analyses, like the Potential Analysis of the German (PotAS) top sports associations, highlight the need for a thorough examination of coaches' personalities. In sports environments involving children and adolescents, this is particularly crucial for managing the tension between individual success and developmental orientation (PotAS, 2019; Sygusch, Muehe, Liebl, Fabinski, & Schwind-Gick, 2020a; Sygusch, Muehe, Liebl, Fabinski, & Schwind-Gick, 2020b; Siegel & Buckwitz, 2021). As partici-

pants in the sport, coaches play a variety of roles, from developing young athletes to managing the development of mature athletes, all of which call for sophisticated and specialized strategies. Recent empirical research has focused on the complex interface that exists between a coach's personality and effectiveness, particularly in team sports. These studies suggest that a coach's personality has a significant impact on an athlete's commitment and subsequent performance results. Yet, there is not a solid theory that outlines the ideal personality traits for sports coaches.

Coaches in team sports must fulfill specific requirements. They begin by supporting each individual in improving their unique athletic abilities. They also need to manage a team and monitor group dynamics. The characteristics that a competent coach must possess in order to achieve success in both team development and competition differ according to the athletes' age and ability level. Youth coaches and teachers serve comparable responsibilities, highlighting their common experience navigating varied groups and emphasizing each student's individual developmental path. In contrast to the more dynamic and risk-prone domain of coaching, the teaching profession's underlying employment stability may contribute to a tendency toward risk aversion (Ayaita & Stuermer, 2019). Managers responsibilities in business organizations have comparable problems as coaching teams, with performance goals, dynamic situations, and public scrutiny all playing important roles. The correspondence between successful managers and specific traits like emotional stability, conscientiousness, extraversion, and openness emphasizes the resonance between these dissimilar but complementary professional domains (de Dios Tena & Forrest, 2007).

In the past, personality research has used a variety of constructs to describe the variations in each individual's personality. Of these, the Big Five personality model is a widely recognized framework that categorizes personality traits into neuroticism, extraversion, agreeableness, openness, and conscientiousness (Lang, John, Luedtke, Schupp, & Wagner,

2011; Masood, Ahmed, & Shaikh, 2018). Neuroticism focuses on emotional stability, while extraversion encompasses interpersonal engagement. Neurotic individuals struggle to maintain emotional equilibrium, while openness emphasizes receptiveness to new experiences and intellectual curiosity. Agreeableness emphasizes social behavior and trust, while conscientiousness emphasizes self-discipline and self-control (McCrae & Costa, 2005; Dehne & Schupp, 2007; Dodt et al., 2022). The model provides a useful lens for examining and evaluating individual dispositions and is showed more detailed in [Table 1](#).

Comparing the personalities within various professional cadres may help identify the optimum selection and training paradigms for coaches. We compare our data on coaches' personalities to those of teachers, managers, and the German general population using the German Socio-Economic Panel Study (SOEP), which includes a short scale of the Big Five (Dehne & Schupp, 2007). The SOEP was used in multiple similar cases, e.g. by Eulenberger (2015) with data on teachers, to determine how well our data match these norms. According to a meta-analysis by Kim, Joerg, and Klassen (2019), there is a significant influence of teacher personality on teaching effectiveness when comparing teachers to other professional cohorts. Significant relationships have been found between teaching effectiveness and the Big Five traits of extraversion, conscientiousness, emotional stability, and openness (ibid.). Therefore, a comparison of the personalities of teachers and youth coaches suggests that criteria for selecting coaches and their professional development could be improved, much like teacher training programs do (Mayr, 2014; Mayr, 2016). Additionally, Masood et al. (2018) clarify how the Big Five personality traits have a significant influence on managerial success, especially in the field of project management. Different analyses identify differences between the characteristics of managers and other people. According to Fichte (2017), managers typically exhibit greater emotional stability and a lower neuroticism score. Furthermore,

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## Does the German sports system recruit coaches with a functional personality?—Attempting an answer by comparing German basketball coaches with teachers and managers

### Abstract

Currently, there is no theory that identifies the ideal personality type for sports coaches. The study's goal is to gain insight into the personalities of German basketball coaches and use existing study results from other professional groups to make recommendations for the content of coaches' education. Given the German Olympic Sports Federation's emphasis on comprehensive coach education that includes personal development, this paper examines the relationship between a coach's vocation and personality, filling in knowledge gaps about how coaches' personalities appear. The analyses are based on a unique dataset of 360 German basketball coaches and data from the German Socio-Economic Panel Study (SOEP), allowing for a more in-depth comparison of coaches' Big Five personality traits. Using SOEP data from the German general population, teachers, and managers as benchmarks, this paper investigates the relationship between different coaching license levels and distinct personality profiles, providing insights into the characteristics displayed by coaches at various professional levels. The analysed data indicate that lower coaching licence levels are associated with lower neuroticism and more agreeableness, whereas openness, conscientiousness, and extraversion are higher. When comparing coaches to the general population and other

occupational groups, A-license coaches have more characteristics that are similar with managers, whilst C-license coaches have more parallels with teachers. Furthermore, examining particular traits and individual comparisons, it is transparent that C-license coaches are more agreeable than A-license coaches. The findings suggest that coach development programs should be improved by incorporating insights from teachers and managers to select coaches and update educational paradigms more carefully. The study emphasizes the importance of traits such as conscientiousness and agreeableness in coaching success and identifies potential areas for intervention to maximize coaching efficacy. In conclusion, this study adds to our empirical understanding of the complex relationships between personality traits, professional roles, and effective coaching on multiple levels. Furthermore, it emphasizes the dynamic relationship between an individual coach's intrinsic disposition and professional efficacy, showing the importance of tailored interventions to improve coaching outcomes.

### Keywords

Personalities · Athlete development · Personality traits · German Socio-Economic Panel Study (SOEP) · Coaching dynamics · Occupational impact

in comparison to their nonmanagerial counterparts, they seem to demonstrate higher levels of conscientiousness, extraversion, and openness (Fietze, Holst, & Tobsch, 2009). This intersection of research strands emphasizes the need for a comprehensive strategy that takes into account a coach's natural temperament, the demands of their work environment, and the ramifications for player growth and team dynamics.

The study's goal is to gain insights into the personalities of German basketball coaches and use existing study results from other professional groups to derive suggestions for the content of trainer training. Our hypothesis states that higher licensed coaches are more

likely to be open, conscientious, emotionally stable, and extraverted, while coaches with lower licenses are usually more agreeable. It is noteworthy that we are only able to address a limited number of questions and cannot provide comprehensive answers.

We anticipate a negative correlation between neuroticism and coaching license levels (H1a) based on this, and we expect higher-level coaches to demonstrate more emotional stability by adhering to prior research. Additionally, we predict that agreeableness will show negative associations with coaching license levels, while conscientiousness, extraversion, and openness will show positive associations (H1b and H1c, respectively).

**Table 1** Traits, facets and definition of the Big Five personality model

	Facets	Definition
	Adapted from Dehne and Schupp (2007)	Adapted from Hogan and Hogan (2007)
Openness	Fantasy, Aesthetics, Feelings, Actions, Ideas, Values	The degree to which a person needs intellectual stimulation, change, and variety
Conscientiousness	Competence, Order, Dutifulness, Achievement Striving, Self-Discipline, Deliberation	The degree to which a person is willing to comply with conventional rules, norms, and standards
Extraversion	Warmth, Gregariousness, Assertiveness, Activity, Excitement-Seeking, Positive Emotions	The degree to which a person needs attention and social interaction
Agreeableness	Trust, Straightforwardness, Altruism, Compliance, Modesty, Tender-Mindedness	The degree to which a person needs pleasant and harmonious relations with others
Neuroticism	Anxiety, Angry Hostility, Depression, Self-Consciousness, Impulsiveness, Vulnerability	The degree to which a person experiences the world as threatening and beyond his/her control

Furthermore, in comparison to the general population, coaches (H2a for C-license; H2b for A-license) are expected to exhibit lower levels of neuroticism and higher levels of agreeableness, conscientiousness, extraversion, and openness.

It is predicted that there will not be any distinctions in any personality attribute between teachers (H3a) and amateur sports coaches (C-license) when compared to specified requirements. Furthermore, it is anticipated that A-license and elite coaches will be less neurotic than managers (H3b), but not differently from managerial profiles (H3c) in other domains.

Lastly, considering the unique demands of coaching roles, the study predicts that A-license coaches will align more with managerial traits (H4b) than with the general population, and C-license coaches will share personality traits closer to those of teachers (H4a).

The applied method is presented in the “Results” section, the empirical results are shown in “Discussion” section, and their applicability to the German coach recruitment system is discussed in the section “Conclusions”.

## Methods

### Subjects

Based on comparable studies, our methodological approach – which is primarily descriptive – can be justified (Dodt et al., 2021; Dodt et al., 2022). Our goal is to determine if the coaches’ current personalities satisfy possible requirements. Whether these character-

istics depend on age, gender, or education is less important. What matters most is the qualities that define the coaches and how they present themselves. Our primary goal is to obtain a clear picture of each coach’s unique characteristics and personality, regardless of how these relate to sociodemographic variables. We compare the coaches’ data with manager, teacher, and representative German general population data using information from the SOEP for verification. The purely descriptive method enables us to investigate the coaches’ real characteristics and behaviors, which is essential for determining whether or not their present personality profiles meet the demands of the industry.

### Tools

For coaches, an anonymous cross-sectional survey was conducted. In theory, potential participants were chosen at random through sampling. In customized ways, the entire collective of all active coaches was addressed. First, the German Basketball Association sent digital letters to all holders of A- and B-licenses in Germany. Second, the coaches holding current C-licenses were contacted directly through the databases of the particular “Mini-Trainer-Ausbildung” and the various state basketball associations.

A web link allowed the coaches who had been contacted to access the online survey. An 8-week survey period was in effect. Within the first 14 days of the survey period, most responses were received. An overview of the survey and consent to participate were provided at the outset. Next, questions pertaining to

specific sports, such as coaching experience, licenses, and teams coached, were posed to the participants. The psychological items and the demographic questions came next.

This research uses data from the SOEP, a database that has provided extensive information on individuals within German households for over three decades (Wagner et al., 2008; Goebel et al., 2018), to create representative statistics of the general German population, managers, and teachers. Every year, over 20,000 households in Germany participate in this extensive panel survey, which collects detailed socioeconomic data (Fietze et al., 2009). The SOEP is frequently used in research because it is widely acknowledged as an essential source of representative data on various German population segments (Sieggers, Steinhauer, & Schuett, 2022). It has served as the basis for several studies that examine unique groups or those with small sample sizes (Schroeder et al., 2020; Heß, Von Scheve, Schupp, & Wagner, 2013; Deter & Van Hoorn, 2023). Notably, the SOEP has been instrumental in studying specific subpopulations like the self-employed (akin to managers) and journalists, investigating facets such as the Big Five personality traits (Caliendo, Fossen, & Kritikos, 2013; Schmidt, Schultz, & Wagner, 2023). The definition of “teacher” in our context is consistent with the SOEP data analyses conducted by Ayaita and Stuermer (2019): It specifically refers to those who work as elementary, secondary, or vocational schoolteachers. For the purposes of this study, however, this classification does not include instructors in higher education, such as professors, educators

in adult education, or instructors in different fields, such as skiing instructors. Regarding our definition of “managers,” we follow Holst and Busch’s (2010) guidelines: This is a reference to people who are 18 years of age or older who are listed in the SOEP as working in the private sector and occupying jobs with a lot of managerial responsibility. In larger businesses and organizations, this includes directors, executives, or board members; it also includes other managerial positions or highly skilled jobs, such as department heads, research personnel, or engineers.

The SOEP deliberately overrepresents households of particular interest, such as migrant or high-income households (Wagner et al., 2008). To ensure accuracy in the statistics retrieved, it integrates sampling weights that adjust for oversampling and potential panel attrition biases (German Institute for Economic Research (DIW) Berlin, n.d.). All statistics presented in this paper are weighted using the corresponding person-weight, including results from the subset analysis involving managers and teachers.

Moreover, the items of the SOEP were used for this data collection (Richter et al., 2017). In addition to the Big Five personality traits, the data collection also included sociodemographic data (marital status, household net income, highest degree, employment status) and trainer-specific data (sex, license level, trainer experience, league).

## Procedure

A total of 360 coaches, ages 18–85, participated in the survey (289 men, 70 women, and 1 unidentified). The majority reported training youth (71.1%), adults (62.7%), and senior citizens (50.2%) in mass sports. In total, 5.5% (20 individuals) had experience in the 1st Basketball Bundesliga, 4.3% in the ProA, and 7.0% in the 2nd Basketball Bundesliga ProB, when it came to competitive sports. The cases for the 1st Bundesliga are deemed sufficient for examination, despite their limitations for analysis. Coaches from the 1st and 2nd Bundesliga (men’s and women’s basketball, with different license requirements) were combined for analy-

sis to assure robustness. There are 51 A-license, 43 B-license, and 2 C-license coaches in this group of 96 coaches. A thorough examination focuses on coaches with C and A licenses as well as first and second division Bundesliga coaches with B and A licenses.

B-license coaches cover a wide range of roles, from recreational to professional sports, and from youth to adult coaching. Owing to this diversity, only C-license, A-license, and first/second division coaches were included in the analyses; comparisons with teachers or managers were disregarded.

With an overrepresentation of A-license coaches (14.2% response rate), the sample represents 4.7% of the coach population. This overrepresentation helps the analysis by providing numbers for comparisons. Nevertheless, the 360 participants’ license level distribution does not match that of the entire coach population ( $N=7646$ ). Subgroup analyses were carried out without weighting, but survey data was weighted to match population ratios to address this disparity for descriptive purposes.

Given that online surveys typically receive less than 10% of responses, a 4% response rate would result in about 300 respondents, or about 20 coaches with an A license, 62 coaches with a B license, and 224 coaches with a C license. It would be difficult to identify minor differences with these sample sizes, but the main focus of our research is on significant effects, especially relevant differences (Cohen’s  $d$  of minimum 0.2). Comparatively, because it is challenging to collect large samples, especially in competitive sports where the pool of eligible subjects is small, the field of sports science frequently deals with small sample sizes (Hecksteden, Kellner, & Donath, 2021). This background information aids in estimating the estimated 300 respondents for our study.

## Statistical analysis

The summaries of the mean values ( $M$ ), sample sizes ( $N$ ), and standard deviations ( $SD$ ) for each of the groups on the list are given prior to the statistical analysis. The Big Five means for the German gen-

eral population, trainers, teachers, and managers are shown in [Table 2](#). Variations are visible among all the metrics. Compared to the general population, the mean values of managers, teachers, and coaches are different. [Tables 3, 4, 5 and 6](#) show the results of the statistical testing of the mean differences. It is noteworthy that, because of rounding effects, they differ from the differences that can be calculated for [Table 1](#).

Initially, basketball coaches’ data was sorted according to their license levels. Furthermore, coaches from both the first and second leagues were merged for specific analyses.

Although the Big Five traits were measured with only 16 items, this was sufficient for our statistical analyses. We did not thoroughly evaluate each individual’s personality, which would have improved reliability and resulted in more items per trait. Instead, we aimed to make conclusions about groups of people. As a result, the reliability of our measurements may be slightly lower than what is required for assessing individual personalities. In the data analysis, mean values, standard deviations, and effect sizes are evaluated to test the hypothesis presented in the “Methods” section. To prevent alpha error accumulation, the comparisons of mean differences were computed using the Bonferroni correction (Haynes, 2013). The statistical analyses were carried out using SPSS (Statistical Package for the Social Sciences, version 28, IBM, Armonk, NY, USA).

Our analysis presents the mean values of the five dimensions of the Big Five personality traits, as well as their differences. Additionally, by using Cohen’s  $d$ , a measure of effect size, and  $p$ -values computed with the Bonferroni correction—where  $p$ -values equal to or less than 0.05 are considered significant—we indicate significance levels (Schaefer & Schwarz, 2019). Cohen’s  $d$  gauges the standardized distance between two means in terms of standard deviation. According to Cohen’s guidelines, an effect size of 0.8 or higher signifies a substantial difference, while a score of minimum 0.2 a small effect. A Cohen’s  $d$  of minimum 0.5 stands for a moderate effect (Cohen, 1988).

**Table 2** Summary of weighted characteristics for different groups: the adult population in Germany (SOEP), German basketball coaches (comprising all levels: 1st and 2nd division, A-license, B-license, C-license), managers, and teachers

		General population	Coaches all	1st/2nd division	A-license	B-license	C-license	Managers	Teachers
Openness	M	4.78	5.01	5.08	5.09	5.14	4.97	5.13	5.28
	N	25,147	360	96	70	120	170	1132	825
	SD	1.07	1.07	1.03	1.11	1.08	1.07	0.98	0.93
Conscientiousness	M	5.76	5.54	5.72	5.74	5.59	5.51	5.95	5.69
	N	25,276	360	96	70	120	170	1133	825
	SD	0.94	0.96	0.97	0.89	1.06	0.93	0.82	0.88
Extraversion	M	4.86	5.10	5.43	5.25	5.26	5.04	5.15	5.02
	N	25,312	360	96	70	120	170	1134	826
	SD	1.15	1.35	1.18	1.16	1.26	1.40	1.11	1.11
Agreeableness	M	5.40	5.54	5.35	5.17	5.46	5.59	5.33	5.47
	N	25,315	360	96	70	120	170	1130	826
	SD	0.97	0.96	0.96	0.95	0.99	0.95	0.96	0.90
Neuroticism	M	3.60	3.40	3.10	3.20	3.26	3.45	3.10	3.59
	N	25,336	360	96	70	120	170	1134	825
	SD	1.26	1.13	1.13	1.05	1.3	1.14	1.18	1.23

M mean, N number, SD standard deviation

**Table 3** The comparison shows the results of the statistical testing of the mean differences of different license and working levels of coaches. It is noteworthy that, because of rounding effects, they differ from the differences that can be calculated for Table 1. (Survey data was weighted to match population ratios to balance this discrepancy for descriptive purposes, but subgroup analyses were conducted without weighting.)

Predictors	t-test for equality of means											
	C-license vs A-license				C-license vs 1st/2nd division				A-license vs 1st/2nd division			
	p	MD	SE <sub>D</sub>	d	p	MD	SE <sub>D</sub>	d	p	MD	SE <sub>D</sub>	d
Openness	> 0.999	-0.12	0.16	-0.11	> 0.999	-0.10	0.13	-0.09	> 0.999	-0.05	0.32	-0.05
Conscientiousness	0.332	-0.22	0.13	-0.24	0.36	-0.21	0.12	-0.22	> 0.999	-0.04	0.25	-0.04
Extraversion	0.924	-0.21	0.17	-0.16	0.068	-0.39	0.16	-0.29	> 0.999	-0.18	0.31	-0.15
Agreeableness	0.008	0.43	0.13	0.45	0.18	0.25	0.12	0.26	> 0.999	-0.25	0.26	-0.25
Neuroticism	0.412	0.25	0.15	0.23	0.06	0.35	0.14	0.31	> 0.999	0.39	0.21	0.36

MD mean difference, SE<sub>D</sub> standard error difference, d Cohen's d

**Table 4** The comparison shows the results of the statistical testing of the mean differences of different license and working levels of coaches with the general population. It is noteworthy that, because of rounding effects, they differ from the differences that can be calculated for Table 1. (Survey data was weighted to match population ratios to balance this discrepancy for descriptive purposes, but subgroup analyses were conducted without weighting.)

Predictors	t-test for equality of means											
	C-license vs general population				A-license vs general population				1st/2nd division vs general population			
	p	MD	SE <sub>D</sub>	d	p	MD	SE <sub>D</sub>	d	p	MD	SE <sub>D</sub>	d
Openness	0.096	0.19	0.08	0.18	0.092	0.31	0.13	0.29	0.024	0.29	0.11	0.28
Conscientiousness	0.004	-0.25	0.07	-0.26	> 0.999	-0.02	0.11	-0.02	0.695	-0.04	0.10	-0.04
Extraversion	0.424	0.17	0.11	0.15	0.028	0.38	0.14	0.34	0.004	0.57	0.12	0.50
Agreeableness	0.032	0.19	0.07	0.20	0.184	-0.23	0.11	-0.24	0.634	-0.05	0.10	-0.05
Neuroticism	0.332	0.15	0.09	-0.12	0.008	-0.40	0.13	-0.32	0.004	-0.50	0.12	-0.39

MD mean difference, SE<sub>D</sub> standard error difference, d Cohen's d

## Results

We perform statistical analyses based on the above-mentioned hypotheses in the next section. **Figure 1** displays the outcomes of these means. Confidence inter-

vals that hardly overlap indicate a significant difference in mean differences from the compared group, which is indicative of relevant differences.

We investigated the differences in the means of the Big Five dimensions

between coaches with C- and A-licenses. Among these attributes only agreeableness demonstrated a significant difference ( $p=0.008$ ), validating hypothesis H1c and indicating a significant and favorable difference ( $M_{C-License} =$

**Table 5** The comparison shows the results of the statistical testing of the mean differences of different license and working levels of coaches with teachers and managers. It is noteworthy that, because of rounding effects, they differ from the differences that can be calculated for Table 1. (Survey data was weighted to match population ratios to balance this discrepancy for descriptive purposes, but subgroup analyses were conducted without weighting.)

Predictors	t-test for equality of means											
	C-license vs teachers				A-license vs managers				1st/2nd division vs managers			
	<i>p</i>	<i>MD</i>	<i>SE<sub>D</sub></i>	<i>d</i>	<i>P</i>	<i>MD</i>	<i>SE<sub>D</sub></i>	<i>d</i>	<i>p</i>	<i>MD</i>	<i>SE<sub>D</sub></i>	<i>D</i>
Openness	0.004	-0.30	0.09	-0.32	> 0.999	-0.03	0.14	-0.04	> 0.999	-0.05	0.11	-0.05
Conscientiousness	0.084	-0.18	0.08	-0.20	0.216	-0.21	0.11	-0.26	0.104	-0.23	0.10	-0.28
Extraversion	> 0.999	0.01	0.11	0.01	> 0.999	0.10	0.14	0.09	0.104	0.28	0.13	0.25
Agreeableness	0.472	0.12	0.08	0.14	0.636	-0.17	0.12	-0.17	> 0.999	0.02	0.10	0.02
Neuroticism	0.672	-0.13	0.10	-0.11	> 0.999	0.10	0.13	0.08	> 0.999	0.00	0.12	0.00

*MD* mean difference, *SE<sub>D</sub>* standard error difference, *d* Cohen's *d*

**Table 6** The highlighted (values in italics) effect sizes (Cohen's *d*) indicate which group coaches are more closely related to: the general population or educators and managers. The greater the similarity between the groups being compared, the smaller the effect size

	C-license		A-license		1st/2nd division	
	General Population	Teachers	General Population	Managers	General Population	Managers
Openness	0.18	-0.32*	0.29	-0.04	0.28*	-0.05
Conscientiousness	-0.26*	-0.20	-0.02	-0.26	-0.04	-0.28
Extraversion	0.15	0.01	0.34*	0.09	0.50*	0.25
Agreeableness	0.20*	0.14	-0.24	-0.17	-0.05*	0.02
Neuroticism	-0.12	-0.11	-0.32*	0.08	-0.39*	0.00

\*Significant difference in t-test for equality of means

5.59;  $M_{A-License} = 5.17$ ). Contrary to hypotheses H1a and H1b, the other traits—neuroticism, conscientiousness, openness, and extraversion—did not show any discernible differences between these groups. Neuroticism ( $d = 0.23$ ) and conscientiousness ( $d = -0.24$ ) show minimal effects.

Table 3 shows that there were no appreciable differences between coaches in the first and second divisions and coaches with C- and A-licenses. However, there are negligible differences in agreeableness ( $d = 0.26$ ), neuroticism ( $d = 0.31$ ), extraversion ( $d = -0.29$ ), and conscientiousness ( $d = -0.22$ ). There were no differences between A-license and 1st/2nd division coaches, but the analysis did reveal minor differences in neuroticism ( $d = 0.36$ ) and agreeableness ( $d = -0.25$ ).

Table 4 shows some support for Hypothesis H2a, which suggests that C-license coaches and the general population differed in certain characteristics. Significant differences were found between conscientiousness and agreeableness and these differences were deemed relevant

( $d = -0.26$ ;  $d = 0.20$ ). On the other hand, neuroticism, extraversion, and openness did not receive any support.

Hypothesis H2b, which looked at differences between A-license coaches and the general population, was supported by the significant differences in extraversion and neuroticism that were observed (Table 4). Openness, conscientiousness, and agreeableness between A-license coaches and the general population, however, did not significantly differ. Notably, we discovered minimal impacts for neuroticism ( $d = -0.32$ ), agreeableness ( $d = -0.24$ ), extraversion ( $d = 0.34$ ), and openness ( $d = 0.29$ ).

Different findings emerged from additional analyses (Table 5) examining hypotheses H3a, H3b, and H3c. A significant difference and small effect were observed in openness ( $p = 0.004$ ;  $d = -0.32$ ) and conscientiousness ( $d = -0.20$ ) between C-license coaches and teachers. This leads us to endorse H3a in particular. When comparing A-license coaches and managers, no differences were observed; however, we did find

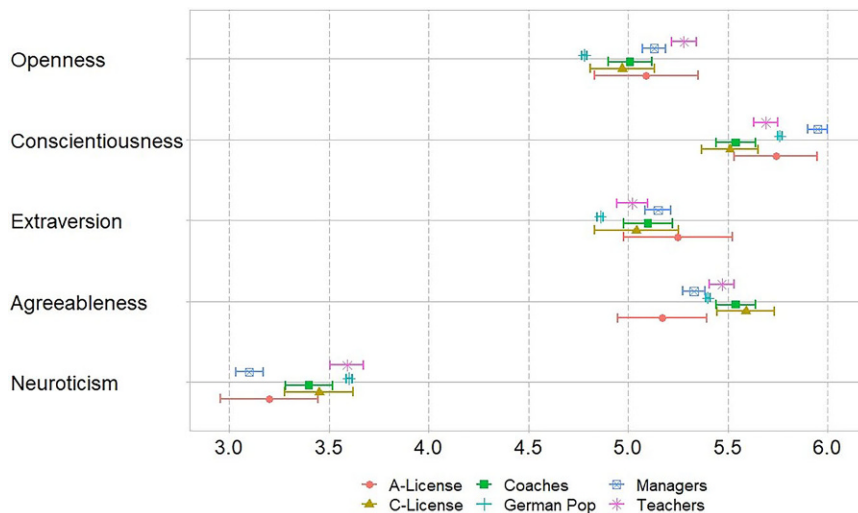
a slight effect in conscientiousness ( $d = -0.26$ ). The coaches and managers of the first and second divisions did not differ significantly from one another, although there were slight differences in extraversion ( $d = 0.25$ ) and conscientiousness ( $d = -0.28$ ), rejecting H3b and supporting H3c.

Finally, the Big Five mean differences between coaches and the general population, teachers, and managers imply that C-license coaches are more similar to teachers in a variety of traits, which is consistent with H4a.

Table 6 demonstrates that, when compared to C-license coaches, A-license and first- and second-level coaches were more similar to managers in terms of most characteristics. Nonetheless, A-license coaches displayed higher levels of conscientiousness than the general population, supporting H4b. Effect sizes indicate the separation between mean differences. The effect sizes highlighted in Table 6 show which group coaches are more likely to be associated with the general population or teachers and managers. The effect magnitude decreases as the similarity between the groups being compared increases.

## Discussion

This study offers insights into the personality traits of the “Big Five” of German basketball coaches. Through statistical analyses, it explores differences in these traits—openness, extraversion, conscientiousness, agreeableness, and neuroticism—across different coaching license levels and competition tiers. Compar-



**Fig. 1** ▲ Mean in the Big Five traits of all compared groups on a 7-point Likert scale. Confidence intervals that hardly overlap indicate a significant difference in mean differences from the compared group, which is indicative of relevant differences. (Survey data was weighted to match population ratios to balance this discrepancy for descriptive purposes, but subgroup analyses were conducted without weighting.)

isons are made against the German population and two professional groups, teachers and managers, considering their comparable skills and requirements to C- and A-license coaches.

The study does not prove the ideal levels of these traits for A- and C-license coaches, but it presumes that teachers and managers, due to their self-selection, education, and training, exhibit traits necessary for their roles. Thus, methods used for personality development in these professions might also be suitable for coaches.

Overall, the findings suggest a consistent decrease in neuroticism and agreeableness with lower coaching license levels, while openness, conscientiousness, and extraversion tend to increase at the same time. The results align with theoretical expectations: coaches working with children and amateurs tend to be more agreeable and conscientious compared to the general population, while those coaching professional teams show higher emotional stability, openness, and extraversion.

In comparison with the personality traits of established profession, there are two patterns. First, comparing coaches with similar professional groups and the general population reveals that C-license coaches resemble teachers in four out of

five Big Five traits, except for openness. Second, A-license, and 1st/2nd division coaches mirror managers more closely in traits of openness, extraversion, agreeableness, and neuroticism.

The study suggests that while C-license coaches display similarities in personality traits with teachers, they could benefit from enhancing their openness, which is associated with teaching effectiveness. Additionally, the notably low neuroticism in both C-license and A-license coaches, compared to teachers and managers, might aid in training effectiveness.

However, neither A-license nor 1st/2nd division coaches show above-average conscientiousness compared to the general population, a trait considered crucial in professional sports. Similarly, these coaches score lower on agreeableness, which could be vital for success at the highest coaching levels. This indicates a potential need for interventions aimed at increasing conscientiousness and agreeableness among these coaches to align with the traits of successful top-level coaches.

When critically considering the differences that exist between teachers and coaches in the current sample, these differences may also result from possible differences in the sociodemographic traits

of the groups. It is assumed that teachers have a significantly higher representation of female teachers and a higher mean educational attainment than coaches in this sample. This difference may help to explain why there are differences in the outcomes, which could be related more to the particular characteristics of the groups than to coaching status alone.

This observation, however, also draws our attention to the main objective of our study, which is to clarify the effect of self-selection in the coaching profession. We seek to explain some of the variations in sociodemographic traits by concentrating on how people intentionally decide to become coaches. A key component of our analysis is the selection effect, which is the propensity of individuals to enter particular groups or professions. It is important to acknowledge that the self-selection effect may have an impact on the differences that have been found. These differences may result from certain traits or reasons that people choose to become coaches. We can learn more by looking at these differences and where they come from in the context of the self-selection effect than by just making statistical comparisons.

## Limitations

The ideal personality qualities for sports coaches have not yet been defined by a recognized theory. Instead of developing a theory of this kind, our study compared the personality traits of basketball coaches to those of people who hold comparable positions, such as managers and teachers. Many of the current coaches have played basketball in the past or continue to play the sport. A recent study revealed a relationship between a person's history of sports participation and all personality traits (Piepiora, Piepiora, & Bagińska, 2022). Nevertheless, the information gathered from German basketball coaches for this study does not delve into their past involvement in basketball or any other sport. As such, personality differences may result from more than just coaching background; they may also be impacted by prior athletic experience. Moreover, there are cases where managers and teachers participate in sports



actively. While this study emphasizes the significance of this aspect for future research, it does not examine any possible connections arising from it.

Our ability to draw conclusions about coaches in other sports is limited by the fact that this research only looks at basketball coaches in Germany. Interestingly, our survey was conducted after major limitations on athletics during the coronavirus disease 2019 (COVID-19) pandemic. Similar methodological approaches could be used in future surveys conducted in various sports and nations, comparing data specific to coaches with more general surveys that include managers and teachers. We acknowledge that, in contacting coaches directly or through intermediaries, biases may have been introduced by their voluntary participation, though we are unable to pinpoint the exact nature or extent of these biases.

A total of 360 German basketball coaches provided data for the survey. In sports science studies, the number of subjects varies widely. Cook et al. (2020), for example, polled 36 Olympic swimming coaches. Dodt et al. (2022) surveyed 582 German amateur handball referees, whereas 163 people were surveyed for a study on professional handball referees and a comparison with the German population (Dodt et al., 2021). This range includes our own survey. There are no population-related statements in the Dodt et al. studies, which makes computations impossible. Rather, effect size is the focus of particular attention. It is imperative to remember that tiny effect sizes might be interpreted incorrectly and not always as significant (Dodt et al., 2022). Moreover, it is important to note that the alpha level of more statistical tests may result in misunderstandings. Therefore, effect sizes can be used as a barometer to identify significant results, regardless of whether they reach significance or show a trend toward significance. Even though the population is used to calculate representativeness in the study we have presented, claims regarding representativeness and the importance of differences should be interpreted with caution. But this only holds true for the data that was especially gathered; it does

not apply to the SOEP's comparative values.

It is useful to take the effect sizes into account as well to address our specific sample size. Without a significant comparison of means, relevant effects are found in this case. This points to a promising trend that could be supported by additional research. While the effects that have been found may only slightly add to actual validity, they can provide clues for larger-scale studies in the future. The study's conclusions can therefore only be regarded as assumptions.

## Conclusions

The study depicts a generally positive scenario for basketball coach recruiting and training across several categories. C-license coaches, chosen on their own initiative and equipped with a few weeks of professional education and sports pedagogical experience, have a proper personality structure on average, laying the groundwork for success in a variety of coaching areas. Similarly, A-license coaches, who are chosen through self-selection and receive additional professional training, have an acceptable profile on average. To be successful, a top-level coach should emphasize the value of qualities like conscientiousness and agreeableness since research indicates that treatments can boost coaching effectiveness. Our data imply that German basketball coaches are on the proper track.

## Practical suggestions

Nonetheless, there are opportunities to enhance coach selection procedures as well as education programs for present and prospective coaches. This might include a detailed appraisal of one's own attributes, identification of one's strengths and weaknesses, and subsequent action planning. The fundamental goal of this study was to investigate the psychological differences between managers and coaches, as well as to propose realistic and beneficial program implementation choices. For example, Lower Saxony Ministry of Education (2023) offers a teacher support program that addresses the various demands of the workplace and

aims to maintain teachers' professional motivation and enjoyment during their first phase of teaching. Coaches with varying license levels could receive education programs that include comparable components of personality development. According to teacher training examples, applying personality development components, or mentoring programs at various coaching levels may be advantageous (Mayr, 2016; Frey et al., 2019). These findings suggest that the German Basketball federation framework guidelines should be revised to display the findings of our study, along with teaching materials from managers and teachers. This may include, for example, a detailed examination of one's own personality, including its strengths and weaknesses, as well as the resulting implications. Furthermore, mentorship programs for various levels of coaches may be a valuable intervention (Wunder, Wagner, & Stoll, 2022).

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## Declarations

**Conflict of interest.** J. Wunder, M. Priem, G.G. Wagner and O. Stoll declare that they have no competing interests.

For this article no studies with human participants or animals were performed by any of the authors. All studies mentioned were in accordance with the ethical standards indicated in each case. We have used the six RatSWD factors to evaluate whether our research project needs ethical review (RatSWD, 2017). Given that our study analysis anonymized data collected independently, ethical approval was not considered necessary. This decision aligns with earlier determinations made on the utilization of SOEP data in other research endeavors (e.g., Grochtdreis, König, & Dams, 2021).

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