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Personality, cognitive styles and Morningness-Eveningness disposition in a sample of Yoga trainees

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Background: Yoga is a psychophysical, spiritual science of holistic living, aiming towards body and mind development; it can influence well-being, cognitive processes, personality (Gunas), psychophysiological parameters, and human health. Since it has been observed that Morningness-Eveningness disposition is associated with personality, and that personality can characterize people practicing Yoga, in this exploratory study we posited that Morningness-Eveningness might be associated with personality in Yoga trainees. Since Yoga can have influences over cognitive perspectives, and since it has been observed that Morningness-Eveningness disposition can associate with cognitive processes, we investigated a sample of Yoga trainees with reference to relationship with styles of learning and thinking (relevant aspects of cognitive functioning) and also with Morningness-Eveningness disposition.

Material/Method: We tested 184 Yoga trainees using the following questionnaires: *Styles of Learning and Thinking* (Torrance), *Big Five Questionnaire* (Caprara, Barbaranelli, Borgogni), and *reduced Morningness-Eveningness Questionnaire* (Natale).

Results: We found that Morning types score significantly higher than Evening types on Conscientiousness, Friendliness, Scrupulousness, Openness to Culture, emotional Stability, emotion Control, they score higher than intermediate types on Conscientiousness, Friendliness, Scrupulousness. Moreover, data showed that the high majority of subjects, also with reference to Morningness-Eveningness disposition, have right-sided styles of learning and thinking, pointing out a tendency towards right-sided cognitive processing in the whole sample. Personality traits of the Yoga trainees were also investigated.

Conclusions: Data are discussed with reference to existing literature, psychological and neuroscientific perspectives are suggested, previous studies about Yoga published on *Medical Science Monitor* are also considered.

MeSH Keywords: **Personality • Cognitive Science • Morningness-Eveningness Disposition • Yoga**

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Background

Yoga is a psychophysical and spiritual science of holistic living aiming towards harmonious development of body and mind, and expansion of personality [1]. In the Bhagavad Gita – one of the most important texts of Sanskrit literature – Yoga (as Integration of Personality), emotional Regulation, Control over Desires, Decisiveness, and Insight are associated with concepts of wisdom and well-being [2].

It has been observed that Yoga can prevent negative emotional mood states [3], improve eating attitudes [4], reduce stress [5], affect interoceptive awareness [6], improve well-being in children [7], reduce addiction [8], act as a complementary treatment for attention-deficit hyperactivity disorder [9], reduce depressive symptoms among cancer survivors [10]; improve the impact of cyclic meditation on quality of sleep [11], and improve somatic indicators of distress in professional computer users [12]. Reduced levels of somatization and anxiety are associated with Yoga practice [13,14]. Yoga and meditation may be beneficial as a routine practice to reduce performance anxiety in musicians [15]. It has been observed that women suffering from mental distress and participating in a Lyengar Yoga class show significant improvements in measures of stress and psychological outcomes [16]. Ashtanga Yoga has positive effects on weight management and psychological well-being in youths who are at risk of developing diabetes [17].

Researchers pointed out the relevance of Yoga with reference to personality; it has been noticed that Yoga can decrease neuroticism in perimenopausal women [18] and has a greater influence on Gunas (Personality) and self-esteem than physical exercise [19]. People who practice Yoga score higher on extraversion and life satisfaction and lower on aggressiveness, openness, emotionality, somatic complaints, and excitability [20].

Moreover, Yoga has effects on the immune system [21], on pain in rheumatoid arthritis [22], on allergic respiratory symptoms [23], and it can induce lower sympathetic activity and improve trunk flexibility [24]. Researchers have explored the role of Yoga in treating cardiovascular diseases [25], and have observed that plasma melatonin increases after Yoga sessions, which can be responsible for improved well-being due to increased melatonin secretion [26]. Effects of Yoga on natural killer cell counts in early breast cancer patients undergoing conventional treatment have been noticed [27]. Yoga practice has effects in reducing blood pressure and improving performance in a task requiring attention, as well as improving bimanual dexterity and visuo-motor co-ordination [28]. High frequency Yoga breathing increases energy-expenditure from carbohydrates [29]. A theory of disease based on ancient Yoga texts has been proposed [31]

based on the observation that across the whole human life span the human body, as a whole, suffers deeply any time an acute or chronic condition is maltreated or neglected [30]. Serum leptin, cholesterol, and blood glucose levels in diabetics following a Yoga program have been studied [32]. Researchers showed that a 6-day Yoga and diet change program decreased BMI and fat-free mass, while total cholesterol decreases due to reduced HDL [33], and positive effects of Ayurveda preparation on gait and balance in older persons have reported [34].

Finally, it has been observed that Yoga practice can have cognitive consequences: it can improve mindfulness [3], attention, concentration, and visual and verbal memory related to right and left brain hemispheres [35], and can alter electroencephalographic parameters with asymmetry in alpha and beta activity between brain hemispheres [36]. Meditation has been studied by functional brain mapping [37], and researchers have observed the effects of meditation on brain networks underlying cognitive functioning, pointing out activity in brain hemispheres of trainees at different levels of meditation [38]. Meditation can activate specific areas of the hemispheres involved in empathy and pleasant feelings [39].

Researchers have noticed that people who practice Yoga score higher on personality traits of extraversion and score lower on personality traits of excitability, aggressiveness, openness, and emotionality [20]. Since it has been shown that Morningness-Eveningness disposition is related to some personality traits [40,41], and that personality traits can characterize people practicing Yoga, in this exploratory study we have posited that Morningness-Eveningness disposition in Yoga trainees might have some associations with personality traits in people practicing Yoga. Moreover, because Yoga can exert influences under cognitive perspectives, we explored its relationship with styles of learning and thinking – a well-known and important aspect of cognitive functioning – also with reference to Morningness-Eveningness disposition, which can be related to cognitive functioning. We have observed associations between Morningness-Eveningness disposition and personality traits, and relevant relationship between Yoga practice and the cognitive parameters of styles of learning and thinking. We have also examined personality traits of the Yoga trainees in our sample. Yoga is a very ancient spiritual and psychophysical practice. It can exert positive effects on well-being and human health generally, and is related to biological and physiological parameters. A wider understanding of the many cognitive, personality, and physiological aspects of Yoga may promote creative and holistic developments of human behaviors of great relevance for improving quality of life. Previous studies concerning Yoga recently published in *Medical Science Monitor* are also considered.

Material and Methods

Subjects

The sample consisted of 184 Yoga trainees (age range, 24–64 years): 108 males (58.7%) and 76 females (41.3%). Mean and standard deviation of age of males was 40.3 and 6.97 years, respectively and mean and standard deviation of females was 40 and 8.27 years, respectively. Participants had been practicing Yoga for from 6 months to 38 years. They completed psychometric instruments voluntarily and were asked to answer spontaneously, and, when not sure, to try anyway to select one of the given responses. All participants provided prior informed consent, they were told their responses were anonymous, and did not receive any payment. Completion of questionnaires took approximately 45 minutes. The research was conducted according to the ethics code of the Italian Psychology Association (A.I.P.).

Questionnaires

Style of Learning and Thinking (S.O.L.A.T.). The human left cerebral hemisphere is thought to specialize primarily in verbal, analytical, abstract operations, and the right cerebral hemisphere in primarily non-verbal, holistic, creative, analogic operations. Learning and thinking styles concern how a person organizes and processes information, and can be studied through *Style of Learning and Thinking (S.O.L.A.T.)* by Torrance, assessing differences in learning and thinking styles. This research used *S.O.L.A.T.* in the Italian validation by Antonietti, Fabio, Boari, and Bonanomi [42], performed on 489 subjects; 137 of them completed the test 8 weeks later, producing test-retest correlations. Factor analysis and reliability analysis were performed, suggesting to discard the 6 least significant items because of low factor loadings, and indicating the need for a version with 22 items. Cronbach's alpha was 0.687, and the correlation coefficient of test-retest analysis within 137 subjects was $r=0.742$ (<0.001). Scoring cut-offs were: ≤ 20 =right styles, ≥ 24 =left styles, 21–23=integrated styles.

Big Five Questionnaire (B.F.Q.) [43]. In the first half of 20th century, Allport, Odbert, Cattell, Fiske, and Tupes, among others [44], came up with the theory of "linguistic sedimentation", presenting a psycho-linguistic method for organizing personality traits, based on factors and subfactors. The Big Five Questionnaire (B.F.Q.) by Caprara, Barbaranelli, and Borgogni [43] emerged out of this background, and organizes the structure of personality based on factors and subfactors: 1) Energy (subfactors: Dynamism, Dominance), 2) Agreeableness (subfactors: Cooperativeness and Friendliness), 3) Conscientiousness (subfactors: Scrupulousness and Perseverance), 4) Emotional Stability (subfactors: Emotional Control and Impulse Control), and 5) Mental Openness (subfactors: Openness to Culture and Openness to Experience). The B.F.Q. has good internal validity

(0.99–0.93); the reliability of factors and subfactors was examined using Cronbach's alpha (0.60–0.90), and test-retest method (0.68–0.86). Concurrent correlations with NEO-PI, E.P.Q., the Comrey Personality Scale, and the Multidimensional Personality Questionnaire were significantly positive in almost all cases [43]. Scores were calculated as follows: 35–44=low level, 45–54=middle-moderate level, 55–64=high level, and >65 =very high level of the measured personality traits and sub-traits.

Morningness-Eveningness Questionnaire, shortened form (rM.E.Q.) – The reduced Morningness-Eveningness Questionnaire (rM.E.Q.) by Natale [45] is based on the Morningness-Eveningness Questionnaire (M.E.Q.) by Horne and Östberg [46], which has been criticized because of its length, and its short form is based on work by Adan and Almirall [47]. It is composed of 5 items, asking the subjects: question 1) at what time they prefer to get up in the morning, question 2) the degree of tiredness half an hour after waking, question 3) at what time they prefer to go to bed in the evening, questions 4) and 5) in which part of the day they feel more active. Correlation coefficients of the 5 questions with total score are (0.46–0.091), the questionnaire has significant correlation with M.E.Q. ($r=0.90$), good internal consistency (Cronbach's alpha=0.71), and good inter-item correlations (0.60–0.67). Cut-off scores are: 4–10=Evening types, 11–18=intermediate types, and 19–25=Morning types.

With reference to styles of learning and thinking, the subjects were grouped into the 3 groups of right, left, and integrated learning and thinking styles according to the relative scoring system. With reference to personality traits, rough scores of B.F.Q. have been transformed into *t*-scores to operate. Morningness-Eveningness scores have been calculated as sums of the scores of the 5 questions, and subjects were divided into 3 categories: Morning types, Intermediate types, and Evening types. The relationship between rM.E.Q. and S.O.L.A.T. was explored and yielded interesting results. Univariate ANOVA was conducted between rM.E.Q. and B.F.Q. and between S.O.L.A.T. and B.F.Q. Personality traits of the sample were investigated, and the significance of the multiple regression in the whole sample with reference to S.O.L.A.T., rM.E.Q., and Big Five with regard to gender, age, and number of years of Yoga practice was also explored.

Results

According to rM.E.Q., 15 subjects (8.1%) had Evening disposition, 38 subjects (20.7%) had Morningness disposition, and 131 subjects (71.2%) had intermediate disposition. Data are partially parallel to previous studies reporting higher percentages of intermediate types [48], although with exceptions [49], and usually lower, differently distributed, percentages in Morning and Evening types, depending on the samples explored [50, 51].

Table 1. Univariate anova of scores on BFQ by rMEQ.

rMEQ	n.	DI	DO	CP	CO	SC	PE	CE	CI	AC	AE	E	A	C	S	M
A	15	49.87	48.20	51.33	45.93	41.80	43.13	45.67	54.60	39.87	50.93	49.83	46.80	40.33	50.40	43.87
B	131	50.24	44.72	50.17	53.32	50.57	47.06	53.47	55.63	51.62	48.52	47.55	51.75	48.29	55.02	50.36
C	38	49.79	44.11	51.16	54.11	51.24	47.74	52.79	52.00	51.21	49.97	48.24	52.66	49.33	51.39	50.61
		Ns	Ns	Ns	0.010	0.001	Ns	0.008	Ns	0.000	Ns	Ns	Ns	0.007	0.018	0.058

A – evening types; B – intermediate types; C – morning types; DI – dynamism; DO – dominance; CP – cooperativeness; CO – friendliness; SC – scrupulousness; PE – perseverance; CE – emotional control; CI – impulse control; AC – openness to culture; AE – openness to experience; E – energy; A – agreeableness; C – conscientiousness; S – emotional stability; M – openness.

Table 2. Univariate anova of scores on BFQ by SOLAT.

SOLAT	n.	DI	DO	CP	CO	SC	PE	CE	CI	AC	AE	E	A	C	S	M
1	138	50.99	44.86	51.02	53.17	49.20	47.28	52.94	55.46	50.30	50.05	48.09	52.24	47.45	54.55	50.53
2	24	46.21	44.71	47.71	50.67	51.88	46.54	52.33	53.92	50.42	44.54	48.13	48.25	49.50	52.56	47.04
3	22	48.91	45.14	50.00	53.45	52.95	44.77	51.55	51.59	52.45	47.41	46.25	50.68	48.59	51.23	48.95
		0.042	Ns	0.012	Ns	Ns	Ns	Ns	Ns							

1 – right styles; 2 – integrate styles; 3 – left styles; DI – dynamism; DO – dominance; CP – cooperativeness; CO – friendliness; SC – scrupulousness; PE – perseverance; CE – emotional control; CI – impulse control; AC – openness to culture; AE – openness to experience; E – energy; A – agreeableness; C – conscientiousness; S – emotional stability; M – openness.

Table 3. Mean and SD of scores on BFQ of all subjects.

	DI	DO	CP	CO	SC	PE	CE	CI	AC	AE	E	A	C	S	M
Mean	50.1	44.8	50.4	52.8	49.9	46.8	52.6	54.7	50.5	49	47.8	51.5	47.8	53.8	49.8
S.D.	8.9	8.3	8.8	9.5	8.8	9.3	9.3	9.4	10.9	8.8	8.9	10	9.9	8.6	10.2
S.E.M.	0.65	0.61	0.64	0.7	0.61	0.68	0.68	0.69	0.8	0.61	0.65	0.73	0.72	0.63	0.75

DI – dynamism; DO – dominance; CP – cooperativeness; CO – friendliness; SC – scrupulousness; PE – perseverance; CE – emotional control; CI – impulse control; AC – openness to culture; AE – openness to experience; E – energy; A – agreeableness; C – conscientiousness; S – emotional stability; M – openness; S.D. – standard deviation, S.E.M. – standard error of the mean.

Univariate ANOVA was conducted between rM.E.Q. and B.F.Q. (Table 1): Morning types scored significantly higher than Evening types on Conscientiousness ($p=0.007$), Friendliness ($p=0.010$), Scrupulousness ($p=0.001$), Openness to Culture ($p=0.000$), Emotional Stability ($p=0.018$), and Emotion Control ($p=0.008$); they also score higher than intermediate types on Conscientiousness ($p=0.007$), Friendliness ($p=0.010$), and Scrupulousness ($p=0.001$).

Univariate ANOVA was also performed between S.O.L.A.T. and B.F.Q. (Table 2): people with right-sided style of learning and thinking score significantly higher on Dynamism ($p=0.042$) and

Openness to experience ($p=0.012$) than people with left-sided and integrated styles of learning and thinking.

The relationship between rM.E.Q. and S.O.L.A.T. yielded interesting results. Right-sided style of learning and thinking was exhibited by the majority of subjects (138), almost the whole percentage of Evening types (14), the high majority of Morning types (26) and of intermediate types (98), and none of Evening types exhibited left-sided styles of learning and thinking. The right-sided style of learning and thinking was most frequently found in our sample of Yoga trainees, independent of Morningness-Eveningness disposition.

Characteristics of personality traits were analyzed in our sample of Yoga trainees, and data showed that scores of all personality traits are situated in the middle range for all the subjects, except the subfactor Dominance, which scores only slightly below middle range (Table 3).

Finally, multiple regression analysis in the whole sample revealed non-significance of rM.E.Q., S.O.L.A.T., and Big Five with reference to gender, age, and years of Yoga practice, except emotional for Stability on B.F.Q. with reference to gender ($p \leq 0.001$).

Discussion

Our results show that Morning types score higher than Evening types on Conscientiousness and its subfactor Scrupulousness, emotional Stability and its subfactor emotional Control, Openness to Culture, and Friendliness, pointing out that personality traits associate with Morningness-Eveningness disposition, as we posited. Our data can be compared to previous research, which reported that Evening types usually score higher on Impulsivity, Neuroticism, Sociability, and Psychoticism [41,52] and Morning types score higher on Conscientiousness [53]. Unlike other research [53], in our sample, Morning types scored higher on Openness to Culture. Morningness-Eveningness disposition can also have a role in Extraversion [40]. It has been observed that Extraversion is usually negatively correlated with Morningness disposition [54], though once again, not always [41,55]. In our sample, however, no statistical significance was found in Energy, which refers to the tendency towards being enthusiastic in individual and interpersonal contexts, and towards high levels of activity and positive emotion [43]. Energy is called Extraversion in other questionnaires based on the Big Five model, such as the NEO-PI by Costa and McCrae, and is a personality factor concerning parameters of assertiveness, activity, positive emotion, and gregariousness, similar to those concerning the factor Extraversion. Moreover, our results reveal a higher percentage of subjects with intermediate disposition; these data can be compared to previous studies reporting higher percentages of intermediate types [48], though with exceptions, and, usually, lower percentages of Morning and Evening types, depending on the samples explored [49,53,56,57].

Our data also show that people with right-sided style of learning and thinking score significantly higher than people with left-sided and integrated styles of learning and thinking on the subfactors Dynamism and Openness to Experience. Previous studies have revealed a relationship between personality and learning style preference [58]. People with different personality traits may process information differently [59]. Personality traits are among the most stable elements of learning styles

[60]. Analyses using M.B.T.I. showed affinities between hemispheric dominance and personality types [61]. It has also been observed that right hemisphericity correlates with a tendency to express emotions and left hemisphericity with a tendency to inhibit emotions [62]. Left hemispheric groups tend towards leadership skills and right hemispheric groups tend towards Extraversion and independence (59). Dynamism is a subfactor of Energy (similar to Extraversion in other questionnaires based on the Big Five model, as we have observed above); from this perspective, our research partially confirms previous findings [59] revealing higher scores on Dynamism, as well as on Openness to Experience, in people with right-sided style of learning and thinking.

A relevant finding of our study is that the majority of the sample, and of the Morning, Evening, and Intermediate types, have right-sided style of learning and thinking. This means that right-sided styles of learning and thinking characterize almost our whole sample of individual practicing Yoga, irrespective of their Morningness-Eveningness disposition; particularly Morning subjects, who would be expected to have left-sided styles of learning and thinking. This is of great interest, and is a significant point of the research: the findings might mean that Yoga trainees tend towards right hemisphere functioning, and towards analogic, holistic, and creative cognitive processing. In fact, in previous research, Morningness-Eveningness disposition was associated with cognitive functioning [48], and Eveningness disposition and Morningness disposition were associated positively and negatively with cognitive processes [48], respectively [54]. Morning types score higher in the left-sided thinking styles than Intermediate and Evening types [63]. It might be supposed that the practice of Yoga can have a relevant influence on cognitive parameters, independently from Morningness-Eveningness disposition, which is based on biological and physiological parameters, shifting the cognitive propensity of Morning subjects, who usually have left-sided styles, towards right processing.

It might also be supposed that Yoga is practiced by people who have a predisposition towards right-sided styles, and towards analogic, open-minded, creative models of processing, regardless of whether they are Morningness-, Eveningness-, or Intermediate-oriented.

The practice of Yoga can influence cognitive processes with reference to mindfulness, attention, concentration, and visual and verbal memory, and it can alter electroencephalographic parameters in brain hemispheres. Right- and left-sided styles of learning and thinking depend upon cerebral dominance; the right cerebral hemisphere is thought to specialize primarily in non-verbal, holistic, creative, analogic operations, and the left cerebral hemisphere is thought to specialize primarily in verbal, logic, systematic, consequential operations. Studies

have in fact shown that Yoga can enhance analogic processes [64], improve creativity [65], and influence problem-solving [66], and is an art of efficient management of attentional energy and mindfulness [67]. A particular aspect of cognitive processing concerns executive functions: high-level cognitive processes allowing adaptation to contexts, where practiced cognitive abilities are not sufficient, and which are involved in handling novel situations outside the range of automatic schemas, in situations requiring overcoming habitual responses, and which are based on neural mechanisms distributed across the cortex [68]. The relationships among Yoga, the development of human personality, physiological parameters, and cognitive processes are complex networks; many of them have not yet been adequately explored and deserve to be better understood using neuroscience perspectives.

We analyzed characteristics of personality traits in our sample of Yoga trainees, and our data show that scores of all personality traits are situated in the middle range for all the subjects, except the subfactor dominance, which scores only slightly below middle range. The practice of Yoga has can have influences on Gunas (Personality) in males and females [19], and our data can be compared to previous research that obtained lower scores for Yoga trainees in the areas of emotionality, excitability in females [20], and neuroticism in males and females [17,69–71].

Finally, we found that gender, age, and number of years of Yoga practice have no effects on S.O.L.A.T., rM.E.Q., and Big Five scores, except for Emotional Stability on B.F.Q. with reference to gender.

Conclusions

Our results are 2-fold. On one hand, our data partially confirm trends observed by previous researchers; on the other hand, some aspects have been revealed that deserve to be explored more thoroughly in the future.

Interestingly, we found that the relationship between cognitive parameters and Morningness-Eveningness disposition, which had been frequently observed in previous research, tend to disappear. While previous researchers have noticed that differences in Morningness-Eveningness disposition can affect different cognitive performance, our findings indicate that Yoga practice can have a significant influence on cognition. Yoga practice might redirect and restructure cognitive parameters, partially independently from a bio-physiological basis, which is typical of Morningness-Eveningness disposition. This can also offer suggestions for future research in different areas of Yoga, meditation, and relaxation practices in general with reference to modulations and oscillations of biological and physiological

parameters, which can be related to these practices. The above aspects can be important in research concerning psychology of health and in well-being in general.

In our study, Yoga trainees have been practicing Yoga for different lengths of time – from 6 months to 38 years; moreover, our data show that number of years of Yoga practice has no effect on S.O.L.A.T., rM.E.Q., and Big Five scores, except for emotional Stability on B.F.Q. with reference to gender. Therefore, it should be worthwhile to investigate possible effects of Yoga practice across the lifespan by comparing Yoga trainees and a control group of subjects who do not practice Yoga.

Implications for future research on the same topics are suggested with samples of younger people (adolescents or children) to investigate whether Yoga practice can influence cognitive styles, personality traits, and Morningness-Eveningness disposition in individuals of a particular age. In fact, the relevance of personality traits [72–74], of Morningness-Eveningness disposition [44], and of cognitive styles [75–77], as well as of creativity [78,79] in school contexts has been of interest to researchers. Yoga has also positive effects in children and adolescents [80–82]. The use of different psychometric instruments has been suggested, since the use of different measurements might result in partially different data. Psychometric instruments should also be administered in different parts of the day, with particular reference to older people, since it is well-known that cognitive abilities in these subjects can vary depending on the time of day [68]. Moreover, and with specific reference to Yoga practice, it should be worthwhile to study how the parameters of Morningness-Eveningness disposition, personality traits, and cognitive styles can be relevant and have intermingled effects in the many aspects of health, mental health. Research into these topics might be also conducted using a wide range of methods: biochemical, physiological, observational, clinical, electroencephalographic measurements, and neuroimaging techniques may be helpful. It is also recommended to explore how Morningness-Eveningness disposition interacts with most efficient cognitive and physiological functioning during Yoga sessions to allow each individual to choose the preferred and most efficient time of day in a complex training and practice experience such as Yoga.

Future research should be devoted to a better understanding of the relevance of Yoga practice with reference to other cognitive parameters (e.g. intelligence, memory, and alertness) that have been partially explored in previous years [85–87], by using different psychometric instruments and also with reference to their intermingled aspects of personality and circadian rhythmicity. Finally, since research in sport psychology has shown that Morningness-Eveningness disposition can interact with personality traits [83] and with cognitive styles [84], it should be worthwhile to compare possible differences

in these parameters among groups practicing Yoga, exercise, and athletic performance.

A limitation of this exploratory research may be the number of subjects with particular reference to the measurement of Morningness-Eveningness disposition; researchers have sometimes investigated larger samples [49,52,57,63] to better understand extreme tendencies towards Morningness and Eveningness, which usually concern a minor percentage of subjects, when compared to intermediate types. Another limitation may be the age range of the sample; as previously observed, future studies might investigate subjects of a specific age range.

People who practice Yoga show learning and thinking processes towards right-sided styles of learning and thinking, towards analogic and holistic functioning, which can lead to cognitive alternatives, and to wider and new ways of behaving and of life parameters, which can contribute to well-being. Relationships among spiritual and religious practices, health, and well-being generally have been pointed out by researchers, who have also observed the relevance of Yoga towards harmonious development of personality (Gunas), human mind, and body. Yoga practice can develop new paths of processing information towards

originality and creative cognitive processes, which can be of high relevance in human development, contributing to elaborate, unexpected behavioral models and unexplored cognitive paths, to cope with difficulties that cannot be overcome only by using logic, and concrete processing.

With specific reference to executive functions based on neural mechanisms distributed across the cortex [68], Yoga practice can help to develop high-level cognitive processes allowing adaptation to new contexts, handling novel situations outside the range of automatic schemas, and overcoming habitual responses.

A broad understanding of the many aspects of Yoga can help develop human personality and behaviors in similar directions, which can be of great relevance for the improvement of many aspects of living conditions in modern society.

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