

Key personality traits of martial arts and world's top coaches – impact on future martial arts specialists

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- A Study Design
- B Data Collection
- C Statistical Analysis
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Abstract

Background and Study Aim:

The personal development process is invaluable for martial arts coaches (and not only), our research increasing awareness of viewing the martial art coach as a performer within the sports performance field. The cognitive aim of current study is knowledge about specific personality traits of coaches of martial arts and top coaches at Olympic, World and European levels others sports.

Material and Methods:

Seventy-seven participants were involved in the study, among which 15 top coaches (world martial arts' specialists, but also, top coaches from different sport disciplines, including the most successful coach of all time). The NEO Five-Factor Inventory was used, which captures the specific constructs of the Big Five Model, thirteen professional competencies and a number of correlative interpretations.

Results:

First step consisted in identifying personality traits and professional competencies specific to the world top coaches - including martial arts specialists. Through the t-Test for Independent Samples we emphasized significant differences between the investigated samples for three personality factors and six professional competencies. Knowing the personality traits specific to world top coaches - including martial arts specialists, the second step was to highlight the personality traits and professional competencies of martial arts coaches, perhaps the most relevant. To achieve this goal, using single-factor multivariate analysis of variance we compared martial arts coaches with successful coaches (from various disciplines) and beginners (young coaches), in terms of the three personality factors and six professional competencies specific to world top coaches. Our attention was focused on identifying the personality features which are not significantly different from those of successful coaches, but significantly different when compared with the beginners, emphasizing leadership abilities, locus of control and independence in work, as key personality traits of martial arts coaches. Other personality dimensions were also discussed, through the Somers' D index facilitating the personal and professional development of young martial arts coaches, by associating relevant professional competencies with the five major factors. Last, but not least, referring to correlative interpretations, we can highlight that both martial arts and world top coaches are mainly goal-focused (impulse control), motivated (task-orientation), predominantly charismatic (interaction style) and altruistic (character-orientation).

Conclusions:

As a result of the analysis of the martial arts coaches' personality, perhaps their most relevant personality traits and professional competencies are leadership abilities, locus of control and independence in work. Orientated towards taking responsibility for the coordination of others, martial arts coaches are able to motivate and mobilise the team members. They manage to work independently, have, generally, the ability to withstand momentary stimuli, succeed in controlling their own reactions, and perceive the impact of their own behaviour on the external events. Martial arts coaches are mainly goal-focused, predominantly charismatic, altruistic and motivated (task-orientation).

Keywords:

Big Five Model • leadership • locus of control • personality • professional competencies

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Leadership – *noun* the way in which a coach, for example, motivates others and typically provides directions [50].

Locus of control – *noun* important dimension of the behaviour, which influences the participation in sports, a person's belief whether the outcomes (for example, health, rewards, punishments) are due to external factors or are within his/ her control [50].

Personality – *noun* concept which designates a very complex reality, its constitutive elements being: relative stability, conscious and unconscious levels, and individual-specific dynamics [2].

Big Five Model – *noun* five key factors of the personality structure: extraversion, agreeableness, conscientiousness, emotional stability (commonly known as neuroticism) and openness to experience, results from factorial analysis studies [3].

Sport – *noun* is a competitive activity that involves two or more opponents, supposing psycho-physical effort made by competitors, who represent/ are part of formally organized associations; is a serious activity, the results are not predetermined, being achieved in a formal framework involving coaches, referees, teams, leagues, divisions, sponsors [51].

Professional competencies – *noun* coaches' characteristics (for example) which results in superior performances in sports activity [52].

Martial arts – *plural noun* any of various systems of combat and self-defense, e.g. judo or karate, developed especially in Japan and Korea and now usually practiced as a sport [53].

INTRODUCTION

Martial arts are part of the heuristic sport disciplines, in competition, the speed of actions being very high (decisions are taken in fractions of a second) and the dynamics of the situations difficult to predict. During the match, under uncertainty, martial artists must show cold blood under pressure and be inventive in order to find the best strategies to achieve their performance goals [1]. Personality development, indubitable, supports martial artists' performance.

The concept of personality designates a very complex reality, which leads to numerous ways of defining it in relation to the existing psychodynamic, neo-behaviouristic and social theories. However, there is a certain consensus regarding the global concept, its different constitutive elements, conscious and unconscious levels, relative stability and the individual-specific dynamics [2]. Factorial analysis studies have led to acknowledging the existence of five key factors of the personality structure, designated as the BIG FIVE Model: extraversion, agreeableness, conscientiousness, emotional stability (commonly known as neuroticism) and openness to experience [3, 4]. The existence of a sixth personality factor – Honesty was suggested [5] and subsequently a new personality model – the HEXACO Inventory was developed [6].

The personality of a successful coach

Given that the dynamics of personality traits depends on the experience gained by each one, sports activities definitely develop and shape the personality of individuals [7].

In the effort to establish the personality profile of a coach, three different approaches were outlined from an empirical and scientific point of view [8].

First, there is the impressionistic report based on personal observations made by professionals and media during personal contacts with coaches. The stereotypes emerging from these interactions were linked to characteristics such as: "cool under fire", team-oriented, authoritarian, manipulative, insensitive, highly organized, unlikely to listen to others, ambitious, achievement-oriented, self-defined as leaders, risk-takers, etc.

The second approach is psychological research carried out by different authors to identify clusters of personality traits "unique" to a successful coach. A number of personality inventories were administered to coaches in various sports, holding positions in youth sport programmes, junior and senior high schools, colleges and national teams. Authors have found a set of personality traits that unambiguously differentiate coaches from non-coaches, including technical and managerial abilities, as well as the communication style.

The third approach: compares coaches' perceptions of traits of the "ideal" coach with self-reported traits; compares athletes' perceptions of the "ideal" coach with the actual traits of the coach; examines the compatibility between athletes' and coaches' objective and subjective evaluations of each other.

In 2002, the following question was addressed: Can personality predict sport success? [9]. Thus, sport coaches might like to use a personality test to establish who is likely to become successful and who is likely to drop out. The author highlights that some researchers have suggested that there is no such personality inducing sport performance. There are also those who do think that a specific personality links with sporting success, so it is still worth exploring this topic. Researchers, investigated a sample of 15 successful coaches working in different sport contexts

in the United States and revealed that only one trend was found, in how they invested their time in coach developmental activities, as an important resource for professional growth [10]. Therefore, coach education and training on technical aspects and personality development should be outlined through the contents of university curricula that have to address both levels, this leading to sound career professionalisation.

However, the preferred sources of education for coaches are rather informal than formal [11, 12], including playing experience, coaching experience, mentoring, reading books, searching the Internet and formal coach education.

Authors believe that the personality of the coach should result in a successful partnership with athletes and proper communication on key aspects like: a clear concept of training, the individualised approach, contextual restraints, the learning environment, etc [13]. The importance of this cooperation in terms of quality interactions between actors within and outside the training settings, impacts athlete development and overall performance [14]. Gender differences in this area were described [15] being analysed the female athletes' perception of coaching as a joint endeavour (positive communication and the need to be supported as persons and performers as well, are very important).

Describing the attributes of a good coach, authors argue the benefit of coach's inspirational motivation, which can help athletes to better cope with adversity and stress. Transformational leadership is also important, often moderating the potential negative effects of neuroticism [16].

To provide a more accurate portrait of the successful coach, certain abilities can be added: planning, programming, creative thinking, visioning, idea evaluation [17]. A coach must believe that he/she has the ability to positively influence the learning and performance of his/her athletes [18]. Other studies highlighted coaching competences related to guiding training and competition, multi-annual planning, **coach education** and meta-cognitive competences [19]. It seems that years of coaching experience positively predict coaching efficacy [20].

As a coach, interacting with athletes, parents, officials, spectators, etc. requires the development of emotional intelligence, the importance

of inter- and intrapersonal skills, gaining an athlete-centred approach and changing role frames being asserted [21]. This latter skill, along with empathy, will help coaches to perceive their team climate. In this respect, coaches generally tend to consider that team climate is less in need of change (being close to optimal) than athletes do [22]. Moreover, as the cultural and social diversity of the athlete population increases, coaches must have the ability to work with different individuals from a wide range of backgrounds, based on openness, flexibility and resilience [23].

Exploring the personality of martial artists it was found that anger facilitates performance [24]. Thus, winners in a karate competition reported a higher level of anger, compared to the defeated athletes. Similar results, considering anger, were obtained using MMPI-2, black-belt martial artists displaying more anger than average [25]. These insights are also valid in rugby, higher levels of anger and aggression having a beneficial impact on sports performance [26]. Considering the relation between anger and aggression, researchers mention that only anger-in (athletes perceive themselves as being responsible for failure and their anger turns inside, being intensified) and anger-out can predict the aggressive behaviors in competitions [27].

In addition, regarding the personality traits of martial arts practitioners (karate, judo, taekwondo, boxing and wrestling), champions were investigated through the brief Ten Item Personality Inventory (Big Five Model). Authors found openness to experience, emotional stability, extraversion and conscientiousness, to be positively related to performance; considering agreeableness, a negative relation with sports performance was emphasized [28]. Also, using the Five-Factor Personality Inventory (FFPI) and trait anxiety scales – EMAS-T and SAS-T, researchers highlighted that self-discipline, extraversion and emotional stability are important personality features of karate practitioners [29]. We complete these data, emphasizing that karate masters have high conscientiousness and low neuroticism [30].

Although the presented data addresses athletes' personality traits (not coaches'), they are important because today's athletes are the future martial arts coaches. And personality, relatively stable, plays an important role in long-term success in sport [31].

Combat sport – *noun* a sport in which one person fights another, e.g. wrestling, boxing and the martial arts [53].

Main relationship between combat sport and martial arts – "every combat sport is martial arts but not vice versa" [54, p. 18].

Investigating the structure of personality in the case of persons training in wrestling and jujitsu, it was found the B type of personality as being dominant. Also, most participants were extroverts (wrestling) and ambiverts (jujitsu), while a low and medium level of neuroticism was found for both ju-jitsu and wrestlers competitors [32]. Other researchers, using the NEO-FFI Personality Inventory mentioned that wrestlers present low openness, low neuroticism, high conscientiousness and high extraversion [33].

The cognitive aim of current study is knowledge about specific personality traits of coaches of martial arts and top coaches at Olympic, World and European levels others sports.

MATERIAL AND METHODS

Participants

The study included 77 participants who were divided, initially, into two groups. The first one was made up of 62 randomly selected students (48 men and 14 women with an average age of 21.4 years) in their final year of studies within the National University of Physical Education and Sport in Bucharest. They were being trained to become coaches in different sport branches such as martial arts (karate, judo, fencing 18 participants, of which 5 women), handball, tennis, gymnastics, kayak-canoe, football, rugby and skiing. The second group consisted of 15 successful coaches (13 men and 2 women with an average age of 58.8 years), all of them recognised at Olympic, World and European levels, including 3 martial arts specialists. Regarding the reduced number of elite female coaches in our sample, we mention that this numerical decline has also been emphasised since 1994, which is a serious concern in the area of sport coaching [34]. The coaches' expertise is: fencing, Greco-Roman wrestling, karate (martial arts/combat sports); artistic and aerobic gymnastics, handball, kayak-canoe, rugby, skiing, tennis (Table 1).

Second step consisted in dividing the participants into three groups: martial arts coaches (including world top coaches and beginners), elite coaches (recognised at Olympic, World and European levels) and beginners (young coaches, at the beginning of their career).

All participants were informed about the aim of the study, and their informed written consent

was obtained. The most significant results of the surveyed top Romanian coaches (including data on the most successful coach of all time, according to the Guinness World Records) in order to have an objective benchmark for their professional recognition (Table 1).

Instruments

The NEO-FFI Personality Questionnaire (the short form of the recognised Revised NEO Personality Inventory – NEO PI-R) was used to provide a clear characteristic of the personality features of the surveyed subjects.

Developed by Costa Jr. and McCrae, the NEO FFI was specifically created to assess the five major personality factors. Our study includes both quantitative and qualitative analyses, as stated below. The assessed dimensions are the classical components of the Big Five Model (neuroticism, extraversion, openness, agreeableness and conscientiousness) and thirteen other personality dimensions considered as professional competencies (provided in a quantified form by the NEO-FFI Questionnaire Profile): orientation to change, decision-making ability, delegation ability, adherence to organizing policies, ability to develop others, leadership ability, locus of control, independence in work, action-orientation, efficiency in businesses, facilitation ability, entrepreneurial mindset ability and risk-taking ability.

Qualitative aspects also emerged from the scores obtained for the components of the Big Five Model in terms of interaction style, impulse control, character-orientation and task-orientation.

The questionnaire was translated and calibrated for the Romanian population, and the test fidelity (inner consistency, test/retest reliability) was checked, as well as its validity [35].

The NEO-FFI Questionnaire consists of 60 items (verbal items measured on a 5-point Likert scale, with 1 representing “strongly disagree”, and 5, “strongly agree”), the personality profile being automatically generated according to the standard population.

Procedure

The NEO-FFI Personality Questionnaire was applied online to 77 participants, using a computerised platform. The period for completing the questionnaire was 2017-2019. Subjects were given the option to withdraw at any time from

Table 1. Sport disciplines and sport performance of the investigated coaches.

No.	Sport disciplines	Sport performance
1	Fencing	Head coach of the Romanian Men's Olympic Sabre Team between 2008 and 2013, with 5 medals in Olympic, World and European sport events. Included in the Fencing Hall of Fame.
2	Greco-Roman Wrestling	Coach Emeritus, with gold and silver medals in Olympic, World and European sport events.
3	Wado Ryu Karate	Coach Emeritus (7 Dan). He won more than 60 medals at European level with the Romanian team (Wado Ryu Karate).
4	Aerobic Gymnastics	National coach of the Romanian team, with more than 25 medals at World and European Championships.
5	Aerobic and Artistic Gymnastics	Coach Emeritus in aerobic gymnastics, with 8 medals at World Championships between 1995 and 1999. Since 2011, Head coach of the Special Olympics Artistic Gymnastics National Team. His athletes won more than 45 medals at the Special Olympics World Games.
6		Declared by the World Records Academy as the "most successful coach in the world", with a track record of 16 Olympic Gold Medals and a total of 305 medals won at World Championships, European Championships and Olympic Games. Included in the International Gymnastics Hall of Fame.
7	Artistic Gymnastics	Head coach of the Romanian Women's Team between 2005 and 2010. His athletes won over 100 Olympic, World and European medals.
8		Coach of the Romanian Women's Olympic Team between 2005 and 2010. Over 50 medals at both junior and senior levels in major European and World sport events.
9	Handball	Head coach of the Romanian and German Men's National Teams, winner of the EHF Trophy and the Champions League. He was twice awarded the title of "Coach of the Year" in Germany.
10	Kayak	Coach Emeritus, World and European Champion at Championships for the Disabled, European Vice-Champion with the U-23 Youth Team, University World Champion, winner of medals at the World and European Senior, Youth and Junior Championships.
11	Kayak-Canoe	Coach Emeritus of the Romanian Olympic Team since 1995. He won more than 35 medals in Olympic, World and European competitions.
12	Rugby	Coach Emeritus, winner of the European Nations Cup and the Junior World Rugby Trophy.
13	Skiing	Special Olympics Head coach for alpine skiing, winner of 11 medals at the Special Olympics World Winter Games.
14		Coach Emeritus, Federal coach, with semi-finalist athletes at Roland Garros (U-18), winner of the Orange Bowl (USA), first ranked in the European Top for girls aged 16 years, 1 st position at the Eddie Hear Tournament (USA) for boys aged 16 years.
15	Tennis	Head coach of Youth Olympic Games, with semi-finalist players at the Australian Open (U-18), senior player in the WTA's Top 200, 1 st position in the European ranking (U-16).

the research, their data were treated confidentially, and their anonymity was ensured. In the case of successful coaches, a period of explanation was needed and their trust had to be gained in order to obtain their informed written consent, which allowed us to process their data and sport performance achieved at European, World and Olympic levels.

Ethical approval was granted for the study by the local ethics committee of the Faculty of Physical Education and Sport, Bucharest, after submitting the protocols, including data management issues: de-identifying personal information immediately after collection, avoiding unencrypted transmission of personal data, keeping the data archive secure. Participants were granted access to their personal data/ personality profiles.

Quasi-experimental design

For coaches, the affiliation to one of the two groups, “beginners” or “successful” (in the first phase), respectively to one of the three groups: “martial arts coaches”, “elite coaches” or “beginners” (in the second phase), had the role of the independent variable, while their scores in the NEO-FFI Questionnaire (regarding personality traits and professional competencies) represented the dependent variables.

Knowing the personality traits specific to world top coaches – including martial arts specialists, in a second phase we were interested in highlighting key personality traits and professional

competencies, perhaps the most relevant, of martial arts coaches. To achieve this goal, using single-factor multivariate analysis of variance we compared martial art coaches (3 world specialists and 18 beginners) with successful coaches (12 top coaches from various disciplines, including the most successful coach of all time according to World Records Academy) and beginners (44 novices from various disciplines), in terms of the three personality factors and six professional competencies specific to world top coaches. Our attention was focused on identifying the personality features which are not significantly different from those of elite coaches, but significantly different when compared with the beginners.

Table 2. Statistical data on the differences between beginner and successful coaches.

Variables	t	df	p	g	Confidence interval	
					lower bound	upper bound
Neuroticism	-3.471	75	.001	1.00	-26.23	-7.12
Extraversion	1.191	75	.238	0.34	-4.22	16.79
Openness	1.137	75	.271	0.43	-6.36	21.21
Agreeableness	2.455	75	.016	0.70	2.89	27.82
Conscientiousness	3.470	75	.001	0.99	6.17	22.80
Orientation to change	1.692	75	.095	0.48	-1.13	13.89
Decision-making ability	3.274	75	.002	0.94	5.53	22.74
Delegation ability	2.055	75	.043	0.59	0.306	17.55
Adherence to organizing policies	-1.719	75	.090	0.49	-24.62	1.81
Ability to develop others	2.064	75	.042	0.59	.307	17.20
Leadership ability	3.246	75	.002	0.93	5.40	22.56
Locus of control	2.948	75	.004	0.84	4.18	21.61
Independence in work	3.737	75	.000	1.07	7.48	24.45
Action-orientation	-0.789	75	.432	0.22	-15.04	6.50
Efficiency in businesses	.637	75	.526	0.18	-5.65	10.97
Facilitation ability	.835	75	.406	0.24	-10.71	26.17
Entrepreneurial mindset	1.433	75	.156	0.41	-3.06	18.76
Risk-taking ability	.734	75	.465	0.21	-7.40	16.03

Statistical analysis

Through the t-Test for Independent Samples, we checked whether there were significant differences between the investigated groups, beginner vs. successful coaches, considering the means of the dependent variables analysed [36].

Considering MANOVA we used type I procedure (given the group inequality). The nine dependent variables (DVs) are negatively correlated with each other and in the case of positive correlations between DVs there are weak or very weak relations, linearity condition being assumed [37]. We emphasize that the Box M test is significant ($p < 0.05$), in which case we referred to the Pillai's Trace test values.

We inform about some of the statistical procedures performed (as a consequence of an in-depth analysis of empirical data) in the "results" section.

RESULTS

The conditions for applying the t-Test were fulfilled: the dependent variable was normally distributed (the absolute value of the Skewness coefficient was, in most cases, less than 1). As regards the homogeneity of variances, the Levene's test results were insignificant ($p > 0.05$). The average value for neuroticism is significantly lower ($p < 0.05$) in successful coaches compared to future coaches. The average values for agreeableness and conscientiousness are significantly higher ($p < 0.05$) in elite coaches compared to young coaches (Table 2).

The effect size index (Hedge's g) shows a very strong difference (for neuroticism and conscientiousness) and a moderate to strong difference (for agreeableness) between the results of successful coaches and those of coaches at the start of their careers. The average values for the decision-making ability, delegation ability, ability to develop others, leadership ability, locus of control and ability to work independently are significantly higher ($p < 0.05$) in elite coaches compared to young coaches. The effect size index (g) shows a very strong difference (for the decision-making ability, leadership ability, locus of control and independence in work) and a moderate to strong difference (for the ability to develop others and delegation ability) between the results of successful coaches and those of young, inexperienced future coaches (Table 2).

Regarding the other investigated dimensions highlighted by the NEO-FFI profile – openness to experience, extraversion, orientation to change, adherence to organizing policies, action-orientation, efficiency in businesses, facilitation ability, entrepreneurial mindset ability and risk-taking ability, no statistically significant differences were found between the two categories of participants.

Table 3 shows the descriptive statistics for the personality traits of world top coaches (we included, however, extraversion and openness, as constructs of the Big Five Model), in terms of mean and standard deviation, separately for each analysed group.

Table 3. Descriptive statistics – martial art coaches, successful coaches and beginners.

Personality dimensions	Martial arts coaches M (SD)	Elite coaches M (SD)	Beginner coaches M (SD)
Neuroticism	32.67 (21.01)	20 (20.35)	38.59 (11.93)
Extraversion	69.95 (13.79)	73.25 (24.99)	69.11 (17.12)
Openness to experience	51.62 (18.07)	59.75 (21.42)	48.66 (15.78)
Agreeableness	51.10 (25.64)	65.50 (30.26)	54.32 (19.29)
Conscientiousness	73.52 (14.82)	86.67 (12.01)	71.27 (14.71)
Decision-making ability	73.57 (12.85)	85.33 (15.17)	69.98 (17.26)
Delegation ability	75.90 (11.46)	81.83 (18.33)	70.68 (16.87)
Ability to develop others	75.14 (17.85)	80.42 (19.92)	72.82 (13.46)
Leadership ability	77.48 (12.04)	84.17 (18.12)	67.16 (15.45)
Locus of control	81.95 (13.34)	81.42 (15.67)	67.80 (15.44)
Independence in work	69.67 (15.00)	78.50 (18.19)	59.20 (13.40)

Note: The means are expressed as percentages, where 45-55 is an average score

Table 4. Between – Coaches Effect (taken into account coaches expertise).

Dependent Variable	F	p
Neuroticism	6.287	.003
Agreeableness	1.566	.216
Conscientiousness	5.446	.006
Decision-making ability	4.414	.015
Delegation ability	2.581	.083
Ability to develop others	1.101	.338
Leadership ability	7.515	.001
Locus of control	8.238	.001
Independence in work	9.608	.000

The Multivariate Test revealed a significant relation between the “coach” factor ($p = 0.001$) and the combination of the DVs. Partial Eta Squared values (more than 0.14) indicate high effect sizes, the Observed Power is very high (over 0.99), highlighting a very good level of confidence in the stability of the results.

Coaches expertise significantly influences the values for neuroticism ($p = 0.003$), conscientiousness ($p = 0.006$), decision-making ability ($p = 0.015$), leadership ability ($p = 0.001$), locus

of control ($p = 0.001$) and independence in work ($p = 0.000$) (Table 4).

The Multiple Comparisons table includes the post-hoc analysis. Considering the results in the case of the Levene test (homogeneity of variance), we interpreted the Scheffe test (for conscientiousness, decision-making ability, delegation ability, leadership ability, locus of control and independence in work), respectively the Tamhane test (neuroticism, agreeableness and ability to develop others) (Table 5).

Table 5. Multiple Comparisons – post-hoc analysis.

Dependent Test Variable	(I) coach	(J) coach	Mean Difference (I-J)	p	
N	Tamhane	martial arts	beginner coaches	-5.92	.561
			top coaches	12.67	.277
		beginner coaches	martial arts	5.92	.561
			top coaches	18.59*	.029
	A	martial arts	beginner coaches	-12.67	.277
			beginner coaches	-18.59*	.029
		beginner coaches	martial arts	-3.22	.942
			top coaches	-14.40	.449
C	martial arts	martial arts	3.22	.942	
		top coaches	-11.18	.570	
	top coaches	martial arts	14.40	.449	
		beginner coaches	11.18	.570	
C	Scheffe	martial arts	beginner coaches	2.25	.840
			top coaches	-13.14*	.047
		beginner coaches	martial arts	-2.25	.840
	top coaches		-15.39*	.006	
	top coaches		martial arts	13.14*	.047
			beginner coaches	15.39*	.006

Dependent Test Variable	(I) coach	(J) coach	Mean Difference (I-J)	p		
DEC	Scheffe	martial arts	beginner coaches	3.59	.696	
			top coaches	-11.76	.130	
	beginner coaches	top coaches	martial arts	-3.59	.696	
			martial arts	-15.36*	.015	
	top coaches	beginner coaches	martial arts	11.76	.130	
			martial arts	15.36*	.015	
DEV	Tamhane	martial arts	beginner coaches	2.32	.936	
			top coaches	-5.27	.839	
		beginner coaches	top coaches	martial arts	-2.32	.936
				martial arts	-7.60	.550
		top coaches	beginner coaches	martial arts	5.27	.839
				martial arts	7.60	.550
LEAD	Scheffe	martial arts	beginner coaches	10.32*	.041	
			top coaches	-6.69	.474	
		beginner coaches	top coaches	martial arts	-10.32*	.041
				martial arts	-17.01*	.004
		top coaches	beginner coaches	martial arts	6.69	.474
				martial arts	17.01*	.004
LOC	Scheffe	martial arts	beginner coaches	14.16*	.003	
			top coaches	.54	.995	
		beginner coaches	top coaches	martial arts	-14.16*	.003
				martial arts	-13.62*	.024
		top coaches	beginner coaches	martial arts	-.54	.995
				martial arts	13.62*	.024
IND	Scheffe	martial arts	beginner coaches	10.46*	.031	
			top coaches	-8.83	.256	
		beginner coaches	top coaches	martial arts	-10.46*	.031
				martial arts	-19.30*	.001
		top coaches	beginner coaches	martial arts	8.83	.256
				martial arts	19.30*	.001
DEL	Scheffe	martial arts	beginner coaches	5.22	.465	
			top coaches	-5.93	.588	
		beginner coaches	top coaches	martial arts	-5.22	.465
				martial arts	-11.15	.104
		top coaches	beginner coaches	martial arts	5.93	.588
				martial arts	11.15	.104

Note: **N**: neuroticism; **A**: agreeableness; **C**: conscientiousness; **DEC**: decision-making ability; **DEV**: ability to develop others; **LEAD**: leadership ability; **LOC**: locus of control; **IND**: independence in work; **DEL**: delegation ability.

The personality features, in the case of martial arts coaches, in which case there are no significant differences from those of successful coaches, but there are significant differences compared to beginners are: leadership abilities, locus of control

and independence in work. These represent key personality traits of martial art coaches.

We underline also significant differences regarding conscientiousness – world top

Table 6. The degree of association (Somers' D) between the results obtained by elite coaches for the two variables (professional competencies and the five major factors)

Variable	N	E	O	A	C
Decision-making ability	-0.132	0.658	0.227	0.023	-0.100
Delegation ability	-0.349	0.482	0.490*	0.102	-0.120
Ability to develop others	-0.213	0.264	0.113	0.755**	0.379

Note: * $p < 0.05$; ** $p < 0.01$; **N**: neuroticism; **E**: extraversion; **O**: openness; **A**: agreeableness; **C**: conscientiousness.

coaches registering significantly higher values by comparison with both martial arts and beginner coaches. In order to facilitate the development, in the case of novice martial arts coaches, of the decision-making ability, delegation ability and ability to develop others (professional competencies specific to world top coaches – including martial arts specialists), we analysed whether there were significant associations between the results obtained for these three dimensions and the results for the five major factors. In this perspective, the Somers' D index was used (Table 6).

Therefore, there are significant positive associations between delegation ability and openness to experience and between the ability to develop others and agreeableness. Considering these professional competencies, high scores are linked to increased values for the mentioned Big Five factors. We highlight that these findings might be a good indicator for the training process of future martial arts coaches, in terms of personal and professional development. Considering Cramer's V we emphasize: a very strong association between agreeableness and ability to develop others (0.81) and a strong link between openness and delegation ability (0.61).

Table 7. Martial arts and world top coaches typology (raw scores and percentages).

Variable	Martial arts coaches	World top coaches
Interaction style (from E and A scores)		
Charismatic E ⁺ A ⁺	11 (52.38%)	7 (58.33%)
Leadership E ⁺ A ⁻	6 (28.57%)	3 (25%)
Participative E ⁻ A ⁺	4 (19.04%)	2 (16.66%)
Reclusive E ⁻ A ⁻	0 (0%)	0 (0%)
Impulse control (from N and C scores)		
Goal-focused C ⁺ N ⁻	10 (47.61%)	11 (91.66%)
Over controlled C ⁺ N ⁺	5 (23.80%)	1 (8.33%)
Uncontrolled C ⁻ N ⁺	3 (14.28%)	0 (0%)
Relaxed C ⁻ N ⁻	3 (14.28%)	0 (0%)
Character-orientation (from A and C scores)		
Altruistic A ⁺ C ⁺	12 (57.14%)	9 (75%)
Focused on personal needs A ⁻ C ⁺	3 (14.28%)	3 (25%)
Unmotivated A ⁻ C ⁻	3 (14.28%)	0 (0%)
Generous A ⁺ C ⁻	3 (14.28%)	0 (0%)
Task-orientation (from E and C scores)		
Motivated E ⁺ C ⁺	11 (52.38%)	10 (83.33%)
Methodical E ⁻ C ⁺	4 (19.02%)	2 (16.66%)
Hedonic E ⁺ C ⁻	6 (28.57%)	0 (0%)
Passive E ⁻ C ⁻	0 (0%)	0 (0%)

Note: **N**: neuroticism; **E**: extraversion; **A**: agreeableness; **C**: conscientiousness; “+”: high score; “-”: low score.

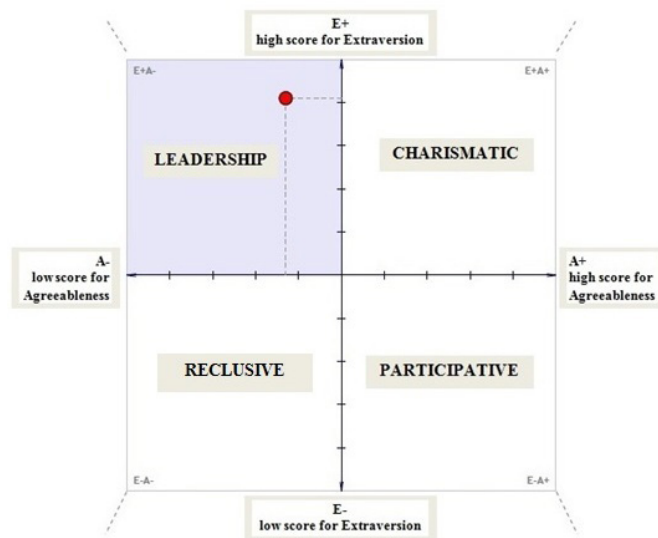


Figure 1. Example for the typology of a coach’s interaction style.

Although not provided in a quantified form by the NEO-FFI Questionnaire Profile but relevant to our topic, correlative interpretations based on the scores for the components of the Big Five Model are also indicative. We are referring to the interaction style, impulse control, character-orientation and task-orientation. Computing the scores for these traits leads to an interesting typology of the martial arts coaches (world top coaches and beginners) and elite coaches (practicing various disciplines), from a qualitative standpoint, as seen in the following (Table 7).

The both martial arts and elite coaches are mainly goal-focused (impulse control), motivated (task-orientation), predominantly charismatic (interaction style) and altruistic (character-orientation) (Table 7).

Figure 1 shows an individual example for the typology of a coach’s interaction style, as automatically computed from extraversion and agreeableness scores. In this case, one can notice that the interaction style of this particular coach is leadership-oriented, based on a high score for extraversion and a low score for agreeableness.

DISCUSSION

Consistent with our first scope, statistical data processing and analysis revealed significant differences between world top coaches (including martial arts specialists) and beginners (involving novice martial arts coaches) in the case of three

personality factors -neuroticism, agreeableness and conscientiousness and six professional competencies: decision-making ability, delegation ability, ability to develop others, leadership ability, locus of control and ability to work independently.

In a second phase, knowing the personality traits specific to world top coaches, we were interested to highlight relevant personality traits and professional competencies of martial arts coaches. Our attention was focused on identifying the personality features which are not significantly different from those of successful coaches (elite coaches from various disciplines, including the most successful coach of all time), but significantly different when compared with the beginners (novice coaches from various disciplines). The personality features, in the case of martial arts coaches, which have fulfilled this goal are: leadership abilities, locus of control and independence in work. These represent key personality traits of martial arts specialists. Thus, orientated towards taking responsibility for the coordination of others, martial arts coaches are able to motivate and mobilise the team members. They succeed in controlling their own reactions, have the ability to withstand momentary stimuli and perceive the impact of their own behaviour on the external events. They are also able to work independently, without needing any coordination or supervision. Similar findings, regarding the ability to motivate and mobilise the team members were found (7 men head coaches were investigated - soccer teams), which argued that specialists displayed,

both in training and competition, inspirational motivation, individualized consideration, being less focused on intellectual stimulation and idealized influence [38]. Our results bring insight into the leadership behaviors, locus of control and independence in work, employed by martial arts coaches.

We underline significant differences regarding conscientiousness - world top coaches registering significantly higher values by comparison with both martial arts (mostly young and inexperienced) and beginner coaches. Elite coaches are more organized in their personal and professional lives, are able to control their emotional responses, thus being prepared to persistently pursue medium-term and long-term goals. The differences found for conscientiousness also refer to their ability to meet deadlines and effectively organize the activities so that the resources can be properly managed.

Statistical data processing also highlights that the average values for neuroticism, agreeableness, the decision-making ability, delegation ability and ability to develop others, are not significantly different in martial arts coaches than those registered by beginner coaches and also by world top specialists. But, since these personality dimensions are specific to elite coaches (world top coaches including the martial arts specialists) - see Table 2, we consider that is essential to be approached, for the personal and professional development of young martial arts coaches. In other words, is important, for the future martial arts specialists to be calmer and relatively free of negative feelings or emotions, to cope better with anger, anxiety or stress; the emotional manifestations need to be more stable and adapted to the situations they face.

Our research shows that a low level of neuroticism and high levels of agreeableness and conscientiousness create favourable conditions for achieving a successful career. For the personal development of young martial arts coaches, the various techniques that can be used involve: inner monologue (positive self-talk); positive resolution of social conflicts; ways of learning conflict mediation; greater involvement in physical activities that make them happy [39]; awareness of their own motivations; self-monitoring of emotional reactions; increasing self-confidence [40]; autogenic training and analytical relaxation; working on nonverbal and paraverbal communication

skills. The personal development process is invaluable for martial arts coaches who want to optimise their professional performance [10].

Our findings on the importance of neuroticism and conscientiousness in career success are consistent with the meta-analytic evidence in the literature. Therefore, most of the study findings suggest that emotional stability tends to be positively related to career success [41].

A positive correlation have been found between conscientiousness and salary in five studies [42]. Conscientiousness was also found to enable people to obtain advancement to more complex and highly regarded jobs [43]. Taking into account agreeableness, a study argued that this feature was positively related to workplace performance only when job autonomy was high [44], which is also true for coaching. Agreeableness is important, because the quality of the coach-athlete relationship predicts the subjective well-being of both coaches and athletes [45]. Investigating the personality of a successful Olympic coach, researchers emphasized that, compared with the norm, the coach is agreeable, emotionally stable, conscientious, motivated and willing to invest energy in his endeavours [46]. Our study largely confirms these findings.

Also, in the process of personal and professional growth of future martial arts specialists, it is important to develop: the ability to make firm and final decisions based on an in-depth analysis and the ability to communicate personal expectations. This last ability is essential, facilitating success in various sports settings [47, 48].

The data processed by the Somers' D index revealed some significant associations between delegation ability, ability to develop others and some of the five major personality factors. Thus, there is a significant positive association between the ability to develop others and agreeableness, and also, between delegation ability and openness to experience. We believe that these findings might be relevant for those involved in the professional training of future martial arts coaches, in terms of integrating psychological approaches/ means in the development of a balanced personality profile. Specifically, high values for openness to experience and agreeableness will be taken into consideration as cues in the personal development strategies for the future professionals in martial arts.

Regarding correlative interpretations based on the scores obtained by coaches for the components of the Big Five Model, we highlight the following aspects: martial arts coaches and elite coaches are mainly goal-focused (impulse control), predominantly charismatic (interaction style), altruistic (character-orientation) and motivated (task-orientation). In other words, both martial arts and world top coaches are, generally, enthusiastic when meeting new people, enjoy when discussing different issues with others and feel relatively comfortable in social settings. Martial arts and top coaches (considering their most prevalent responses) have, also, a clear picture of the objectives to be reached, a strong ability to overcome the obstacles they face and, through their fortitude and organization, get over failure quickly and can manage the immediate non-fulfilment of needs in order to achieve an important objective. Last but not least, martial arts and top coaches have the ability to work hard at an alert personal pace. In most cases, they are interested in their own development and professional growth and are able to follow a pre-established plan or schedule. Sometimes, they try to impose on others their own working style, considered as very efficient.

It is difficult to capture (with analytical finesse) all the personality characteristics of martial arts and elite sport coaches. However, the resulting profile can serve as a general model to be followed by the future martial arts specialists (and not only), in order to appropriately develop those specific personality features of the coaches retained by the sport history.

Although the current research has reached its goal and provides valuable insight into the personality traits and professional competencies of martial arts and world top coaches, certain research limitations were inherent, for example the relatively small sample of participants. This limit can be, however, compensated by the quality of the investigated participants, performance holders at Olympic, World and European levels. Also, our research provide knowledge application for working with future martial arts coaches, this subject being less approached by the currently literature [49].

CONCLUSIONS

As a result of the analysis of the martial arts coaches' personality, perhaps their most relevant personality traits and professional competencies are leadership abilities, locus of control and independence in work. Orientated towards taking responsibility for the coordination of others, martial arts coaches are able to motivate and mobilise the team members. They manage to work independently, have, generally, the ability to withstand momentary stimuli, succeed in controlling their own reactions, and perceive the impact of their own behaviour on the external events. Martial arts coaches are mainly goal-focused, predominantly charismatic, altruistic and motivated (task-orientation).

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