

THE FIVE-FACTOR MODEL OF PERSONALITY AND AGGRESSIVENESS IN PRISONERS AND ATHLETES

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Original scientific paper

UDC 159.923.2:364.271:343.261-052:796.056

Abstract:

The study examined the type of relationship between the trait of *aggressiveness* and the dimensions of the *Five-Factor Model (FFM) of personality* on samples of prisoners (N=106) and athletes (N=109). The relationship between the five factors of personality and six measures of *aggressiveness* was determined by the Pearson's correlation coefficient, whereas multiple regression analysis was used to determine the relations between the five personality factors and the total measure of aggressiveness separately for each sample. In the prisoners it was found that aggressiveness is significantly correlated with *agreeableness*, *conscientiousness* and *emotional stability*, whereas in the athletes a significant correlation was found between *aggressiveness* and *extraversion*, *agreeableness* and *emotional stability*. Multiple regression analysis showed that all the factors, except *agreeableness*, were significant predictors of *aggressiveness* in the prisoners, whereas in the athletes only *emotional stability* was a significant predictor.

Key words: aggression, extraversion, agreeableness, conscientiousness, emotional stability, intellect, openness, neuroticism

Introduction

Aggressiveness and aggressive behaviour is a highly multifaceted construct (Parrott & Giancola, 2007) and a widespread social phenomenon. Within the framework of Eysenck's personality theory it is included within the wider structure of the dimension psychoticism (Knezović et al., 1989; Milas, 2004; Hudek-Knežević, Krapić, & Kardum, 2006). It may be defined as any behavioural pattern the aim of which is to hurt others, physically or mentally (Glavota, 1990; Maxwell & Moores, 2007; Parrott & Giancola, 2007). With regard to behaviour, we differentiate between *verbal* and *physical aggression*. *Verbal aggression* is manifested as shouting, swearing, threatening, insulting and similar, whereas *physical aggression* is characterized by a more or less direct physical assault on a person (Smits, De Boeck, & Vansteelandt, 2004; Žužul, 1989). Further, according to the object of *aggression* manifestation, we distinguish *direct* from *indirect aggression*. *Direct aggression* is oriented directly towards the source of frustration, whereas *indirect aggression* is oriented towards substituted goals, other persons, or any other objects (Campbell, 2006; Garandau & Cillessen, 2006; Žužul, 1989). *Aggressiveness* as a personal-

ity trait is manifested on two levels: as *latent* and *manifest aggressiveness*. Under the term *latent aggressiveness* we understand a latent tendency or just a disposition to assault the perceived source of frustration, whereas *manifest aggressiveness* is an open manifestation of aggressive behaviour or response. Or, more precisely, *latent aggressiveness* is usually defined as a relatively permanent and stable personality trait thanks to which an individual in provoking situations responds by the elevation of affect tension and by the occurrence of motivation to assault the source of the provocation. On the other hand, the *manifest aggressiveness* is usually defined as a relatively permanent and stable personality trait of a person who reacts in provoking situations by the manifestation of either *physical* or *verbal aggression* against the source of frustration or the substituted goals (Garandau & Cillessen, 2006; Žužul, 1989). So, *manifest aggressiveness* is a function of *latent aggressiveness* and restraining inhibition mechanism. The development of the inhibition mechanism is primarily influenced by a learning process, especially social learning (Žužul et al., 1989), which embraces the adopted moral, ethical and social values and, generally, attitudes towards aggression and violence. However, there is also a moderate genetic base for the mechanism of

inhibition (Žužul, 1989; Richetin & Richardson, in press; Keller, Hurst, & Uskul, 2008).

As far as the relationship between aggressiveness and cognitive competence is regarded (Feshbach & Price, 1984; Richetin & Richardson, in press), the longitudinal study indicates the causal connection between cognitive competence and aggressive behaviour. The development of cognitive competence would in many cases decrease the incidence or level of aggressiveness in humans.

Personality can be defined as a cluster of traits that determine individual-specific responses to the environment (Musek, 1999). So, on the one hand, the concept of personality explains why one individual differs from all other individuals and, on the other hand, it explains his/her behavioural consistency in diverse situations (Asendorpf & van Aken, 2003; Macdonald, Bore, & Munro, 2008; Knezović et al., 1989).

Every personality theory tries to embrace as wide a range of human behavioural patterns as possible by its limited system of assumptions or constructs (Buško, 1990). The *Big Five Model* or the *Five-Factor Model* (FFM) is substantially descriptive, with the emphasis on the taxonomic aspect, that is, on the way in which personality can be divided into a smaller number of fundamental constructs (Bucik, Boben, & Hruševar-Bobek, 1997; Macdonald, Bore, & Munro, 2008). According to that theory, personality can be described by means of five factors: *extraversion*, *agreeableness*, *conscientiousness*, *emotional stability* and *intellect* (Pervin & John, 1997). These five factors represent personality in the highest degree of abstraction, and each of these dimensions includes a large number of distinct specific characteristics.

Factor *EXTRAVERSION* accounts for the amount and intensity of social interaction, activity level, the need for external stimulation and the feature of joy. Individuals scoring high on that dimension can be described as sociable, active, venturesome, talkative, and optimistic, as ones who like parties and fun, who are warm-hearted. Opposite to them, persons low on that dimension are described as unsociable, quiet, reserved, unexuberant, balanced, serious, aloof, and task-oriented.

Factor *AGREEABLENESS* assesses quality of interpersonal orientation towards the others along a continuum from pity and compassion to adversary, antagonism in thoughts, emotions and actions. Persons scoring high on that dimension can be described as soft-hearted, as a being of a good nature, trusting, helping, forgiving, open persons, straightforward, honest, whereas those on the opposite pole of the dimension are seen as cynical, mocking, rude, irritable, suspicious, vengeful, ruthless, uncooperative, and manipulative.

Factor *CONSCIENTIOUSNESS* describes task-oriented and goal-oriented behaviour and socially

required impulse control. Individuals scoring high on that dimension are known as organized, reliable, assured, self-disciplined, punctual, scrupulous, neat, polite, considerate, ambitious, committed, and persevering. Opposite to them, persons with low scores are unreliable, lazy, careless, negligent, imprudent, inconsiderate, indifferent, weak-willed, inert, hedonistic, aimless, and with no aspirations.

Factor *NEUROTICISM* identifies persons who tend to feel negative emotions (anxiety, bitterness, sorrow), who suffer from unrealistic ideas, excessive yearning and urges and have or suffer from maladaptive stress-coping strategies. Persons highly positioned on that dimension exemplify as worrying, nervous, irritable, easy jumping, too emotional, insecure, unreliable, inadequate, and frequently hypochondriacal. Low positioned individuals are calm, relaxed, not too emotional, hardy, secure, and self-satisfied.

Factor *INTELLECT/OPENESS TO EXPERIENCE* assesses proactive seeking and appreciation of experience for its own sake, tolerance for the unknown and exploration of the unfamiliar; in other words, it assesses the width, depth and complexity of one's "spiritual world" and life experience. Persons scoring high on this dimension are described as curious, of broad interests, creative, operational, imaginative and non-conventional. On the contrary, those scoring low are traditional, down-to-earth, narrow-hearted, limited, inartistic, not curious and not interested to explore (Pervin & John, 1997).

Several research studies demonstrated that *extraversion* and *emotional stability* from FFM are congruent to *extraversion* and *neuroticism* from the Eysenck's model (Mlačić & Knezović, 1997). *Agreeableness* and *conscientiousness* from FFM have a moderate high correlation with the factor *psychoticism*. Eysenck's theory and FFM, however, have quite different explanations for the finding. The first theory states that *psychoticism* is a superfactor and that *agreeableness* and *conscientiousness* are its compounds (Eysenck, 1991, 1992, 1993, 1994). The second theory, however, says that *agreeableness* and *conscientiousness* are fundamental dimensions, whereas *psychoticism* is their particular combination (Goldberg & Rosalack, 1994; Costa & McCrae, 1992). As far as the relationship between *aggressiveness* and Eysenck's personality theory regards (Eysenck, 1992), *aggressiveness* is classified within the framework of *psychoticism*.

According to certain studies (Žužul, Frieze, & Arambašić, 1989), *aggressiveness* is in no correlation with the dimension of *extraversion*. Not big, but significant correlation was found between *neuroticism* and *aggressiveness*, with the *latent aggressiveness* having a higher correlation with *neuroticism* than the *manifest* one. *Psychoticism* is in the highest correlation with *latent* and *manifest aggressiveness*.

The goal of the present study was to examine the type of relationship between the trait of *aggressiveness* and the dimensions of the *Five-Factor Model (FFM) of personality* in the populations of prisoners and athletes. These two populations were presumed more aggressive than other populations – the prisoners by definition have already endangered others by their behaviour and are either under investigation or are already serving their sentence for it; athletes must be “aggressive” when striving to beat their opponents in their sports (especially in contact sports; Rogulj, Nazor, Srhoj, & Božin, 2006). We hypothesized that prisoners will score lower on *agreeableness* and *conscientiousness* because in several previous research studies (e.g. Tani et al., 2003) it has been evidenced that lower levels on these dimensions predict delinquency. On the other hand, athletes score lower (Cox, 2000; Tušak, Kandare, & Bednarik, 2005) on the *neuroticism* scale and higher on the dimensions of *agreeableness* and *conscientiousness*.

Therefore, the authors presumed that *agreeableness*, *conscientiousness* and *emotional stability* would be statistically significantly correlated with *aggressiveness* in a way that persons who would score lower on the variables *agreeableness*, *conscientiousness* and *emotional stability* would display higher aggressiveness. No hypotheses were set for the relationships between *extraversion* and *intellect* on the one hand, and *aggressiveness* on the other.

Methods

Instruments

QUESTIONNAIRE A – 87 AND IPIP 100:

Questionnaire A – 87 (Žužul, 1987) consists of 15 items of different situations with five possible responses. The possible responses or reactions are the five most frequent forms of aggressive responses: a) *verbal manifest aggression* (VM); b) *physical manifest aggression* (PHM); c) *indirect aggression* (IND); d) *verbal latent aggression* (VL), and e) *physical latent aggression* (PHL).

The subject's answers were given on a five point scale: 1 - they never behave in that way, 2 - they behave seldom in that way, 3 - they behave in that way from time to time, 4 - they behave frequently in that way, and 5 - they behave very often in that way.

The alpha coefficients of reliability for every *aggressiveness* scale were as follows:

rtt(VM) = .91, rtt(PHM) = .92, rtt(IND) = .92, rtt(VL) = .89, and rtt(PHL) = .92 (for the prisoners); and

rtt(VM) = .83, rtt(PHM) = .89, rtt(IND) = .86, rtt(VL) = .88, and rtt(PHL) = .90 (for the athletes).

Test A – 87 is an extremely homogeneous instrument in the measures of individual forms of *aggressiveness* and the total result due to the results

on particular scales have been formed on the basis of only 15 items. In order to verify the contents validity of the questionnaire, the author conducted a validation study (Žužul, 1989) in which correlations among all the scales of aggressiveness were determined. The cross-scale correlations were considerably high – they covered ranges from .505 (between VL and PHM *aggression*) to .797 (between PHL and PHM *aggression*). The factor analysis yielded only one factor which explained 73.7 % of the total variance of A - 87. The projections of all the five scales on that factor were similar and profoundly high – from .800, being the projection of the scale *verbal latent aggression*, to .906, being the projection of the scale *indirect aggression* (Žužul, 1989). Consequently, there is one factor, saturated similarly with all the variables, which strongly confirmed the contents validity.

The second applied questionnaire - IPIP 100 (www.ipip.org/2005) measures the five personality factors: *extraversion* (EXT), *agreeableness* (AGR), *conscientiousness* (CON), *emotional stability* (EMST) and *intellect* (INT). The questionnaire consists of 100 items (20 items for each factor) describing typical forms of behaviour or the mentioned feature. The subjects answered on a five point scale: 1 - the statement is absolutely incorrect, 2 - the statement is mostly incorrect, 3 - the statement is neither correct nor incorrect, 4 - the statement is mostly correct, 5 - the statement is absolutely correct.

In this study the computed alpha reliability coefficients for every factor were as follows:

rtt(EXT) = .80, rtt(AGR) = .78, rtt(CON) = .87, rtt(EMST) = .83, and rtt(INT) = .76 (for the *prisoners*); and

rtt(EXT) = .90, rtt(AGR) = .78, rtt(CON) = .88, rtt(EMST) = .90, and rtt(INT) = .84 (for the *athletes*).

Subjects

The sample of subjects was a convenience one. The first sample consisted of male suspect and convicted offenders of the criminal code (N=106), the persons serving their penalties in the Zagreb County Prison and the halfway prison Vukomerec, or the detainees who were in custody in the Zagreb County Prison. Their age ranged from 19 to 66 years (Mean=36.85 yrs, SD=11.33). The investigated *prisoners* committed 10 categories of crime offences (CO). These were CO against life and body: murder and grievous bodily harm - 7 *prisoners*; CO against freedom, human and civil rights: kidnapping - 1 *prisoner*; CO against values protected by international law: illicit people trafficking and drug trafficking - 25 *prisoners*; CO against sexual freedom and moral: rape - 2 *prisoners*; CO against matrimony, family and the young: violation of children's alimony duties, home/

family violence - 8 *prisoners*; CO against property: theft, burglary, fraud, extortion, blackmailing - 43 *prisoners*; CO against general security of people and property and traffic security: traffic accidents - 8 *prisoners*; CO against financial transactions and business security: counterfeit banknotes, evasions of tax payment and other financial obligations - 5 *prisoners*; CO against public order: assault against a person on duty, obstruction of a public officer - 2 *prisoners*; CO against official duty: embezzlement, abuse of office and power - 5 *prisoners* (Marijan, 2004).

The second sample (N=109) consisted of male freshmen and sophomores at the Faculty of Kinesiology, University of Zagreb, Croatia, aged between 18 and 19 years, future physical education teachers and professional coaches (of a particular competitive sport, recreational sport, physical recreation, physical conditioning, physical fitness training, and kinesitherapy programme leaders in adapted physical activity and in sport for the disabled). They were all involved in extramural additional sports training practice sessions (most of them at the national quality level): 76 students played ball games (football, basketball, team handball, water polo, field hockey, tennis, and table tennis), 15 did combat sports (karate, tae kwon do, wrestling, boxing, nanbudo, budokai and fencing), two did aesthetic sports (diving and dances), and 16 were involved in

track-and-field, swimming, rowing, kayaking, road bicycling, triathlon, equestrian sport (show jumping), and various activities for recreational purposes (jogging, lifting weights).

All the subjects provided their informed consent and were assured confidentiality.

Data processing methods

From the data (five personality factors and six *aggressiveness* measures) obtained on the samples of prisoners and athletes, the basic descriptive parameters were calculated. The goodness of fit of the data was tested by the Kolmogorov–Smirnov test. The relations between the five personality factors and six *aggressiveness* measures were established by the Pearson's correlation coefficient. Associations between the five personality factors and the total measure of aggressiveness were determined by a multiple regression analysis for each sample separately.

The data were processed with the statistical package *SPSS 11.5 for Windows* at the Department of Psychology, Faculty of Arts, University of Zagreb, Croatia.

Results

The results of descriptive analyses of the samples of prisoners and athletes are presented in Tables 1 and 2.

Table 1. Parameters of descriptive statistics, Kolmogorov-Smirnov test (K-S) (*prisoners*)

	Extra-version	Agreeableness	Conscientiousness	Emotional stability	Intellect	VM aggressiveness	PHM aggressiveness	IN aggressiveness	VL aggressiveness	PHL aggressiveness	Total aggressiveness
N	106	106	106	106	106	106	106	106	106	106	106
M	68.30	73.65	76.28	67.02	69.88	34.05	23.56	26.08	33.23	25.44	142.26
SD	10.36	9.47	11.98	11.68	9.65	12.08	9.71	10.83	11.03	11.48	49.26
Kurtosis	.28	.13	-.13	.10	.05	.66	2.35	1.79	.29	1.39	1.28
Skewness	-.22	-.15	-.23	-.23	.13	1.01	8.28	4.48	-.56	2.07	2.94
Maximum absolute differences	.09	.08	.07	.08	.08	.06	.19	.15	.07	.20	.09
Maximum positive difference	.09	.08	.07	.08	.08	.05	.15	.14	.07	.20	.08
Maximum negative difference	-.07	-.05	-.06	-.07	-.08	-.06	-.19	-.15	-.05	-.18	-.09
K-S test	.90	.81	.76	.84	.83	.59	1.95	1.57	.67	2.09	.89
Significance	.40	.53	.61	.48	.50	.88	.00**	.02*	.77	.00**	.41

Legend: VM verbal manifest, PHM physical manifest, IND indirect, VL verbal latent, PHL physical latent

Table 2. Parameters of descriptive statistics, Kolmogorov-Smirnov test (K-S) (athletes)

	Extra- version	Agree- ableness	Conscien- tiousness	Emotional stability	Intellect	VM aggres- siveness	PHM aggres- siveness	IN aggres- siveness	VL aggres- siveness	PHL aggres- siveness	Total aggres- siveness
N	109	109	109	109	109	108	109	109	109	109	109
M	71.40	72.95	70.45	69.86	69.24	38.46	24.55	27.45	38.42	31.25	160.05
SD	10.31	7.04	10.34	10.78	8.65	9.87	9.02	8.93	10.84	12.25	42.21
Kurtosis	.13	.13	-.10	.09	.12	.48	2.23	1.33	.24	.73	.87
Skewness	-.46	.19	-.24	-.27	.29	.46	7.23	2.80	.07	.16	1.51
Maximum absolute differences	.06	.07	.05	.07	.07	.08	.19	1.26	.06	.10	.10
Maximum positive difference	.06	.07	.04	.07	.07	.08	.19	1.26	.06	.10	.10
Maximum negative difference	-.05	-.06	-.05	-.05	-.04	-.06	-.15	-.08	-.04	-.09	-.06
K-S test	.65	.67	.54	.74	.71	.80	1.93	1.31	.59	1.00	1.00
Significance	.79	.75	.93	.64	.70	.54	.00**	.06	.87	.27	.28

Legend: VM verbal manifest, PHM physical manifest, IND indirect, VL verbal latent, PHL physical latent

In the sample of prisoners (Table 1) all the five personality factors are distributed in the shape of a platykurtic curve (peakedness < 3 in all the factors), whereas there is no significant departure from the normal Gaussian curve in any personality factor (skewness ~ 0).

Out of the five measures of *aggressiveness* and total *aggressiveness*, the highest degree of skewness (positive asymmetry) was displayed by *physical manifest* (skewness = 2.35) and *indirect* (skewness = 1.79) *aggressiveness*. These two variables displayed also the highest level of leptokurtosis (PHM kurtosis = 8.28, IN kurtosis = 4.48).

The normality of the curve was tested by the Kolmogorov-Smirnov test (K-S test). Significant deviation is obvious (Table 1) of *physical manifest* (K-S test=1.95; $p < .01$), *indirect* (K-S test=1.57; $p < .05$), and *physical latent aggression* (K-S test=2.09; $p < .01$) from the normal distribution, in the direction of a positive asymmetry (skewness = 2.35, 1.79, and 1.39, respectively) and the platykurtic (kurtosis = 8.28, 4.48 and 2.07, respectively) curve.

In the sample of athletes (Table 2) distribution of all the five personality factors followed platykurtic curve (kurtosis < 3). The same was with all the measures of *aggressiveness*, except for the variable *physical manifest aggression* (kurtosis = 7.23). In all the measures of *aggressiveness* the positive

asymmetric curve pattern was obvious, and the tendency was most pronounced in *physical manifest* (skewness = 2.23) and *indirect* (skewness = 1.33) *aggression*. By means of the K-S test a significant deviation from normal distribution was obtained in the variable *physical manifest aggression* ($p < .01$). Distribution of *indirect aggression* came close to the significance level.

In the sample of prisoners (Table 3) statistically significant negative relations were found between *emotional stability* and all the five measures of *aggressiveness*, as well as between *emotional stability* and total *aggression*. In the *indirect* ($r = -.41$), *physical manifest* ($r = -.34$), *physical latent* ($r = -.29$) and total *aggression* ($r = -.32$) the relations were established with 1% of risk.

Also, statistically significant negative relations were found between *conscientiousness* and total *aggression* ($r = -.32$, $p < .01$), *conscientiousness* and *physical manifest* ($r = -.32$, $p < .01$), *conscientiousness* and *indirect aggression* ($r = -.37$, $p < .01$), *conscientiousness* and *physical latent* ($r = -.36$, $p < .01$) and *conscientiousness* and *verbal manifest aggression* ($r = -.22$, $p < .05$).

The factor *agreeableness* is significantly related negatively to *physical latent aggression* ($r = -.30$, $p < .01$), *indirect* ($r = -.29$, $p < .01$), *physical manifest* ($r = -.26$, $p < .01$) and total *aggression* ($r = -.24$, $p < .05$).

Table 3. Correlation matrix of individual measures of aggressiveness and the five personality factors (prisoners)

N=106	Extraversion	Agreeableness	Conscientiousness	Emotional stability	Intellect
Total <i>aggressiveness</i>	.014	-.239*	-.319**	-.323**	-.017
Verbal manifest <i>aggressiveness</i>	.098	-.180	-.218*	-.218*	.022
Physical manifest <i>aggressiveness</i>	.001	-.257**	-.317**	-.336**	.011
Indirect <i>aggressiveness</i>	-.070	-.285**	-.369**	-.407**	-.085
Verbal latent <i>aggressiveness</i>	-.007	-.052	-.172	-.204*	-.030
Physical latent <i>aggressiveness</i>	.022	-.301**	-.355**	-.288**	.001

In the sample of athletes (Table 4) statistically significant negative relations were obtained between *emotional stability* and all the measures of *aggressiveness*, the same as in the sample of prisoners.

Further, there were significant negative correlations between *agreeableness* and *total aggressiveness* ($r=-.25$, $p<.01$), *agreeableness* and *physical latent aggressiveness* ($r=-.37$, $p<.01$), and *agreeableness* and *physical manifest aggressiveness* ($r=-.31$, $p<.01$).

As opposed to the findings in the sample of prisoners, in the sample of athletes statistically significant negative relations were obtained between extraversion and four measures of *aggressiveness* (*extraversion* and *VL aggression* - $r=-.33$, $p<.01$; *extraversion* and *PHL aggression* - $r=-.27$, $p<.01$; *extraversion* and *IN aggression* - $r=-.20$, $p<.05$ and *extraversion* and *total aggression* - $r=-.24$, $p<.05$).

Table 4. Correlation matrix of individual measures of aggressiveness and the five personality factors (athletes)

N=109	Extraversion	Agreeableness	Conscientiousness	Emotional stability	Intellect
Total aggressiveness	-.243*	-.245**	-.137	-.378**	-.075
Verbal manifest aggressiveness	.000	-.084	.032	-.224*	.046
Physical manifest aggressiveness	-.164	-.308**	-.109	-.307**	-.039
Indirect aggressiveness	-.204*	-.176	-.092	-.326**	-.073
Verbal latent aggressiveness	-.326**	-.170	-.176	-.334**	-.155
Physical latent aggressiveness	-.268**	-.366**	-.197*	-.353**	-.067

Connectedness of the group of predictor variables, consisting of the five personality factors (*extraversion*, *agreeableness*, *conscientiousness*, *emotional stability* and *intellect*), with the criterion *aggressiveness* was established by multiple regression analysis (Table 5).

The coefficient of multiple correlation in the sample of *prisoners* was .52 ($p<.01$), consequently, the coefficient of determination was .27. It is obvious that the predictor variables managed to explain statistically significantly ($F=7.23$, $p<.01$) 27% of the variance of the criterion variable.

Individually, all the variables, except for the variable *agreeableness*, were statistically significantly related to the criterion ($p<.05$). The biggest individual correlation with the criterion *aggression* was obtained for the variable *emotional stability* ($Beta=-.38$, $p<.01$), then, in descending order, followed *intellect* ($Beta=.30$, $p<.05$), *conscientiousness* ($Beta=-.29$, $p<.05$) and *extraversion* ($Beta=.26$, $p<.05$).

Even the variable *agreeableness* came close to the significance level of 5% ($p=.064$).

Table 5. Results of overall regression analysis with the five personality factors as the predictors and aggressiveness as the criterion (prisoners)

R	R ²	df	F-ratio	p
.52	.27	5/105	7.23	.00

Predictors	Beta	t	p
Extraversion	.26	2.25	<.05
Agreeableness	-.23	-1.87	>.05
Conscientiousness	-.29	-2.36	<.05
Emotional stability	-.38	-3.62	<.01
Intellect	.30	2.46	<.05

When compared to the sample of prisoners, a somewhat lower coefficient of multiple correlation was obtained ($R=.43$, $p<.01$) in the sample of athletes (Table 6), but the influence of the group of predictors on the criterion was statistically significant

with the error lower than 1%. The group of predictors explained 18% of the variance of the criterion. Individually, only the variable *emotional stability* established statistically significant correlation with the criterion variable with the measurement error of 5% ($Beta=-.32$, $p<.05$).

Out of the other factors, only the factor *agreeableness* came close to the significance level of 5% ($p=.068$).

Table 6. Results of overall regression analysis with the five personality factors as the predictors and aggressiveness as the criterion (athletes)

R	R ²	df	F-ratio	p
.43	.18	5/108	4.61	.00

Predictors	Beta	t	p
Extraversion	-.03	-.20	>.05
Agreeableness	-.20	-1.84	>.05
Conscientiousness	-.05	-.58	>.05
Emotional stability	-.32	-3.15	<.05
Intellect	.12	1.05	>.05

Discussion

The Kolmogorov-Smirnov test was computed for each of the personality factors and *aggressiveness*. It was determined that the results obtained on the measures of *physical manifest* ($p < .01$), *physical latent* ($p < .01$) and *indirect aggression* ($p < .05$) significantly deviated from the normal distribution with the error lower than 5% in the sample of prisoners.

We can state that *physical manifest aggression* follows a positive asymmetric (skewness = 2.35) and the platykurtic (kurtosis = 8.28) curve. It means that the results grouped around the lower values. That happened probably due to the wish of the prisoners to present themselves in the best possible light, and the expressed tendency was greatest exactly in *physical manifest aggression* ($p < .01$). It is a publicly known fact that this kind of *aggressiveness* is most susceptible to social criticism. A similar tendency, but smaller in volume, could be observed in the variables *physical latent* and *indirect aggression* (which can be regarded also as the manifest, yet directed to the substituted goal and not to the exact source of actual frustration).

Table 2 reveals the same tendency in the sample of athletes, but only in the curve of *physical manifest aggression* ($p < .01$), the kind of aggressiveness being socially least acceptable

In the sample of prisoners all the measures of *aggressiveness*, as well as the *total aggressiveness* were statistically significantly related to *emotional stability*. That association was particularly expressed with *physical manifest* ($r = -.34$, $p < .01$), *physical latent* ($r = -.29$, $p < .01$) and *indirect aggression* ($r = -.41$, $p < .01$), as well as *total aggression* ($r = -.32$, $p < .01$). *Emotional stability* includes also issues of emotions control and regulation (Martin, Choi et al., 1999).

Martin et al. (1999) found a low, yet statistically significant negative correlation between *emotional stability* and expressions of negative emotions, especially anger. The obtained correlation indicates that emotionally unstable prisoners are more liable to anger when provoked; since they have control issues when that emotion is in question, they manifest it as *aggressiveness*. It is confirmed here by the highest correlation with *manifest aggression* ($r = -.22$, $p < .05$ and $r = -.34$, $p < .01$) and *indirect aggression* ($r = -.41$, $p < .01$), which are the manifestations of impulse control issues.

Further, statistically significant negative correlation was obtained between aggression and *agreeableness* ($r = -.24$, $p < .05$). Persons with low scores on the dimension *agreeableness* are described as lonely, quarrelsome, mistake-seeking, rude, harsh, irritable, feeling goal achievement anxiety, with no empathy (Bucik, Boben, & Hruševar-Bobek, 1997). It is viable to conclude that for such a person it is easy to prefer aggressive behaviour for solving interpersonal conflicts.

Martin, Choi et al. (1999) also obtained a negative correlation between *agreeableness* and anger. Therefore, it can be said that persons low on *agreeableness* are more susceptible to feel provoked anger, which they predominantly manifest physically not verbally. In accord with that, we have also found a correlation with *physical manifest aggression* ($r = -.26$, $p < .01$) and *indirect aggression* ($r = -.29$, $p < .01$), and no correlation with *verbal manifest aggression* (in the sample of prisoners).

Besides, there is a certain parallelism between FFM of personality and Eysenck's theory of personality. According to Goldberg and Rosolack (1994), the scale *psychoticism* (EPQ scale) has the biggest negative correlation with the factor *agreeableness* ($r = -.43$) from the FFM markers. It is well known that within psychoticism a trait of *aggressiveness* can be found, consequently, the trait *aggressiveness* is here also indirectly negatively correlated with *agreeableness*.

Further, studies with molesters/bullies and victims in schools demonstrated that the tormentors had a lower *emotional stability* and lower *agreeableness* (Tani et al., 2003). Intimidators tend to resolve interpersonal issues by aggressive behaviour, and they prefer to behave aggressively in general. This is in line with our finding of a negative correlation between *aggressiveness* and *agreeableness* ($r = -.24$, $p < .05$) and between *aggressiveness* and *emotional stability* ($r = -.32$, $p < .01$).

As expected, a statistically significant negative correlation was obtained between *conscientiousness* and *aggressiveness* ($r = -.32$, $p < .01$).

In their research Tani et al. (2003) defined persons positioned high on the dimension of *conscientiousness* like goal-oriented, wilful and responsible (they respect order, rules and duties), whereas persons low on that dimension are less prone to moral principle leadership and they are more hedonistically oriented. Consequently, persons low on the factor *conscientiousness* may manifest aggressive types of behaviour because they are not aware of the moral unacceptability of such actions. It is probably the result of a poorly performed process of socialization. Costa and McCrae (1992) say that the dimension *conscientiousness* also includes self-control, strong will and high determination.

Therefore, a low negative relationship found in our study between *conscientiousness* and *aggression* may be explained by low *conscientiousness* representing a kind of inability to control impulses, which is expressed as *aggression* due to frustration.

In the already mentioned study, Tani et al. (2003) demonstrated that low *agreeableness* and low *conscientiousness* in children were highly positively connected with bullying reports and fighting initiations. And that is undoubtedly highly aggressive behaviour. Also, in the research of Asendorph

et al. (2003) correlations were found between low agreeableness and low *conscientiousness* and *aggression*.

The further study that confirms the findings of our study was conducted with a population of prisoners (Knezović et al., 1989). It dealt with the relationship between *aggressiveness* and accompanying sociopathology. The finding was that doing nothing led to enhanced *aggressiveness* on almost all the *aggressiveness* scales when compared to the average population. More sensitive research on the relationship of employment status and *aggressiveness* indicated that among persons of various working status the least aggressive persons were those having permanent full-time employment, then came those who were employed on a temporary basis, and the most aggressive were unemployed persons and day labourers (Knezović et al., 1989).

Since in this sample *agreeableness* and *conscientiousness* were associated with *aggressiveness*, it is a question of primary psychopathological aggression in the prisoners, as opposed to the sample of athletes.

The results in our study (Table 4) revealed statistically significant negative correlations between *emotional stability* and all the measures of *aggressiveness*. However, as opposed to the sample of prisoners, in the sample of athletes a statistically significant correlation occurred between extraversion and the four measures of *aggressiveness* (*physical latent aggression*, *verbal latent aggression*, *indirect* and *total aggression*).

Correlations between *emotional stability* and *aggressiveness* are clear and have already been explained in the section on the prisoners.

As far as *extraversion* is regarded, statistically significant, but negative correlations were obvious between *extraversion* and *verbal latent* ($r=-.33$, $p<.01$) and *physical latent aggression* ($r=-.27$, $p<.01$). The next by size was the correlation with total *aggression* ($r=-0.24$, $p<.05$).

The findings of the experiment by Martin et al. (1999) speak in favour of the previous finding. They found that the so called variable "anger-in" (defined as the tendency to live through anger, not to express it) is positively correlated with *introversion*. Therefore, it is feasible to draw a parallel between the variable "anger-in" (suppressed anger), starting from its definition, and *verbal latent* and *physical latent aggression*. So, the found correlations between *introversion* and *verbal latent*, and *introversion* and *physical latent* "anger-in" aggression are logical and expected. Further, the variable had the highest correlation with *neuroticism*, and a somewhat moderate correlation with a lower *extraversion* (Martin et al., 1999). Such results were obtained in our research also for the variable *latent aggression*.

Also, a positive correlation was found between *extraversion* and the expression of emotions (Mar-

tin et al., 1999). Consequently, extroverts express their emotions, anger alike, whereas introverts may feel anger (in the form of motivation for *aggression*), but they do not express it – they suppress it within themselves. They may say they wish to hit someone or to shout at someone, but they would not do that; therefore, this type of aggression is regarded as *latent aggression*.

In order to analyse the correlation of the group of predictor variables, consisting of the five personality factors (*extraversion*, *conscientiousness*, *agreeableness*, *emotional stability* and *intellect*), with the criterion total aggression, multiple regression analysis was performed. The obtained results revealed that the group of predictor variables managed to statistically significantly ($F=7.23$, $p<.01$) explain 27 % of the criterion variable variance in the sample of prisoners. From the aspect of individual variables, all of them, except for the variable *agreeableness*, have a statistically significant influence on the criterion ($p<.05$). The greatest individual influence on the criterion *aggression* was obtained for the variable *emotional stability* ($Beta=-.38$, $p<.01$), meaning the greater the *emotional stability*, the lower the *aggressiveness*. It can be explained by the phenomenon that emotionally unstable persons (high on *neuroticism*) are more susceptible to the experience of negative emotions, consequently their tolerance to frustration is lower (Pervin & John, 1997). That means that they react more violently than other persons to situations that are not so very embarrassing, objectively speaking.

Pervin and John (1997) described in their book *neuroticism* as a dimension which identifies persons inclined to negative emotions, unrealistic ideas, excessive cravings and urges, and maladaptive stress coping strategies. Aggressiveness is also one of these inadequate coping strategies (Hudek-Knežević, Krapić, & Kardum, 2006).

Persons high on the dimension of neuroticism are described as worrying, nervous, easy jumping, venturesome, emotional, insecure, unreliable, inadequate, and hypochondriachal (Pervin & John, 1997). Such a profile leads to the conclusion that they are liable to negative emotions, therefore, they are more sensitive to provocations; their frustration tolerance is low, so they frequently respond in an aggressive way to aversive stimuli. The mentioned authors positioned the dimension of *neuroticism* on the one end of the scale, opposite to the end on which *emotional stability* is. *Neuroticism* includes a wide range of negative emotions like: anxiety, sorrow, irritability, nervous tension and others (Pervin & John, 1997).

Martin et al. (1999) state that both *latent* and *manifest aggressiveness* are primarily associated with *neuroticism*, after which, in relation to sequence, comes *agreeableness*. In the already mentioned research by Tani et al. (2000), a moderate

positive correlation was obtained between *neuroticism* and the expression of negative emotions. Consequently, *neuroticism* has a primary influence on both the motivation for aggressive behaviour and on its expression. Therefore, the obtained statistically significant strong prediction of *aggression* based on the predictor *neuroticism/emotional (un)stability* in our study is quite logical and expected.

The second predictor in the sequence is *intellect*, or *openness to experience* ($\text{Beta}=.30$, $p<.05$) – here we obtained that the greater the *intellect*, the greater the *aggressiveness*. Here *intellect* represents the disposition of a person to seek intellectually challenging areas and situations, to handle facts, to have a developed imagination and to enjoy mental operations. Such a seemingly illogical result may be attributed to the diverse structure of the observed population of prisoners, that is, to a high portion of business crime and other crime offences in which *intellect* plays a crucial role for its accomplishment (for example, banknotes falsifications, illegal financial transactions, illicit people trafficking, smuggling, and drug dealing). For them, *intellect* is a kind of a tool, a means to control their *aggressiveness* in order to accomplish planned criminal deeds. On the contrary, in the longitudinal research of Feschbach and Price (1984), a causal relationship was obtained between cognitive competence and aggressive behaviour, meaning that the development of cognitive competence decreases *aggressiveness*.

In previous research studies it was almost a pattern to obtain a statistically significant relationship between *conscientiousness* and *aggressiveness*. However, in our study that was not the case. Yet, the factor *agreeableness* came close to the significance level of 5% ($p=.064$).

When compared to the sample of prisoners, in the sample of athletes we obtained a somewhat lower coefficient of multiple correlation ($R=.43$, $p<.01$), but the relationship between the group of predictors and the criterion was still statistically significant with the error less than 1%. So, the group of predictors explained 18% of the variance of the criterion. From the aspect of individual predictors, only the variable *emotional stability* established a statistically significant correlation with the criterion variable with the conclusion error less than 5% ($\text{Beta}=-.32$, $p<.05$). In the sample of athletes we mostly dealt with the emotionally provoked *aggression* and not with the *aggression* conditioned by the total personality traits structure. Namely, the sample of athletes consisted exclusively of students who were, from the aspect of their development, in the phase of late adolescence. Adolescence is a turbulent life period, very often followed by feelings of inadequacy or low self-esteem and by hypersensitivity to actual or imagined underestimation.

Adolescents frequently have issues with the delay of gratification and they usually respond to frustration with anxiety, which can be manifested as pronounced bodily restlessness, anger attacks, quarrelsomeness, aggressive behaviour, or escape (Biti & Borovečki, 1986).

All these are parameters of *emotional (in)stability*, so that can be a possible explanation for *emotional stability* being a significant predictor of *aggressiveness* in the sample of athletes.

Out of the other factors, only the factor *agreeableness* came close to the level of significance ($p=.068$).

To sum up - correlations among the five personality factors and *aggressiveness* were computed for each subsample separately. In the sample of prisoners statistically significant correlations were obtained between *agreeableness*, *conscientiousness*, *emotional stability* and *aggressiveness*, whereas in the sample of athletes significant correlations were obtained for extraversion, agreeableness, emotional stability and aggressiveness. It is important to underline that the correlation between *aggressiveness* and *intellect* in the sample of prisoners was of a positive direction, which can be attributed to a high contribution of business crime, serious fraud and other crimes for the realization of which a higher level of intelligence had been necessary.

Regression analysis, performed for each sample separately, disclosed the following: on the sample of prisoners it was found that *extraversion*, *conscientiousness*, *emotional stability* and *intellect* were significant predictors of *total aggressiveness*, whereas on the sample of athletes it was only *emotional stability* with a marginal significance of the factor *agreeableness*.

It can be concluded that different structures were obtained of the relationships between the dimensions of the FFM theory of personality and *aggressiveness* across the samples of these specific subpopulations. Given the great importance of aggression in everyday life, it seems worthwhile to try and counteract hostile dispositional attributions by highlighting also the relevance of social context (Keller, Hurst, & Uskul, 2008) as a critical factor in driving individual behaviour, which was beyond the limits of this paper. However, we must not forget the fact that human characteristics and behaviour are malleable and subject to a certain change. Our findings indicate that psychologists, social workers, teachers, coaches and other professionals should pay special attention to the findings of the study when working with these populations to the specific features in the structure of their personality and behaviour. Due to the prevalence of the emotionally provoked, i.e. reactive aggression in athletes obtained in our study, it would be advisable in practical work to focus on underpinning emotional stability and instrumental aggressiveness.

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Submitted: January 21, 2008

Accepted: December 2, 2008

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Acknowledgement

The paper is a result of the research conducted within the scientific research programme number 034-2607 "Anthropological determinants of competition performance in sports games", approved and granted by the Ministry of Science, Education and Sports of the Republic of Croatia.

PETEROFAKTORSKA TEORIJA LIČNOSTI I AGRESIVNOST

Sažetak

Uvod

Cilj je ovog istraživanja bio utvrditi vrstu odnosa između crte agresivnosti i dimenzija peterofaktorske teorije ličnosti na uzorcima zatvorenika i sportaša.

Agresivnost se može definirati kao svako ponašanje u kojemu se očituje namjera da se povrijedi druga osoba bilo psihički bilo fizički.

Peterofaktorski model opisuje ličnost pomoću pet faktora koji je predstavljaju na njenu najvišem stupnju apstrakcije, što znači da svaka od tih dimenzija uključuje velik broj distinktivnih, specifičnijih karakteristika. Radi se o sljedećih 5 faktora: *ekstraverzija*, *ugodnost*, *savjesnost*, *emocionalna stabilnost/neuroticizam* i *intelekt/otvorenost za iskustva*.

Autori su pretpostavili da su zatvorenici i sportaši dvije subpopulacije s povećanom razinom agresivnosti – zatvorenici, jer su svojim ponašanjem prekršili zakone kojima se štite druge osobe i njihova sigurnost u najširem smislu (dakle, jasno su pokazali namjeru da naude drugoj osobi), a za sportaše i laici kažu, osobito u kontaktnim sportovima, da moraju posjedovati i iskazivati dozu agresivnosti kako bi nadvladali protivnika i pobijedili ga.

Na osnovi dosadašnjih istraživanja, pretpostavili smo da će zatvorenici postizati niže rezultate na skalama *ugodnosti* i *savjesnosti*. Naime, prijašnja istraživanja su pokazala da niska razina *ugodnosti* i *savjesnosti* predviđa delinkvenciju. S druge strane, za sportaše je iz dosadašnjih istraživanja poznato da postižu niže rezultate na skali *neuroticizma*, a više rezultate na dimenzijama *ugodnosti* i *savjesnosti*.

Metode

Za mjerenje agresivnosti, koristili smo upitnik A-87 (prema Žužul, 1987), dok smo za mjerenje 5 faktora ličnosti primijenili IPIP 100 (www.ipip.ori.org, 2005).

Uzorak zatvorenika činili su osumnjičeni i osuđeni počinitelji kaznenih djela (N=106), a uzorak sportaša studenti prve i druge godine Kineziološkog fakulteta Sveučilišta u Zagrebu (N=109) koji se uz redovito studiranje bave sportom na nacionalnoj kvalitetnoj razini.

Relacije između agresivnosti i pet faktora ličnosti utvrđene su Pearsonovim koeficijentom korelacije, dok je povezanost između skupa prediktorskih varijabli, koji čini pet faktora ličnosti, s kriterijem *agresivnost* utvrđena multiplom regresijskom analizom.

Rezultati, rasprava i zaključak

Na uzorku zatvorenika nađena je statistički značajna negativna povezanost između *agresivnosti* i: *emocionalne stabilnosti* ($r=-0.32$, $p<.1$), *savjesnosti* ($r=-0.32$, $p<.1$) i *ugodnosti* ($r=-0.24$, $p<.5$).

Statistički značajnu negativnu povezanost između *agresivnosti* i *emocionalne stabilnosti* na uzorku zatvorenika ($r=-0.32$) možemo objasniti činjenicom da emocionalna stabilnost uključuje i probleme reguliranja i kontrole emocija. Nadalje, statistički značajnu negativnu korelaciju između *agresivnosti* i *savjesnosti* ($r=-0.32$) možemo objasniti u okviru istraživanja Tanijeva i suradnika (2003). U svom istraživanju Tanijeva definira osobe nisko pozicionirane na dimenziji *savjesnosti* kao nesvrhovite, manje vođene moralnim principima i orijentirane prema užitku. Možemo pretpostaviti da su osobe niske na *savjesnosti* agresivne jer nisu svjesne moralne neopravdanosti takvog ponašanja. Zatim, statistički značajna negativna korelacija između *agresivnosti* i *ugodnosti* ($r=-0.24$) potiče iz same definicije dimenzije *ugodnosti* (prema Pervin i John, 1997). Osoba s niskim rezultatima na dimenziji *ugodnosti* opisuje se kao svadljiva, koja traži pogreške, gruba, osorna i razdražljiva. Takva će osoba vjerojatno češće koristiti agresivno ponašanje za rješavanje interpersonalnih konflikata.

Na uzorku sportaša nađena je statistički značajna negativna povezanost između *agresivnosti* i: *emocionalne stabilnosti* ($r=-0.38$, $p<.1$), *ugodnosti* ($r=-0.25$, $p<.1$) i *ekstraverzije* ($r=-0.24$, $p<.5$).

Prve dvije relacije objašnjene su već na uzorku zatvorenika. Na uzorku sportaša iznimno se pojavljuje statistički značajna povezanost između *agresivnosti* i *ekstraverzije* ($r=-0.24$, $p<.5$). To možemo objasniti time što ekstroverti izravno i otvoreno očituju svoje emocije, pa prema tome i srdžbu. U jednom istraživanju nađena je pozitivna korelacija između *ekstraverzije* i ekspresije emocija.

Rezultati regresijske analize kod zatvorenika pokazuju da sve varijable, osim *ugodnosti*, imaju statistički značajan utjecaj na agresivnost. Najveći pojedinačan utjecaj na kriterij agresivnosti ima varijabla *emocionalna stabilnost* (Beta=-0.38). Pretpostavljamo da je to zato što su emocionalno nestabilne osobe podložnije doživljaju negativnih emocija pa češće reagiraju agresijom.

Iznenadujuće je da prediktor *intelekt* ima statistički značajan utjecaj na kriterij *agresivnost*, i to pozitivnog smjera. Pretpostaviti je da je to zbog visokog udjela gospodarskoga kriminala i ostalih djela za čiju je provedbu potreban intelekt u uzorku zatvorenika.

Rezultati regresijske analize kod sportaša pokazuju da jedino varijabla *emocionalna stabilnost* ostvaruje statistički značajan utjecaj na agresivnost.

Konačno, možemo zaključiti da se na uzorku zatvorenika radi o primarno psihopatskoj agresiji koja je uvjetovana ukupnom strukturom ličnosti, dok se kod sportaša radi o emocionalno isprovociranoj, tj. reaktivnoj agresiji.

S obzirom na taj nalaz, preporučili bismo da se u praktičnom radu sa sportašima poradi na povećanju emocionalne stabilnosti i na povećanju instrumentalne agresivnosti koja je usmjerena prema konstruktivnim ciljevima.