

PERSONALITY TRAITS AND THE ROLE OF GENDER IN SWIMMERS AT THE LEISURE LEVEL

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We used the Big Five Questionnaire (BFQ; Caprara, Barbaranelli, & Borgogni, 1993) with swimmers engaged in indoor practice at the leisure level (50 male, 50 female) to measure whether personality traits are associated with swimming. We also examined the concept that scores on some personality traits can have a reciprocal closely intermingled influence on other personality traits, and that gender can play a role in modulating personality. We found that the swimmers were characterized by evidence of personality traits distributed within moderate middle scores in personality factors, contributing to well-being and satisfaction with life. We also found correlations within factors and subfactors, showing a close relationship among personality traits. Gender also plays a role in the measurement of personality traits as gender has a statistically significant effect on extraversion.

Keywords: swimming, personality, Big Five Questionnaire, sport, athletic performance, nonathletic performance, well-being.

Personality factors are determinants of psychological well-being (Yeung & Hemsley, 1997), and sport contributes to individuals' well-being. Researchers have examined personality traits of people practicing sport at leisure and competitive levels. Rhodes and Smith (2006) found that extraversion (E), neuroticism (N), and conscientiousness (C) were correlated to physical activity,

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but not openness to experience (OE), agreeableness (A), or psychoticism (P). Male athletes tend to be more active, aggressive, competitive, dominating, and controlling, while female athletes are more goal oriented, organized, and rule governed (Pedersen, 1997). A positive attitude to exercise is negatively associated with N, and positively with E (Saklofske, Austin, Rohr, & Andrews, 2007). Higher E is positively related to exercising, while N and P are positively related to not exercising (Arai & Hisamichi, 1998). O, E, and emotional stability (ES), or OE and A explain the greatest variance in exercise dependence (Kern, 2010). Athletes with high levels of E, O, and A show greater use of emotion-focused coping strategies (Allen, Greenlees, & Jones, 2011). People with low C combined with high E and high N are greater risk takers, while people with high C and low E are lower risk-takers (Castanier, Le Scanff, & Woodman, 2010). Personality traits, except for N, score higher in athletes than in nonathletes, and athletes are more psychosocially developed than nonathletes (Tafti, Pakdaman, & Asgari, 2008). Individual athletes score higher on dominance (D), introversion (I), C, and emotionality than team athletes, while team athletes are more constant, concrete, and reliable, and score higher on A, E, and sociotropy (S) than practitioners of individual sports (Eagleton, McKelvie, & de Man, 2007; Nia & Besharat, 2010; Peterson, Weber, & Trousedale, 1967; Urvashi, 1998). Endurance sport and shooting sport athletes show lower N scores than the control group (Bäckmand, Kaprio, Kujala, & Sarna, 2001). Parmigiani et al. (2009) found that personality traits were important factors in athletic performance, influencing the probability of winning or losing. Losers showed higher levels of harm avoidance as well as lower levels of novelty seeking than winners. In addition, individual differences concerning morningness–eveningness personalities in sport have been investigated by Rossi, Zani, and Mecacci (1983) and Zani, Rossi, Boriello, and Mecacci (1984), who observed a decrease in morningness in sport from golf and shooting to volleyball and water polo. No significant differences were found in morningness–eveningness among low-performing athletes, while high-performance golfers showed higher morningness than water polo players (Rossi et al., 1983).

Although few studies have been published about personality traits in swimmers, the findings of the following researchers are relevant to the present study. When studying a sample of 176 female swimmers at the University of Illinois, Meredith and Harris (1969), using the Cattell 16PF, observed that swimmers were more assertive, enthusiastic, conscientious, apprehensive, self-sufficient, reserved, and socially precise than the control group of 264 women involved in other activities such as tennis and golf. Behrman (1967), using the Guilford-Zimmerman Temperament Survey with a sample of 102 swimmers at City College of New York, found that the greater the degree of swimming competence, the more ascendant and socially bold were the individuals, while the lower the degree of

swimming ability, the more submissive were the individuals. The high score of friendliness in the lower ability group suggested that those individuals may have lacked the necessary aggressiveness. [Newman \(1968\)](#) examined a sample of 21 swimmers participating in a university swimming program at a college high school in Oklahoma using the Thurstone Temperament Schedule and observed a tendency for swimmers ranked higher in the 100-yard freestyle to score higher in D, and for swimmers ranked higher in the 100-yard breaststroke to score low in D, impulsiveness, and sociability. Newman concluded that personality traits could distinguish faster and slower swimmers and type of swimming style. Hendry (1969) investigated 48 selected coaches and 30 international junior swimmers under 16 years when constructing the ideal coach profile on a 10-point scale from the Cattell 16PF. He compared the objective test profiles of highly successful coaches with coaches' self-assessment of personality. Hendry observed great similarities between coaches' subjective assessment and the ideal coach, and between coaches' and swimmers' estimation of the ideal coach.

Swimming has also been studied in relation to oscillation of physiological parameters, that is, performance trends are aligned with time of day in association with rhythms of temperature (Baxter & Reilly, 1983), and diurnal physiological variations in temperature, heart rate, and oxygen uptake in morning or evening swimming sessions are examined ([Martin & Thompson, 2000](#)). Circadian variations in salivary cortisol and IgA were observed in competitive swimmers before exercise (Dimitriou, Sharp, & Doherty, 2002), and Deschodt and Arsac (2004) found that, when swimmers perform at a high level in the morning, they should have a comprehensive warm-up to "swamp" the diurnal effects of the morning.

Participation in sport contributes to a good, fulfilling life, and to physical and psychological health and well-being benefits. It supports affective development and enhances physical competence (Dishman, 1995) and educational achievement ([Taras, 2005](#)). It reduces anxiety (Biddle & Mutrie, 2001), contributes to processes of inclusion by bringing individuals together in shared activities (Bailey, 2005), develops systems of values, and improves sexual activity (Sabo, Miller, Farrell, Melnick, & Barnes, 1999). The role of sport and exercise with regard to physical health has been studied recently (e.g., Aidar et al., 2012; Gould, Lahart, Carmichael, Koutedakis, & Metsios, 2012; Martin Ginis, Jørgensen, & Stapleton, 2012; Morano et al., 2012). In addition, significant relationships have been found between P, E, N, and personality type dimensions of professional players' anger-anger expression styles (Yildiz, Sahan, Tekin, Ulukan, & Mehtap, 2011), the role of personality variables in the processes of exhaustion and vigor has been researched (Moreno-Jiménez, Garrosa, Corso, Boada, & Rodríguez-Carvajal, 2012), and researchers have found that sedentary Type D men score lower in body satisfaction than active groups (Borkoles, Polman, & Levy, 2010).

Personality factors are important determinants of well-being with specific reference to ES, C, N, E, and A (Grant, Langan-Fox, & Anglim, 2009; Yeung & Hemsley, 1997). Well-being correlates are particularly accounted for by E, N, OE, A, and C, also from a genetic perspective (Weiss, Bates, & Luciano, 2008). Because swimming can improve general well-being (Huttunen, Kokko, & Ylijokuri, 2004), we have posited that scores on personality traits at around at least the moderate middle range might characterize people practicing swimming.

Method

Participants

The voluntary participants were 100 swimmers aged between 19 and 55 years, with a mean age of 32 ($SD = 9.18$) years. Participants comprised 50 men, with a mean age of 34.2 (median 34) years, and 50 women, with a mean age of 29.06 (median 29) years. Participants practiced swimming at the leisure level only, for 1 hour 2 or 3 times a week in public indoor swimming establishments in central-southern Italy. Participants, none of whom received monetary compensation, were recruited by the directors of the swimming establishments, and they provided informed consent prior to participation and completed the questionnaires anonymously. They were asked to read the instructions on the front page carefully, and then fill out the questionnaire individually before the swimming sections, and to answer directly, without hesitation, sincerely, and spontaneously.

Measures

Big Five Questionnaire. The Big Five Questionnaire (BFQ; Caprara, Barbaranelli, & Borgogni, 1993) was used to measure whether personality traits are associated with swimming. Within the BFQ, personality traits are categorized as five factors and 10 subfactors. BFQ has good internal validity (ranging from .93 to .99). Reliability was established using Cronbach's alpha (from .60 to .90) and the test-retest method (from .68 to .86). Concurrent correlations with the NEO-PI, the EPQ, the Comrey Personality Scale, and the Multidimensional Personality Questionnaire were significantly positive in almost all cases (Caprara et al., 1993). The cutoffs for the five factors and the 10 subfactors are >65, 64-55, 54-45, 44-35, <35. The scoring system from the highest level to the lowest level indicates very high, high, medium evidence of the respective personality traits. The BFQ is used in organizational and work psychology (Tett, Jackson, & Rothstein, 1991), clinical psychology (Widiger & Trull, 1992), and educational and school psychology (Graziano & Ward, 1992).

Results

In Table 1 personality trait scores are equally distributed within moderate middle scores, and can be observed in all five factors.

Table 1. *Descriptive Measure of the BFQ*

	<i>M</i>	<i>SD</i>	Minimum	Maximum	Skewness	Kurtosis
Extraversion	52.79	1.2	20	76	-.09	.40
Agreeableness	48.61	7.9	30	68	-.10	-.18
Conscientiousness	49.53	1.47	25	73	-.03	-.50
Emotional stability	51.82	8.65	26	68	-.61	.35
Openness	48.04	1.03	22	71	.04	-.21

The focus in the first stage of analysis was on exploring relationships among personality traits. The Pearson correlation matrix revealed statistically significant positive correlations between E and C ($r = .521, p > .001$), E and OE ($r = .384, p > .001$), and O and C ($r = .428, p > .001$). Other correlations were not statistically significant. At the significance level of $p < .01$ positive correlations were found between the following subfactors (see Table 2): cooperativeness and friendliness, perseverance (PE), openness to culture (OC), and OE; D and OC; friendliness and impulse control (IC). At the significance level of $p < .001$ significant positive correlations were found between the following subfactors (see Table 2): dynamism and D, cooperativeness, scrupulousness, PE, OC, and OE; D and scrupulousness, PE, and OC; scrupulousness and PE, OC, and OE; PE, OC, and OE; emotion control (EC) and IC; OC and OE.

Analysis of variance (ANOVA) was conducted to explore the effect of gender in modulating personality. ANOVA results suggested that male and female groups differed significantly only in scores on E ($F(1, 107) = 3.18, p < .001$), with women scoring higher than men.

The results led to application of the more complex analysis of covariance (ANCOVA) with the focus on the effect of gender on E, controlled for the influence of age and other scores on personality traits.

The ANCOVA model was conducted using E as the criterion variable, gender as the independent grouping variable, and age and the other four dimensions of BFQ as covariates.

The results revealed that the effect of gender on E was statistically significant ($F(1, 97) = 5.13, p = .029, \eta^2 = .180$), along with the effect of C ($F(1, 97) = 13.76, p = .001, \eta^2 = .213$). The effect of age on E ($F(1, 97) = 1.31, p = .290$), and interaction between gender and age were not statistically significant either ($F(1, 97) = .879, p = .595$).

Table 2. Correlations Among BFQ Subfactors of Personality Traits

	1	2	3	4	5	6	7	8	9	10
Dynamism	-									
Dominance	.480**	-								
Cooperativeness	.248**	.070	-							
Friendliness	.099	-.029	.224*	-						
Scrupulousness	.202**	.278**	.104	.036						
Perseverance	.548**	.536**	.193*	-.111	.463**	-				
Emotion control	-.005	-.013	-.053	.047	-.031	.048	-			
Impulse control	-.154	-.008	-.029	.189*	-.034	-.139	.557**	-		
Openness to culture	.382**	.209*	.204*	.013	.320**	.470**	.032	-.008	-	
Openness to experience	.511**	.128	.237*	.040	.297**	.448**	.039	-.033	.512**	-

Note. * $p < .01$, ** $p < .001$.

Because the analysis results confirmed a relationship between E and consciousness and a statistically significant intergroup difference in scoring on E, multiple regression was applied to model if and to what extent scores on consciousness predicted outcomes on the measure of E, controlled for both the interactive effect of gender and the multiplicative effect of consciousness*gender (see Table 3). Subsequent steps (model 1, model 2, model 3) of multiple regression (stepwise) identified determinants of E by including variables to verify progressive significance levels.

Table 3. *Summary of Regression Analyses for Variables Predicting Extraversion*

	Model 1 $R^2 = .085$	Model 2 $R^2 = .321$	Model 3 $R^2 = .372$
		$\Delta R^2 = .240^a$	$\Delta R^2 = .056^b$
Intercept	49.82***	26.18***	14.61**
Gender	6.21***	5.10***	28.48***
Consciousness		.486***	.723***
Conscientiousness*gender			-.470***

Note. ^a $p = .0001$, ^b $p = .001$, ** $p < .01$, *** $p < .001$.

The results of regression analysis on E showed that the set of selected predictors was statistically significant in all steps: model 1 ($F(1, 95) = 10.83$, $p < .001$), model 2 ($F(2, 94) = 26.05$, $p < .0001$), and model 3 ($F(3, 93) = 21.947$, $p < .0001$). This confirmed that gender, consciousness and the multiplicative effect of consciousness*gender are predictors of scores on E. The coefficient of determination R^2 providing information about incremental accounted variances of each model, revealed that each variable added to the regression equation can contribute to explaining more variance in the scores on E. It must be noted that men (baseline) showed a lower intercept value (14.61) than women (43.08). For each incremental unit on the measure of consciousness, male swimmers obtained a higher value of E of $B = .723$, and for each incremental unit on the measure of consciousness, female swimmers obtained a higher value of E of $B = .253$.

Discussion

In this study, participants were clearly characterized by evidence of personality traits distributed within moderate middle scores, as we posited, and this was observed in all five factors. Also, women reported high scores, but only in E. Personality is a relevant aspect of and a predisposition to well-being, as has been observed in recent research, although with different instruments of measurements. For example, satisfaction with life is determined by N-ES (Librán, 2006), and E,

N, ES, and C represent personality predispositions to general well-being (Brebner, Donaldson, Kirby, & Ward, 1995; Chan & Stephen, 2000; [Grant, Langan-Fox, & Anglim, 2009](#)). Positive and negative affects are amongst the most significant aspects of well-being, and E and OE are particularly strong predictors of positive affect (Hayes & Joseph, 2003), and N predicts the largest amount of variance in negative affect (Yeung & Hemsley, 1997). Moreover, subjective well-being is accounted for by unique genetic influences from N, E, and C, and by a common genetic factor influencing the personality domains of E, OE, A, and C ([Weiss et al., 2008](#)). Given that personality traits have been observed with reference to well-being, and swimming can contribute to well-being, it might be supposed that the evidence of some personality traits might characterize people practicing swimming, as we have posited, and that this can be relevant and also account for well-being in swimming practice.

Personality factors are relevant determinants of psychological well-being with reference to sport activity generally (Yeung & Hemsley, 1997). Moreover, we found that some personality factors in our sample of swimmers correlate reciprocally. This means that the personality traits E, OE, and C are closely interrelated and intermingled, and that most subfactors are significantly involved in a complex structure of other subfactors as a complex network of personality characteristics. Gender also plays a role in the measurement of personality traits. Gender has a statistically significant effect on E, and gender, conscientiousness and the multiplicative effect of conscientiousness*gender are predictors of E, and increments in measures of consciousness have different effects on a higher value of E in men and women. It should also be mentioned that the BFQ was the only instrument of assessment used in this study, and that using other instruments of measurements might result in somewhat different data.

Sport activities deserve to be more thoroughly investigated in view of the different aspects of personality psychology, that is, the multiple psychological, physiological, and neurobiological variables involved in the practice of sport activity and in the structure of personality traits. This could help in the development of strategies for achieving an individual's best performance through training or coaching at leisure and athletic levels. Researchers should devote more attention to understanding the role of personality in sport activity in relation to individual well-being, physical and psychological health, reduction of anxiety and stress, affective and educational achievement, and development of wider systems of social and moral values.

It would be worthwhile for researchers to explore how sport activity contributes to personal well-being, with particular reference to age, gender, and personality typology of individuals who practice sport either at the leisure level or competitively. Differently grouped kinds of samples, for example, older people, children, adolescents, top-level athletes, people involved in different

sport activities, and separate gender samples could be used. It might also be relevant to extend the investigation to cognitive parameters to understand how cognitive functioning is differently modulated by different types of personality in people who practice sport. Cognitive functioning and cognitive processes also deserve to be investigated with appropriate psychometric instruments for the improvement of personal well-being with reference to different personality types. It should be also examined which types of sport, that is, individual or team, match specific personality typologies, and contribute to better individual well-being. The relevance of swimming to individuals' health has been studied in the last decade (Ferrand, Magnan, & Antonini Philippe, 2005; Özer et al., 2007; Seif Eldin, 2005), and should be continued to be studied.

The role of personality traits should be investigated either in individual or in team sport with reference to the prevention of pathogenic conditions, physiological reactions, and mental health generally. Moreover, researchers should extend this investigation about the relevance of personality in different sport activities into areas concerning human health such as neurological rehabilitation, cardiovascular diseases, cancer, obesity, back pain, motor disabilities, autism, diabetes, osteoarthritis, sleep quality, paralympic activities, psychiatry, and aging. The results of future studies in these and similar directions could help develop better ways to improve the practice of sport and to plan sport activities more efficiently at the leisure or competitive level, with the additional aim of improving and fulfilling individuals' well-being and satisfaction with life.

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